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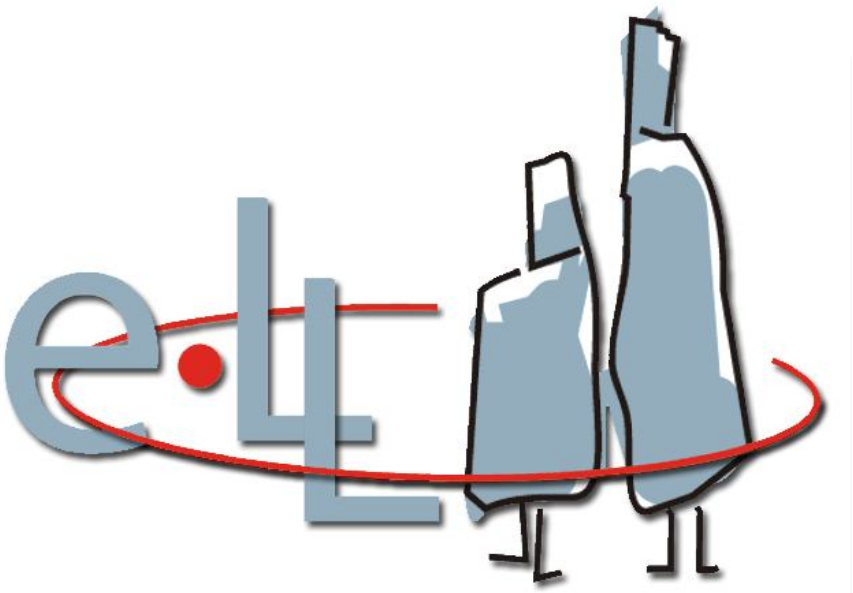
Understanding youth, learning and technology



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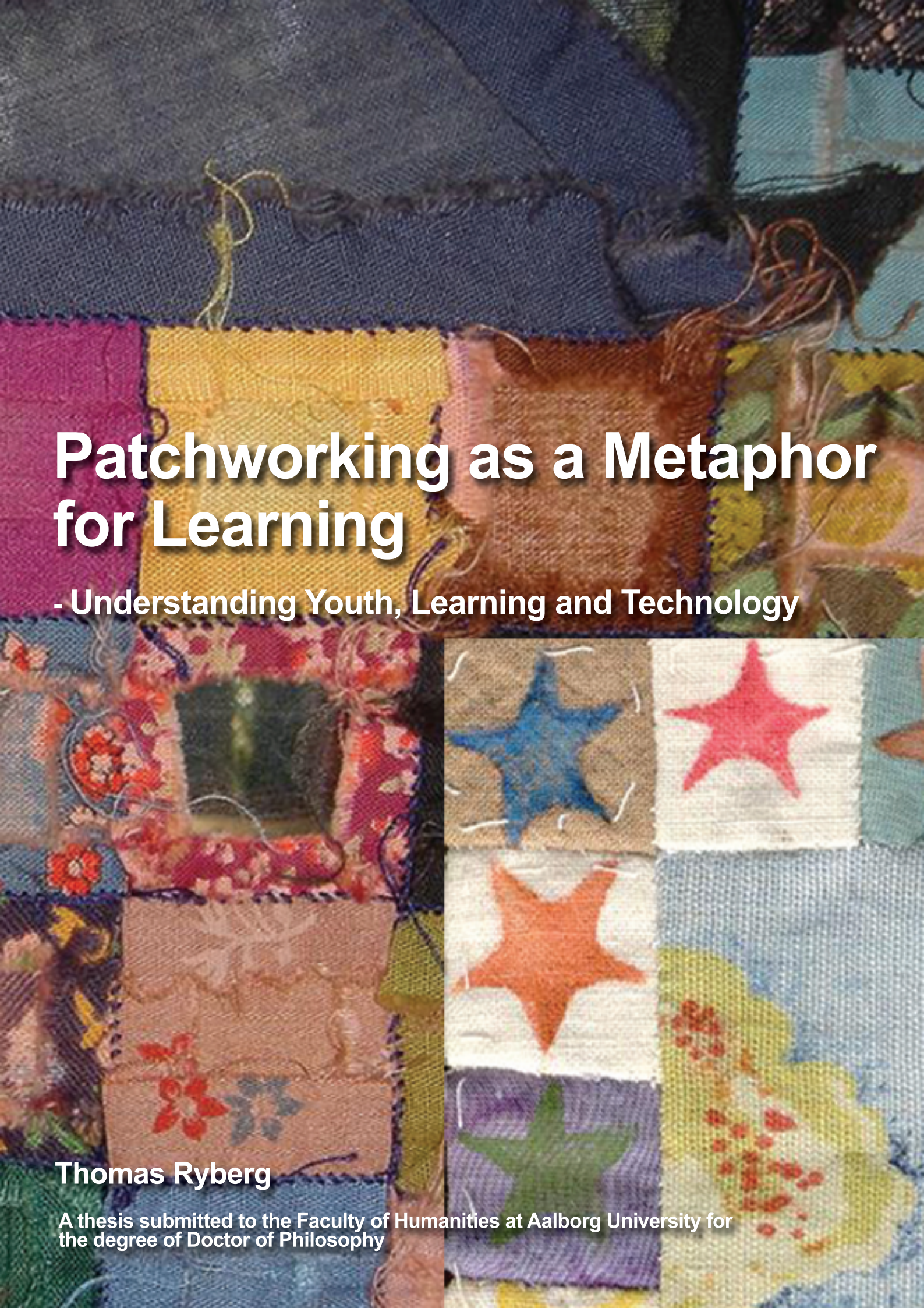

Patchworking as a Metaphor for Learning

- Understanding Youth, Learning and Technology

Thomas Ryberg

A thesis submitted to the Faculty of Humanities at Aalborg University for the degree of Doctor of Philosophy

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e-Learning Lab will, through a fertile, dynamic and collaborative research environment in interaction with user groups and stakeholders, establish a solid theoretical and methodological basis, and ensure the development of long term knowledge building for the research field *User driven Innovation, Learning and Design* that will best serve the region, the nation and the world in the 21st century. e-Learning Lab contributes to the bridging of the digital divide, emphasising projects with partners in developing countries.

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Aalborg, September 2007

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English Summary

During 8-10th of August 2005 six teams of young 'power users' worked intensively on addressing different open-ended learning challenges. This took place within a larger event and symposium arranged as part of the 'Power Users of Technology Project' – a research project formed around the hypothesis that young power users of technology might be learning, working and solving problems in new and innovative ways due to their intensified use of technology; and that we can gain valuable insights about the future design of education by studying young people and their use of technology in relation to learning and problem solving processes.

Each of the teams had chosen a specific problem to work with before and during the symposium and on the last day they were to present their solutions and recommendations to the approximately 100 grown-ups attending the event. During the symposium each team was followed, observed, studied and supported by a group of researchers, facilitators and chaperones. The symposium was thus the scene for studying and following in depth the learning processes, work and problem solving strategies of the young people and how they used technologies as a part of the learning and problem solving process. Throughout this event I intensively followed the Nordic team of power users, who worked with the open-ended challenge of 'how to use technology to reduce poverty in the world'.

The central theme of this thesis is to argue how we can theoretically understand, analyse and methodologically approach such processes of technology mediated learning from a critical perspective. Furthermore, I critically discuss the relations between youth, learning and technology, and what we might be able to learn from studying young 'power users of technology'.

The notion of patchworking

In the thesis I propose and argue for the metaphor of 'patchworking' as a way of understanding, analysing and methodologically approaching technology mediated learning processes. The notion of patchworking has emerged through closely following and analysing the work of the Nordic team of power users. Even though the work process involving the young people spanned a period of almost three months the majority of their actual work on addressing the learning challenge and creating their presentation was accomplished within a much shorter period of time; basically most of their work was done over three work days during which they managed to

create quite an impressive final presentation.

The notion of patchworking reflects how the young people in addressing their problem and in creating a final presentation of their work manage to forage a number of 'patches and pieces' that were creatively stitched together into a coherent argument and narrative, while also being an impressive multimodal assemblage of various media. However, an important argument of the patchworking metaphor is that we should not focus on the 'final' product, rather we need to critically analyse the whole process of 'patchworking' that take place. We need to study, whether the learners are merely gluing together different chunks of well-known, or even contradictory, information without much reflection; or if they manage to create a meaningful, creative synthesis of the material they have collected. In relation to this it becomes important to study also how they plan, coordinate, distribute task and manage the entire process. In understanding and critically analysing their process of patchworking I argue for and construct an analytical framework and some analytical concepts that are employed in analysis of the case.

The analytical framework and concepts

The analytical framework I present is inspired mainly by socio-cultural theories of learning and from interaction analysis. I argue that it is important to corroborate and ground the analysis in the empirical data, while also maintaining an overview of the development of the entire process. Therefore I argue for a level of analytical zoom and approach to the analysis, which lies in-between ethnographical narrative accounts, and then more detailed analysis of transcribed excerpts of interaction.

The analytical concepts I employ and develop through the analysis are three overarching analytical categories called cycles, processes and threads. Threads are a concept I use to analyse how ideas, interpretations or topics develop over time. Equally, I through the analysis, I draw out processes, which are important parts of their work, such as planning their work, foraging information and creating a sociable atmosphere. Cycles are analytical concepts that aim at identifying some of the overarching structures of their work. Through the analysis I identify two overarching cycles, which I call 'cycles of remixing and patchworking' and 'cycles of stabilisation work and production'.

In the analysis I argue how we can follow different topical threads and see how which little patchworks start to cluster and form more coherent chains

of arguments and ideas, as they forage and gather information through interviews, webpages and informal conversations. I point to how they as part of their enquiry and learning process engage in stitching a moral and a conceptual blueprint. The latter is their continuously evolving representation of the entire problem space, whereas the former reflects the participants' more fundamental views and assumptions. Sometimes the 'patches and pieces' they gather are corroboratory evidence, which fit their conceptual and moral blueprint, but at other times they are disruptive pieces which challenge the threads and their conceptual or moral blueprint. These disruptions and problematic patches and pieces are especially negotiated and discussed during the cycles of remixing and patchworking cycles. Here they discuss the relations between threads, blueprints and the various 'patches and pieces' and they engage in negotiations of the more overarching questions of their enquiry 'what is their problem formulation' or 'what are the solutions and causes for poverty'. During these cycles they engage in reweaving and reorganising their conceptual and moral blueprints leading to the formation of new overarching patchworks.

Patchworking as a process of knowledge creation

On basis of this analysis I further discuss and develop the notions of understanding learning as a process of patchworking, and I device some models and analytical foci through which we can critically investigate such processes. I suggest we should especially focus on the processes of reweaving the different patchworks.

The models I present are conceptual tools to engage in actual empirical analysis of patchworking and reweaving processes. The aim is to analyse what happens when 'patches and pieces' (whether these are disruptive pieces, new ideas or corroborative evidence) are weaved into an existing patchwork. I argue that through analysing such instances of reweaving we can study if the processes cause the learners to reflect, rethink and reweave the different threads and blueprint, which can give us insight into whether the process is one of critical, reflexive inquiry.

Furthermore, I discuss the notion of patchworking in relation to a metaphor of knowledge creation, which is especially inspired by Engeströms notion of expansive learning, and I discuss why problem oriented processes of learning and knowledge creation are important in the knowledge society. I argue that the metaphor of patchworking is a perspective that foregrounds the constructive, creative and transformative aspects of learning processes, and therefore it resembles notions such as expansive learning or the metaphor of

knowledge creation. However, I argue that these perspectives focus very much on whether the learning process leads to objective social and cultural transformation, whereas the notion of patchworking also recognises more modest and small contributions as instances of knowledge creation. Therefore I suggest that we need to involve insights from social theories of learning and notions of identity, as to understand how the learning processes support or enable experiences of agency, empowerment and personal involvement. This is because such experiences can be equally transformative, though they do not lead to actual, objective transformations of cultural practices. I argue that we need to understand how explorations of boundaries involve the negotiation of different forms of knowledge, which may challenge the learners and prompt them to negotiate their identities or reinvestigate their conceptual and moral blueprints.

In understanding the roles of technology in relation to processes of patchworking and reweaving, I argue that we should focus on the inherent dynamics and relational nature between the technological artefacts and then how they are mobilised, made sense of, interacts with and are fused or weaved into the processes of patchworking. I argue that we should not look in isolation at e.g. young people's technological skills or the depth of their expertise within one or more technological domains. Rather we need to study their abilities to orchestrate complex processes of patchworking where the technologies are made part of, or used to produce and reweave the different patchworks.

The relations between youth, learning and technology

Based on the analysis and by drawing on various case studies, review reports and large-scale quantitative studies I critically discuss the relations between youth, learning and technology. I discuss what we might be able to learn from studying young 'power users of technology' that can help us in designing education for the emerging knowledge and information society.

In understanding youth, learning and technology I argue that we should be careful about equating, consciously or implicit, a high-level of technological skills or frequent use with the ability to create new knowledge or engage in complex processes of patchworking. I argue that transformative skills do not automatically flow from having, leveraging or supporting technological skills; but rather from engagement in various technology-enhanced activities and communities. However, I also argue that youth may increasingly be engaged in such activities and communities.

Young people most often engage with and learn how to use technologies through their informal peer-networks; rather than within the context of formal education. It seems that many schools, educational institutions (or educational policies) have not been able to provide fruitful, engaging and challenging learning environments that are able to nurture, utilise, support and develop the capabilities and ways of learning that the youth favour and engage in outside schools. I argue that it is quite evident that (some) young people's ways of learning outside the boundaries of the formal education system in many ways reflect the learning challenges of the knowledge society. Through their leisure time activities some youth are engaging in creative production or remixing of various types of digital media. These productions are often created in collaboration with others or shared, discussed and developed in various types of networks or communities. In this sense many youth are engaged in meaningful, authentic processes of knowledge or content creation, which also entails participation in communities and interaction with people that have different levels of competence and knowledge. Through participation and engagement with such communities and activities some youth are developing important skills, competences and learning capabilities.

However, I also argue that children and young people are using ICTs in very different ways and that they have very differentiated experiences, competences and varied access to ICTs and possibilities for using them. While some youth have the opportunities, support, competences and access to engage in such productive activities there are some youth who are not capable of making such productive use of the technologies. Thus, we should not assume that youth who play games, chat or surf the web several hours a day will *necessarily* develop skills and competences to engage in complex knowledge creation activities. These capabilities do not flow from using technologies in-and-off itself; but rather from engagement in various technology-enhanced patchworking activities.

I argue that we should be careful about presuming and anticipating that youth will automatically develop skills and learning capabilities due to intensive use of technology. While there are potentials we should be very observant that they are indeed *potentials* that need to be nurtured and supported. Thus, there is a strong need not only to understand power users or young users of technology, but also to support and empower them. Schools and other educational institutions are important arenas for this.

Therefore it is increasingly important for schools, educational institutions

and policy makers to recognise, support and nurture critical, problem-oriented, technology mediated learning processes, and to transform the focus from knowledge acquisition towards knowledge creation. For one thing to address the challenges of the knowledge society, but also because the schools and educational institutions play a pivotal role in recognising, nurturing and developing the capabilities of all young people.

Danish Summary - Dansk resumé

I løbet af den 8.-10. august 2005 arbejdede seks grupper af unge 'power users' intenst med at løse en række åbne problemstillinger. Dette skete under et større arrangement og symposium, som var en del af projektet ´Power Users of Technology' – et forskningsprojekt dannet ud fra den hypotese, at unge 'power users of technology' muligvis lærer, arbejder og løser problemer på nye og innovative måder. Dette hænger sammen med deres forøgede brug af teknologi, og ved at studere unge og deres måde at bruge teknologien på i forhold til læring og dét at arbejde problemorienteret, kan vi få et værdifuldt indblik i, hvordan fremtidens undervisning skal tilrettelægges.

Hver af de seks grupper havde udvalgt en problemstilling, som de skulle arbejde med i løbet af symposiet. På den sidste dag skulle de præsentere deres løsninger og forslag til ca. 100 voksne, som deltog i arrangementet. I løbet af symposiet blev hver gruppe fulgt tæt, observeret, studeret og hjulpet på vej af en række forskere, facilitatorer og chaperoner. På den måde dannede symposiet rammer om et nærstudie af de unges problemløsnings- og læringsproces, og hvordan de brugte teknologien som en del af denne proces. Gennem hele arrangementet fulgte jeg den nordiske 'power users'-gruppe tæt. Denne gruppe arbejdede med det meget åbne problem: 'Hvordan kan teknologi bruges til at mindske fattigdom i verden?'

Det centrale omdrejningspunkt i denne afhandling er at argumentere for, hvordan vi teoretisk kan forstå, analysere og metodisk nærme os sådanne teknologimedierede læringsprocesser ud fra et kritisk perspektiv. Derudover diskuterer jeg kritisk relationen mellem unge, læring og teknologi, og hvad vi er i stand til at uddrage ved at studere unge 'power users of technology'.

Begrebet om 'patchworking'

I afhandlingen fremsætter og argumenterer jeg for en 'patchworking'-metafor som en måde, hvorpå vi kan forstå, analysere og metodisk tilgå teknologimedierede læringsprocesser. Begrebet om patchworking er udsprunget ved tæt at følge og analysere det arbejde, som den nordiske gruppe af 'power users' udførte. Selvom de unges arbejdsproces egentlig foregik over en periode på tre måneder, udførte de det meste af deres arbejde med at løse problemet og lave en præsentation inden for et ganske kort tidsrum. Det meste af deres arbejde blev stort set gennemført på tre arbejdsdage, hvor de formåede at udforme en ganske imponerende

præsentation.

Begrebet om 'patchworking' reflekterer, hvordan de unge ved at tilgå deres problem og udforme den endelige præsentation formåede at indsamle en række 'stumper og stykker', som kreativt blev syet og vævet sammen til en sammenhængende og argumenterende fortælling – samtidig med, at den indeholdt en imponerende samling af forskellige multimodale medier. I metaforen om 'patchworking' er det dog et vigtigt argument, at vi ikke udelukkende fokuserer på det 'endelige' produkt, men at vi i stedet kritisk analyserer hele den 'patchworking'-proces, som finder sted. Vi bør undersøge, om de lærende blot limer forskellige velkendte – eller endda modstridende – klumper af information sammen uden at reflektere videre over det. Eller om de er i stand til at udforme en meningsfuld og kreativ syntese af materiale, som de har indsamlet. I den sammenhæng bliver det også relevant at studere, hvordan de planlægger, koordinere, uddeler opgaver og leder hele processen. I forhold til kritisk at forstå og analysere deres 'patchworking'- proces argumenterer jeg for og konstruerer et analytisk rammeværk og en række analytiske koncepter, som er integreret som en del af analysen af min case.

Det analytiske rammeværk og de analytiske begreber

Det analytiske rammeværk, som jeg præsenterer, er primært inspireret af sociokulturelle teorier om læring og af interaktionsanalyse. Jeg hævder, at det er vigtigt at begrunde og fundere sin analyse i de empiriske data, samtidig med at man bevarer et overblik over hele processens udvikling. Derfor argumenterer jeg for et analytisk niveau og en analysestrategi, som befinder sig imellem etnografiske narrativer og mere detaljerede analyser af transskriberede interaktionsuddrag.

De analytiske begreber, som jeg anvender og udvikler i løbet af analysen, er tre overordnende analytiske kategorier kaldet 'cyklusser', 'processer' og 'tråde'. 'Tråde' er et begreb, som jeg bruger til at analysere, hvordan ideer, forståelser og emner udvikler sig over tid. Ligeledes fremhæver jeg gennem analysen ´processer', som er vigtige dele af de unges forløb med at planlægge deres arbejde, indsamle viden og etablere en social atmosfære. 'Cyklusser' er et analytiske begreb, som sigter mod at identificere nogle af de overordnede strukturer, som kan findes i deres arbejde. Gennem analysen identificerer jeg to overordnende cyklusser, som jeg kalder henholdsvis 'remixing- og patchworking-cyklusser' og 'stabiliserende produktions-cyklusser'.

I analysen argumenterer jeg for, hvordan vi kan følge forskellige tråde og se, hvordan små 'patchworks' begynder at forme sig og danne mere sammenhængende kæder af argumenter og ideer, efterhånden som de unge indhenter information via interviewes, hjemmesider og uformelle samtaler. Jeg påpeger, hvordan de via deres undersøgelse og læringsproces er sammen om at udforme en moralsk og konceptuel arbejdstegning (blueprint). Sidstnævnte er deres konstante repræsentation af hele problemfeltet, imens det første afspejler deltagernes mere generelle holdninger og grundlæggende antagelser. Nogle gange er de 'stumper og stykker', som de unge indsamler, bekræftende argumenter, som passer til deres konceptuelle og moralske arbejdstegning, men andre gange er de forstyrrende elementer, som udfordrer trådene og deres konceptuelle og moralske arbejdstegning. Disse forstyrrelser og problematiske 'stumper og stykker' bliver især forhandlet og diskuteret i løbet af 'remixing- og patchworking-cyklusserne'. Her diskuterer de unge sammenhængen mellem tråde, arbejdstegningerne og de forskellige 'stumper og stykker', og de indgår i forhandlinger om mere overordnede spørgsmål vedrørende deres undersøgelse, 'hvad er deres problemformulering' eller 'hvad er løsningerne og grundene til fattigdom'. Undervejs i disse cyklusser reorganiserer de deres konceptuelle og moralske arbejdstegning, hvilket medfører dannelse af nye, overordnede patchworks.

Patchworking som en vidensproducerende proces

På baggrund af analysen diskuterer og videreudvikler jeg begrebet om at forstå læring som en 'patchworking'-process, og jeg udvikler en række modeller og analytiske foci, hvorigennem vi kritisk kan undersøge sådanne processer. Jeg foreslår, at vi især skal fokusere på processerne med at optrevle og sammenflette de forskellige patchworks.

De modeller, jeg præsentere, er konceptuelle værktøjer, hvormed man empirisk kan tilgå patchworking og optrevlings- og sammenfletningsprocesserne. Målet er at analysere, hvad der sker, når 'stumper og stykker' (hvad enten de forstyrrende elementer, nye ideer eller underbyggende beviser) bliver vævet ind i et eksisterende patchwork. Jeg argumenterer for, at vi ved at analysere sådanne optrevlings- og sammenfletningsøjeblikke kan undersøge, om processerne får de lærende til at reflektere, tænke forfra og omflette de forskellige tråde og arbejdstegninger - dette kan give os en forståelse for, om processen er kritisk og refleksiv.

Ydermere diskuterer jeg begrebet om patchworking i forhold til en metafor om videnskonstruktion/produktion (knowledge creation), hvilket især er

inspireret af Engeströms begreb om ekspansiv læring. Her argumenterer jeg også for, hvorfor disse problemorienterede lærings- og vidensprocesser er vigtige i forhold til videnssamfundet. Jeg argumenterer ligeledes for, at patchwork-metaforen er et perspektiv, som fremhæver de konstruktive, kreative og transformative aspekter ved læringsprocesser, og at det derfor minder om begreber som ekspansiv læring og metaforen om videnskonstruktion/produktion.

Dog argumenterer jeg også for, at disse perspektiver i høj grad fokuserer på, om læringsprocesserne leder til objektive sociale og kulturelle transformationer, hvorimod begrebet om patchworking også anerkender mere beskedne bidrag som eksempler på videnskonstruktion. Derfor foreslår jeg, at vi er nødt til også at inddrage aspekter fra sociale læringsteorier og begrebet om identitet for at forstå, hvordan læringsprocesser støtter eller muliggør oplevelser omkring tilhørsforhold, empowerment og personligt engagement. Dette hænger sammen med, at sådanne oplevelser kan være lige så transformerende og omskabende, selvom de ikke direkte fører til faktisk objektive transformationer af kulturelle praksisser. Jeg argumenterer for, at vi må forstå, hvordan udforskninger på tværs af grænser også indeholder forhandling af forskellige vidensformer, hvilke kan udfordre de lærende og give anledning til, at de forhandler deres identitet eller på ny genovervejer deres konceptuelle og moralske arbejdstegning.

For at forstå de roller, som teknologien spiller i forhold til patchworking- og optrevlingsprocesserne, argumenterer jeg for, at vi skal fokusere på det dynamiske og relationelle forhold mellem de teknologiske artefakter og så den måde, hvorpå de bliver mobiliseret, forstået og interagerer med – og hvordan de smelter sammen og væves ind i patchworking-processen. Jeg argumenterer for, at vi ikke alene skal se på unges teknologiske færdigheder eller dyben af deres ekspertise inden for et eller flere tekniske domæner. Vi er i stedet nødt til at studere deres evne til at organisere komplekse patchworking-processer, hvor teknologien er indlejret eller bliver brugt i forbindelse med disse processer.

Forholdet mellem unge, læring og teknologi

På baggrund af min analyse og ved at trække på en række kvantitive undersøgelser, review-rapporter og omfangsrige kvalitative studier diskuterer jeg kritisk forholdet mellem unge, læring og teknologi. Jeg diskuterer, hvad vi kan lære ved at studere unge 'power users of technology', som kan hjælpe os med at designe og tilrettelægge læring i det gryende videns- og informationssamfund. Jeg argumenterer for, at vi, når vi

skal forstå unge, teknologi of læring, skal være påpasselige med, bevidst eller ubevidste, at sætte lighedstegn mellem en høj grad af teknologiske færdighed eller jævnlig brug af teknologi og så evnen til at skabe ny viden og indgå i komplekse patchworking-processer. Jeg argumenterer for, at transformative kompetencer ikke automatisk hænger sammen med at have eller støtte isolerede teknologiske færdigheder, men i højere grad hænger sammen med deltagelse i forskellige teknologimedierede aktiviteter og fællesskaber. Dog argumenterer jeg også for, at unge i stigende grad deltager i sådanne aktiviteter og teknologimedierede fællesskaber.

Unge anvender og lærer oftest at bruge teknologi gennem deres uformelle venne-netværk, snarere end inden for en uddannelsesmæssig kontekst. Der er noget, der tyder på, at mange skoler og udannelsesinstitutioner (eller udannelsespolitikker) ikke har været i stand til at tilbyde frugtbare, deltagende og udfordrende læringsmiljøer, som kan fordre og støtte mulighederne for at lære, på samme måde som de netværk, unge indgår i uden for skolen. Jeg argumenterer for, at det er ganske tydeligt, at (nogle) unge menneskers måde at lære på uden for de traditionelle rammer af skolesystemet på mange måder reflekterer de udfordringer, vi står over for i videnssamfundet. Gennem deres fritidsaktiviteter er nogle unge meget optaget af at udforme kreative produktioner, hvor de mikser forskellige typer af digitalt mediemateriale. Disse produktioner er ofte udformede i fællesskab med andre og deles, diskuteres og videreudvikles i en række forskellige netværk og fællesskaber. På den måde indgår unge i meningsfulde og autentiske vidensskabelsesprocesser og produktion af digitalt indhold, som også medfører det at deltage i fællesskaber med andre folk, som har forskellige former for kompetencer og viden. Gennem deltagelse og engagement i sådanne fællesskaber og aktiviteter udvikler unge vigtige kompetencer, færdigheder og læringskvalifikationer.

Dog argumenterer jeg også for, at børn og unge bruger IKT på meget forskellige måder, og at de har forskellige oplevelser, kompetencer og tilgange til IKT og muligheder for at benytte dem. Hvor nogle unge har mulighed for, bliver støttet i, har adgang og kompetencer til at indgå i sådanne produktive aktiviteter, er andre unge ikke nødvendigvis kabaple til indgå i sådanne kreative, producerende aktiviteter med teknologien. Derfor skal vi ikke tage for givet, at unge, som spiller spil, chatter og surfer på nettet mange timer om dagen, *nødvendigvis* udvikler færdigheder og kompetencer til at indgå i komplekse videnskonstruerende aktiviteter. Disse kompetencer kommer ikke ved blot at anvende teknologien, men i stedet fra deltagelse i en række af teknologimediedere lære-processer.

Jeg argumenterer for, at vi skal være forsigtige med at forvente, at unge automatisk vil udvikle færdigheder og læringskompetencer ved intensiv brug af teknologi. Selvom der er potentialer, skal vi være meget opmærksomme på, at det er *potentialer*, som skal støttes og plejes. Derfor er der et stort behov for ikke bare at forstå, men også støtte unge power users. Skoler og uddannelsesinstitutioner er vigtige arenaer for dette.

Derfor er det til stadighed mere vigtigt for skoler, uddannelsesinstitutioner og politiske beslutningstagere at anerkende og støtte kritiske, problemorienterede og teknologistøttede læringsprocesser, og at skifte fokus fra erhvervelse af viden til dannelse af viden. Ikke blot for at imødekomme de udfordringer, som videnssamfundet står over for, men også fordi skolerne og uddannelsesinstitutionerne spiller en afgørende rolle i at værdsætte, støtte og udvikle de unges komptencer.

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Chapter 1: Introduction

In this thesis I will explore, analyse and develop the notion of patchworking as a metaphor for understanding learning. The notion of patchworking has emerged and been developed through analytically engaging with the empirical data that form the case in this thesis. Throughout the thesis I shall discuss and elaborate on the notion of patchworking and argue how we analytically and methodologically can approach such processes of patchworking from a critical perspective.

The case is based on, or was part of, a larger event called the 'Power Users of Technology Symposium' held in San Juan, Costa Rica on August 8-10th 2005. Here teams of young people or young 'power users' were invited to Costa Rica to demonstrate their ways of engaging with a learning challenge involving the use of ICT. On the last day they were to present their findings to approximately 100 grown-ups attending the symposium.

While working with their learning challenge the teams of power users were followed intensively by research teams. I was part of the research team following and facilitating the Nordic Powers Users team which consisted of eight young people from Denmark between 13-16 years of age. The entire process of selecting, preparing and working with the young people spanned a period of three months. However, most of their work took place within a shorter period of time; basically they accomplished to address the learning challenge and create their final presentation during the three work days in Costa Rica. From analysing their work and learning I expand and elaborate on how we can understand learning as a process of patchworking, which also leads to discussions of the relations between youth, learning and technology. The importance of understanding these relations and processes of patchworking I will unfold in the following sections.

The challenges of the knowledge and information society

The rapid development of Information and Communication Technologies (ICTs), and the internet in particular, is shaping and altering not only our everyday lives, but also instantiate change on a global scale. Apparently, we are entering what has been termed 'the knowledge society'. On a societal scale this means that we are moving from an economy based on traditional industrial production into an economy focusing on innovation, creativity and a continuous process of creating new knowledge:

> "The ability of a society to produce, select, adapt, commercialize, and use knowl-

> edge is critical for sustained economic growth and improved living standards. Knowledge has become the most important factor in economic development. (…) The process of globalization is accelerating this trend as knowledge is increasingly at the core of a country's competitive advantage (Porter, 1990). Comparative advantages among nations come less and less from abundant natural resources or cheap labor, and more and more from technical innovations and the competitive use of knowledge (…)" (The World Bank, 2002. p. 7)

Hence, the challenge of the knowledge society emphasises the need to deepen our understanding of innovation, creativity and knowledge creation. This is a double-fold challenge in that it means both a deeper understanding of what fundamentally constitute innovation, creativity and knowledge creation, but simultaneously an understanding of how to support and nurture these processes in education, work and organisations. Research areas within learning, technology, organisation studies and developmental work research are increasingly important to map the challenges within this field and in developing models and conceptual tools for how these challenges can be met. ICTs and the internet are envisioned to play an important role in transforming several aspects of social and cultural life to address the challenges of the 'knowledge society'. Therefore major public and private investments are made into e-commerce, e-health, e-governance and e-learning through both governmentally funded research projects and venture capital. Digital technologies have already made its way into the field of education and learning and it is envisaged that it will have even more profound implications for learning and education in the 21st century (Kaleidoscope, 2007; The World Bank, 2002).

These are some of the visions of policy makers, researchers, visionaries and other central actors that represent powerful and influential groups. Such a group was conveyed to the 'Power Users of Technology Summit' that was held at the UN-headquarters in New York, December 2004. The summit was held to publicly launch a long-term international research initiative called 'Power Users of Technology'. The aim of the long-term initiative is to understand the impact of technology on youth around the world and to explore how these advanced users influence the direction of the global information and knowledge society. The composition of the audience was eloquently captured by a young African woman who approached the audience with the words: 'I see a lot of greyheads here today'. It caused the convened 'greyheads' to smile and laugh; but also to nod silently in agreement, as the age composition was quite in contrast to the topic.

Youth as resources and ICT pioneers

While the kids and youth might be those who have been most profoundly affected by these socio-technical changes (and will be in the years to come) they are seldom invited to join expert groups, round table discussions or included in political decisions:

> "Buckingham (2000) argues that young people's lack of interest in news and their disconnection from politics reflects their perception of disempowerment. "By and large, young people are not defined by society as political subjects, let alone as political agents. Even in the areas of social life that affect and concern them to a much greater extent than adults—most notably education— political debate is conducted almost entirely 'over their heads'" (pp. 218-219). Politics, as constructed by the news, becomes a spectator sport, something we watch but do not do. Yet, the new participatory culture offers many opportunities for youth to engage in civic debates, to participate in community life, to become political leaders, even if sometimes only through the "second lives" offered by massively multiplayer games or online fan communities." (Jenkins et al., 2006, p. 10)

The role of youth might be something which is equally under transformation and change. For one thing because young people, as mentioned in the citation above, seem deeply immersed and engaged in what Jenkins et. al. (2006) term 'participatory culture'. From several different studies it is evident that many young people are engaging with online communities and social networks. Here they act as media creators by engaging in the creative production of various digital content, whether this is shared primarily with peers, or with a larger and more dispersed network ((Facer, Furlong, Furlong, & Sutherland, 2003; Holm Sørensen, 2002a; Ito, 2007 in press; Jenkins, Purushotma, Clinton, Weigel, & Robison, 2006; Lenhart & Madden, 2005; Livingstone, 2002b; Mediappro, 2006; Russell, Ito, Richmond, & Tuters, 2006):

> "Now as ever individuals produce new cultural material with shared cultural referents. The difference is the centrality of commercially produced source material and, more recently, the ability to easily recombine and exchange these materials locally and through peer-to-peer networks. For better and for worse popular media mixes have become an integral part of our common culture, and visual media referents are a central part of the language with which young people communicate and express themselves." (Ito, 2007, p. 15)

> "According to a 2005 study conducted by the Pew Internet and American Life project (Lenhardt & Madden, 2005), more than one-half of all American teens—and 57 percent of teens who use the Internet—could be considered media creators. For the purpose of the study, a media creator is someone who created a blog or webpage, posted original artwork, photography, stories or videos online or remixed online content into their own new creations. Most have done two or more of these activities. One-third of teens share what they create online with others, 22 percent have

> their own websites, 19 percent blog, and 19 percent remix online content." (Jenkins et. al, 2006, p. 3)

Through engaging with these varied activities youth achieve skills and competences which are believed to be increasingly important in the emerging knowledge society (Holm Sørensen, 2005). Here we find the second reason that the role of youth might be under transformation, and why they suddenly seem to have become, if not a strong voice on the political scene, then at least a group that has attracted increased attention from researchers, policy makers and visionaries:

> "Two trends make an academic volume on children and young people's media environments valuable at present time. First, and as the empirical research to be discussed clearly shows, the media are playing an evergreater role in children's daily lives, whether measured in terms of family income, use of time and space, or importance within the conduct of social relations. Secondly, and here too the evidence is quite convincing, the media are extending their influence throughout children's lives so that children's leisure can no longer be clearly separated from their education, their employment prospects, their participation in public activities, or their participation within the private realm of the family." (Livingstone, 2002a, p. 3)

Especially the second trend highlighting the relations between media use and educational and employment prospects is interesting. As a range of studies conducted in the last couple of years have concluded, it is not through the formal education system youth are building and developing important skills for the future; rather these skills are built through their informal and leisure time related activities. In fact, a recently published large-scale, quantitative study of European youth states that the most striking conclusion is the gap between use of the internet at home and in schools. The ICT-related activities that are important to young people take place outside school, and this is also where they learn to use ICTs, through participation in informal peer-networks (Holm Sørensen, 2002a; Mediappro, 2006). This has also been acknowledged at a political level, and in a recently published strategy for promoting e-learning across all sectors in Denmark children and youth are emphasised as a special group (Videnskabsministeriet, 2007):

> "In spite of Denmark being the country within EU that is number one in relation to integrating ICT in teaching, it remains a fact that kids and youth's use of ICT is greater in leisure time. (…) the motivation kids and youth naturally have for using, playing and learning with the technology can be utilised much better for learning purposes than is the case today. The technology can be instrumental in leveraging the creativity and the abilities to produce and communicate." (Videnskabsministeriet, 2007, p.9 – my translation from Danish)

In this way the kids and young people who have grown up with these tech-

nologies as a natural part of their cultural and social life have attracted attention from both researchers and policy makers.

These young people who have grown up with ICTs and an abundance of other media have been characterised by many different labels, such as: The Digital Natives, The Net Generation, Power Users, Millennial Generation or other terms that suggest that they are somewhat different from earlier generations. This is especially reflected in the term 'digital natives', which is used in contrast to 'digital immigrants' being those who have not grown up with the digital technologies (Prensky, 2001). While we should be careful with such terms it does seems evident that youth are those who engage most vividly with digital culture, new media and online forms of social life, compared to the rest of the population (Lenhart, Madden, & Hitlin, 2005; Mediappro, 2006).

Some suggest that young people are developing new skills and literacies through their intensified use of digital media and hypothesise that these skills and literacies will become increasingly important in the information and knowledge society (Jenkins et al., 2006; New Media Consortium, 2005). For instance, some argue that especially young people are increasingly becoming more visually than textually oriented, and that interpreting multimodal 'texts', games, and information structures require and build other 'skills' than consumption and production of primarily written text does. This is expressed in the definition of literacy created by the New Media Consortium:

> "21st century literacy is the set of abilities and skills where aural, visual, and digital literacy overlap. These include the ability to understand the power of images and sounds, to recognize and use that power, to manipulate and transform digital media, to distribute them pervasively, and to easily adapt them to new forms." (The New Media Consortium, 2005, p. 2)

Others stress that these new skills and literacies are also of a social, collaborative nature and that definitions of literacy should equally incorporate the capacities to participate fully in public, communal and societal practices (Jenkins et al., 2006; New London Group, 1996). Thus, several studies and research projects revolving around children and youth's use of technology have been undertaken, as to understand how we can develop education and notions of literacy to accommodate to the new generation, the new technologies and the challenges of the 'knowledge society' (Facer et al., 2003; Holm Sørensen, Jessen, & Olesen, 2002; Jenkins et al., 2006; Livingstone, 2002b). In the US the MacArthur Foundation has recently launched a five years $50 million research project:

> "The MacArthur Foundation launched its five-year, $50 million digital media and learning initiative in 2006 to help determine how digital technologies are changing the way young people learn, play, socialize, and participate in civic life. Answers are critical to developing educational and other social institutions that can meet the needs of this and future generations. The initiative is both marshaling what it is already known about the field and seeding innovation for continued growth." (MacArthur Foundation, 2006)

In this way youth and their engagement with digital cultures has become an area of intense interest for a diverse group of different actors within research, the business sector, education and at the policy level. However, it should also be noted that youth's use of technology is not only seen as a positive and developing activity; equally (or perhaps even more in the public debate) the use of games, social networking sites and engagement with popular culture has spawned worries, moral panics or has been seen to represent the decline of general cultural, social and moral values (Facer et al., 2003; Ito, 2007 in press; Larsen, 2005; Livingstone, 2002ab, 2002ba).

Power Users of Technology

Another project that revolves around youth and their use of technology is the 'Power Users of Technology Project'. In the 'Power Users Project' the hypothesis is that the challenges of the knowledge society can be studied through investigations of innovative and technologically advanced Power Users and their use of ICTs in both formal and informal settings. It is envisioned that their innovative ways of learning and using technology can help us design education and learning better suited for the knowledge society.

The 'Power Users Project' is a collaborative research project that I am affiliated with and the empirical data in this dissertation springs from an event established in relation to the 'Power Users Project'. I shall later describe the project more thoroughly, but shortly characterised the project is a collaboration amongst members of various international educational research communities, the United Nations Fund for International Partnerships (UNFIP) and the Education Development Center (EDC).

The project revolves around youth between the ages of 12-18 who have grown up with digital technologies. The concept of power users are young people *"who use information and communication technologies in ways that enable them to break out of the confines of traditional learning, demographic or technological barriers by constantly sharing, creating, or changing information in innovative and/or unintended ways"* (Joyce Malyn-Smith, 2004). The project has been formed around the hypothesis that the

intense saturation of digital technologies that especially young people experience must somehow change their ways of learning and how they engage with the world (J. Malyn-Smith & Guilfoy, 2003):

> "We believe that how they think and what they do is revolutionary not evolutionary. They are leapfrogging over many of the more traditional ways that we think about learning. Their minds and their brains are developing in ways that most of us can't quite understand because we are not "wired" in the same ways that they have been" (Malyn-Smith & Guilfoy, 2003, p. 6)

> "They seek information, learn what they want to know, when they want to learn it, to the level of depth that satisfies their immediate quest for knowledge—on a just-in-time, as-needed basis (…) Their self-selected, long-term, intensive experiences with technology have changed them. They think, behave, and solve problems differently from us and from others who have not had this special relationship with technology. We really don't know everything they are able to do. We are "amazed" when we learn what they have accomplished at young ages. We are puzzled by their learning patterns and concerned about their trajectory". (Malyn-Smith & Guilfoy, 2003, p. 4)

Thus, the core assumption of the project is that a new generation of 'Power Users of Technology' is emerging due to the societal and especially technological changes. Furthermore, that we can gain valuable insights from studying these power users, which can feed into the design of education for the future.

However, already from this short introduction and the citations from the 'Power Users Project' we are faced with a myriad of complex questions. A pertinent question seems to be why we should assume that there is a connection between socio-technical changes and ways of learning? How can we theoretically understand or conceptualise notions such as 'ways of learning' are changing? Several researchers argue that we are moving from an industrial mode of learning towards a knowledge society way of learning (Engeström, 2005; Holm Sørensen, 2005; Paavola, Lipponen, & Hakkarainen, 2004)? But what does this mean, what exactly is changing and what are the roles of technologies in such processes of change? Finally, if such changes are actually emerging then what does this mean in relation to designing education and learning settings for the youth of the 21st generation? Do we need to fundamentally re-visit current notions of education and schooling?

These are only some of the very overarching and complex questions that the 'Power Users Project' is faced with and trying to understand in more depth. As a first step into addressing some of these questions the 'Power Users Project' management arranged the 'Power Users of Technology Sympo-

sium' which was held in San Juan, Costa Rica during the 8th – 10th of August 2005. The symposium was envisioned as an initial entrance point into further widening our understanding and knowledge of young power users of technology.

The symposium was the scene of a small research conference and an opportunity for various projects, foundations and NGO's to present their work with youth. But the heart and soul of the symposium were teams of young power users who were brought in from different countries. The teams of young people came to work with and present their work on addressing global challenges and problems. Each of the teams had chosen a global challenge, such as "how would you use technology to help achieve universal primary education?" or "how would you use technology to help eradicate hunger and extreme poverty?" Before and during the event teams of researchers and facilitators followed, supported and studied their work and learning process in an effort to understand what might be special about these young people, their ways of learning and their use of technology.

As mentioned I was part of the Nordic research team who brought eight young people to participate in the Costa Rica Symposium, and it is their work and learning process on addressing the global problem of poverty that constitute the case and empirical basis of this thesis. Through an analysis of their work and learning process I will address some of the complex questions revolving around youth, technology and ways of learning. Therefore, before engaging further with these overarching and abstract questions let us instead turn to something more concrete by traveling back in time and meet the young people. In fair Costa Rica, where we lay our scene.

Vignette: August 10th 2005: Marriot Hotel, San Jose, Costa Rica

In the large conference room approximately 100 people are seated. The air is heavy and hot from the Costa Rican sun shining outside. People cough, talk and move in their seats, while the technical support team is arranging cameras and monitoring the online conference. Can the online attendees see the scene, is the audio coming through? One of the Nordic team facilitators is partly hidden by the speaker's chair where he is making the final readjustments of audio and video for the presentation. At the centre of the stage eight young people are sitting in a half-circle reading from their notes and looking out at the audience. They are the ones it is all about now; they are

the “Nordic Power Users Team” waiting to present on the topic of 'how technology can be used to reduce poverty'. They sit quietly and concentrated while Eric Clapton's 'Tears in Heaven' starts to play. Simultaneously a slide show portraying poor people and poverty is projected unto one of the two big screens behind them. The emotional effect of the audio-visual collage is strong, touching and emphasised by the silence in the room. As the music fades out the young people stand up and form a line on the centre of the stage. One by one they move to the front of the stage and delivers short, but very disturbing, statements about poverty. The statements visually emerge and then disappear on the projector screen: “1,1 billion people have no access to clean water – 4 million children die because of that every year”. These and other disturbing facts about poverty emerge and dissolve on the projector screen only accompanied by their voices reading the facts in English.

In pairs they start to present the results of their research, analyses of reasons for poverty in Latin America, statistics, graphs and background material emerge on the PowerPoint slides. The slides are complemented with video clips they have gathered through interviewing economical experts and people from the Intel Clubhouses; some of the clips are subtitled for the non-Spanish speakers.

Two of them step up to present the animated show they have created. It is a fictional story from “the land of no taxes” featuring George the wealthy stock broker and Fernando the poor peasant who both break a leg. For Fernando this is a disaster, as there is no social security system financed by the taxes, and thus he cannot get treatment at the hospital: “And then he must go home one-legged. Poor guy!” as the slide says. The morale of the animation is that taxes are necessary so not only wealthy George would have access to medical treatment - “Thumbs up for taxes” as the slides conclude. Following this comes a final round where they present some suggestions for solutions to the global problem of extreme poverty: "The whole world has to cooperate on fighting poverty, every country has to makes its own effort.", "We have to stop making trade agreements that make workers from poor countries unable to sell their products in their own homeland". These statements are some of the suggestions zooming in and out on the screen before they declare the end of their presentation with a slide acknowledging those who have helped them in their work: Diego, Ricardo Monge, EDC, Intel Clubhouses, www.unicef.org, www.google.com and Laura Aijalla to name a few. The audience applaud and probably some of their parents following the presentation online cheer, while the youngsters clear the stage for next team

of Power Users.

«« Rewind – August 8th: Group room at CINPE

One and a half day before, the 8th of August 2005, approximately 12.30 PM to be more precise. The team is benched around a table at CINPE (Centro Internacional de Política Económica) which is a department at the Universidad Nacional in San Jose, Costa Rica.

One of the facilitators is trying to help them get started by asking them questions while writing on the whiteboard. They are returning to some of the questions they discussed the night before, as to identify what their research questions are and to refine their problem formulation. The adult facilitator is heading the discussion and writing on the whiteboard – they raise their hands and state their suggestions, some draw on their tablet PC's being slightly disruptive. They arrive at some key issues: Taxes, education and jobs. One of the researchers suggests that they should instead head the process themselves and the facilitator leaves the whiteboard to one of the youngsters. Now they discuss how to present the final product, though they are really not yet sure what the final product will be. Should they involve the audience in a role play, should they do a PowerPoint or how about making a movie? This also opens a discussion of what their problem and research question really is. Should they focus on poverty in Costa Rica or should they use Costa Rica as a good example of how to fight and reduce poverty?

Nothing has really stabilised quite yet; neither the problem itself, nor the way of presenting their findings. They will finish, and in a very reasonable way as can be read from above, but both the youngsters and researchers had their doubts at this point in time – one and a half day is really not very much to address a complex problem, less to present it as a final well-argued presentation.

«« Rewind – July 27th: Computer lab at Aalborg University

Back to July 27 where some of them met online through an online conference and three of them continued to work on framing and formulating a problem for the upcoming event in Costa Rica. After the online meeting the three of them worked with a researcher and two facilitators to arrive at a better understanding of the problem area of poverty. They were to identify areas for further studies, narrow down the rather complex theme of poverty and decide how they would eventually study and come up with 'solutions' to

the problems. They were offered to use paper and pens to brainstorm and visualise their ideas, while the researcher and facilitators were there to facilitate the discussions. However, the pace of the session and the whole rhythm of interaction was quite slow and hesitant.

Therefore they were encouraged to collaboratively surf the internet or alternatively use an individual computer to gather more information on the topic of poverty and Costa Rica. They did find some pages and information before coming back to another collaborative session on framing the problem. They were not sparkling with ideas from their information search and again the pace and whole atmosphere was slow, hesitant and with long pauses in speech. The final product of the session was a short minute and two hand-drawn posters with some ideas that emerged during the session. It was a progress compared to their earlier conceptualisation, but at that point in time it seemed like a very small step that left the researcher with some worries about the upcoming event. How would they be able to present something reasonable with the only time being the actual workdays over there? Also, the work and thoughts had only been coordinated between three people in this final session and they would now have to discuss and negotiate this with the remaining five people.

Yes, there would be some days in advance of the symposium, as they would arrive already on the third of August, but still... they were two local groups from two different Danish cities. Some of them had only met online, and now they were to work with a complex problem within a very short time span… the researcher was not amused!

What can we learn from the vignettes

Already from these small vignettes, which are small parts of the entire empirical body of data in this dissertation, there are a quite few things to say. First of all it is evident that the situation is quite special and not a part of every youngster's everyday experience. The young people who formed the Nordic Team of Power Users were selected by researchers, brought to Costa Rica to a luxurious hotel. They were asked to work with the global problem of poverty and finally to present their result to approximately 100 grown-ups (and an international audience attending the event online). Along with the other Power Users teams they were the centre of attention for all these grown-ups from companies, universities, the educational sector, parents, facilitators, press and so on. One of them was even interviewed by the Latin American CNN, and another was interviewed by the probably less interna-

tionally known program called 'The Hard Drive' (a Danish public service radio program). In this sense the whole setting, environment and atmosphere for this case was quite spectacular. However, the whole situation was also special in other ways, as the entire learning process relied on a very open-ended pedagogical design.

The organisation of the learning and work process: open-ended problem oriented learning

The ways of working with the problem of poverty and the whole design of the setting were very open-ended. They were not asked to solve a given, well-defined problem where the resources, methods and the organisation of work were nicely laid out, provided or designed in advance; rather they had to choose and identify the problem to work with and decide how to frame and formulate this problem. They had to decide which resources to draw on in order to solve the problem, and they were also expected to control and manage this problem enquiry process largely by themselves. They were not provided with detailed plans, directions or instructions for how they were supposed to carry out the task or how to work with and address the problem at hand. This they had to decide and organise themselves with support from the researchers and facilitators.

In this way the case is an example of a learning process based on a specific kind of very open-ended Problem Based Learning (PBL) that is, for instance, practiced at Aalborg University. Therefore it has also been described as the 'Aalborg Model' of PBL (Kolmos, Fink, & Krogh, 2004) or as Problem Oriented Project Pedagogy (POPP) (L. Dirckinck-Holmfeld, 2002). In chapter 2 I will return to discuss in more depth how this particular way of practising PBL is different from other ways of organising and interpreting Problem Based Learning. But in short, it depends on the degree of control the learners or participants have of the problem, the solution and the ways of organising the work processes.

Before engaging with the whole Costa Rica Event the eight young people only knew each other in dyads, but had not necessarily worked together with the person they knew. Four of them were from the city of Aalborg, whereas the four others were from Copenhagen, and these two groups had only met online and through a video-conference that we held in June 2005. In the months before leaving for Costa Rica we arranged various smaller activities, as for instance the work meeting on the 27th of July where they initiated discussions on how to work in Costa Rica. However, most of the work was done during two and a half work days in Costa Rica. The case is therefore

an example of a relatively short-term, intensive open-ended learning process which featured fast-paced change and rapid development from the actual initiation of their work to the final outcome (their final presentation).

They were not required to carry on the work afterwards or engage further with the problem after the Costa Rica event, and it was not related to their everyday or formal institutional practices such as a youth club, sports club, school class or political association. Neither was it a part of their formal education for which they would be assessed, graded or rewarded. They came together for a shorter period of time, were asked to work with an open-ended problem and to produce some final outcome, after which they could return to their regular doings.

This kind of learning and working with a problem resembles what Engeström has called 'knotworking'. The notion of knotworking aims at describing unstable situations with actively on-the-spot constructed relations and constantly changing configurations of people and artefacts (Engeström, Engeström, & Vähäaho, 1999):

> "In a series of recent studies, we have encountered numerous examples of this type of work organization. We call it *knotworking*. The notion of knot refers to a rapidly pulsating, distributed and partially improvised orchestration of collaboration between otherwise loosely connected actors and activity systems" (Engeström, Engeström, Vähäaho 1999, p. 346)

The case represents such an unstable setting, as the young people were lifted out and disembedded from their regular school environment or organisational practices and placed in a situation where they had to work on addressing an open-ended, complex problem in collaboration with other youngsters they had not worked with before. Together they now had to organise, improvise and orchestrate a collaborative problem oriented process of enquiry within a short period of time. Compared to a regular school or organisational work setting there were few or no stable plans, directions, requirements, practices and procedures to draw on; rather these had to be partially enacted, constructed, negotiated and orchestrated as part of the process. Even though the young people were familiar working with projects and problem based learning from school, this process was more open ended than they were used to.

We did, however, as facilitators and researchers provide them with some resources. For instance, we had arranged for them to meet and interview some experts and people from the Intel Clubhouse. We arranged a short lecture on poverty with local researchers and we provided them with various

ICT-equipment (e.g. video cameras, tablet PC's, a mini-disc). I will return in more detail to the design of the entire setting and how we indirectly supported, designed and facilitated a learning environment and some learning opportunities for them to engage with; but also how we interacted with them and supported them in different ways throughout the event.

The work that eventually led to a very interesting and well-performed presentation was intense, hard and certainly not without frustrations. But it was also a process of joy, fun, swimming, attention, responsibility, being taken seriously, laughing, pitching jokes and seamlessly weaving together the hard work with humour, spontaneous jokes, teasing each other and just having fun. It was a learning and work process which was inherently a very pleasant and joyful experience, though it was also hard and very intense.

The presentation and their learning as a process of remix and patchworking

While the work was a mixture of having fun and doing hard work, it was also a mixture in many other ways. As can be sensed from the vignettes (and from the pictures) the final presentation was an assemblage of many different media. It was heavily multi-modal and combining animation, video, pictures, texts, language, sound, computers, paper, projectors, chairs, stage, bodily posture, movement, intonation and much more. In this way the presentation was a remix of a lot of different digital resources, but also it involved a remix and orchestration of bodily, spatial and material resources.

The notion of remix originates from the world of music where it represents sampling and re-mixing different 'pieces' of music and sound into a new version of a song, different from the original version(s). With the rise of the internet, and the vast amount of digital content, the term has also come to mean many other different ways of *re*-combining various types of digital content into new works. The metaphor of remix[1] is connected to the notion of participatory culture and it is a description of the way many young people engage in creative remixes and production of various media – from writing fan fiction to creating YouTube videos (Black, 2005; Ito, 2007 in press; Jenkins, 2006; Jenkins et al., 2006) – or as John Seely-Brown expresses it in an interview (Powell, 2005):

> "It leads us to understand a fundamental culture that is emerging amongst kids who grow up digital, which is what I will call the remix culture, where kids take what is all around them and engage in a form of tinkering, bricolage or remixing as a very interesting way to exercise their creativity and communicate a sense of self to others." (Powell, 2005, p. 261)

While the presentation created by the young people during the Costa Rica Event was a remix of different media, so was the entire process of generating these ideas, collecting the resources and the production process itself. Conceptually, the presentation was a remix or patchwork of information, facts, arguments and ideas from many different sources. The facts presented came from different web pages. Some of the slides they produced themselves, while others with statistical graphs were borrowed from the PowerPoint-presentation of a local researcher who gave them a small lecture on poverty (and actually some of his slides were acquired from a UN-website, he told them). After the lecture they quickly asked for the PowerPoint-file and transferred it to their USB-stick.

Pictures of poor people were collected through various search engines, while the "pictures" in the "animation" were meticulously drawn and col-

oured by hand on a tablet-PC and later animated through use of the built-in PowerPoint transition and action effects. The music they used was brought from home on their Tablet PCs or stored on their IPods.

Some ideas and arguments were discussed at meetings we held before going to Costa Rica, but during the work process new ideas, perspectives and arguments emerged from a conversation in a bus, lectures and from four videotaped interviews with various resource persons, such as local researchers and people from the Intel Clubhouses. Throughout the process ideas transformed and some were abandoned, as new ideas and perspectives emerged. The initial conceptual blueprint of the presentation and their argumentation seems somewhat incommensurable with the final product.

As can be sensed from the vignettes, the content and form of the presentation, the arguments and even what constituted their central problem was not something that was pre-given, but rather an 'order' that emerged through their discussions and negotiations – a bricolage or patchwork composed of both material 'patches and pieces' as well as less tangible ideas, perspectives, arguments and thoughts. What I aim at accomplishing throughout this thesis is to analyse the weaving, construction and accomplishment of such an order and final patchwork. I will analyse and show how the final presentation was essentially a patchwork accomplished by combining, inventing and creatively stitching together and reweaving different 'patches and pieces' and conceptual threads. Furthermore, as I have already described, this was a work, enquiry and learning process the youth were largely in control of and had to orchestrate and manage. All of this together is what we could call a process of remixing, or as I shall term it: A process of patchworking. This is a concept I will explore, analyse, develop and elaborate throughout this thesis.

The concept or perspective of patchworking has emerged from working with the data and has been conceptually developed throughout the work and different stages of analysing the data – but also through discussions with others[2]. The notion of patchworking is similar to remixing, and in a sense the two concepts can be used interchangeably. The reason why I will employ the term patchwork, rather than remix, is that as I started to work more analytically with these concepts I found that the metaphorical vocabulary of patchworking was richer and better conveyed what I wish to express.

Central questions emerging

As mentioned, their final presentation was a mixture of many different media, but also an assemblage of different ideas, arguments and perspectives. This, first of all, provokes the question – how did they actually accomplish pulling all these seemingly disparate 'patches and pieces' together into a final product within such a short period of time? How did they manage and orchestrate this process of patchworking and what was the role of technology in their work? In relation to this I shall also discuss why studying such processes are interesting and important in relation to understanding learning.

Secondly, and certainly also important in relation to learning, are such processes just an exercise of copy-pasting or are they creative and challenging processes; are they processes of knowledge creation rather than merely knowledge re-production? For instance Jenkins et al. (2006) (building on other studies) suggest that the latter is what happens in many cases:

> "Because new research processes depend on young people's resourcefulness as networkers, students must understand how to sample and distill multiple, independent perspectives. Guinee and Eagleton (2006) have been researching how students take notes in the digital environment, discovering, to their dismay, that young people tend to copy large blocks of text rather than paraphrasing it for future reference. In the process, they often lose track of the distinction between their own words and material borrowed from other sources. They also skip over the need to assess any contradictions that might exist in the information they have copied. In short, they show only a minimal ability to create a meaningful synthesis from the resources they have gathered." (Jenkins et. al 2006, p. 51)

In understanding processes of patchworking it becomes important to study, whether the learners are merely gluing together different chunks of well-known, or even contradictory, information without much reflection; or if they manage to create *"a meaningful synthesis from the resources they have gathered",* to use the words of Jenkins et al. (2006). Therefore, the tensions between creativity, knowledge construction and creating meaningful syntheses of resources vs. knowledge reproduction, copying or gluing together disparate, contradictory pieces are methodologically and theoretically interesting. While I shall argue, and analytically show, that this particular case represents a creative process of knowledge creation, such questions do have a wider currency. How can we critically understand and investigate processes of patchworking and remixing? What are the demarcation lines between different types of learning processes and what theoretical vocabularies can we draw on in order to discuss this?

This I will investigate through analysing their work and learning as a proc-

ess of patchworking. I will explore how we methodologically and analytically can approach processes of patchworking by developing an analytical framework and some analytical concepts that will be used to analyse the empirical data, which will also be critically discussed and reflected upon. On basis of the analysis of the empirical data I will discuss how we can critically investigate such learning and enquiry processes and elaborate on how we can understand learning as a process of patchworking.

From these discussions and the analysis I will return to some of the more broad questions of the relations between youth, learning and technology. What is it that we might be able to learn from studying young 'power users of technology' and what might be special about them? Is a new generation of 'power users', 'digital natives' or 'millenials' emerging and are their ways of learning and their skills different? If so how can this help us understand the needs for designing education for the emerging knowledge and information society?

The way ahead

For now I have mainly tossed up some big and complex questions and given a small, preliminary taste of the analyses that will follow. In the following chapters I will explore, elaborate, analyse and discuss the notion of patchworking and all the related concepts.

I will start in chapter 2 by presenting the context of the case in more detail, which encompasses first a description and history of the larger 'Power Users Project'. Then I will discuss the process that led to the Power Users of Technology Symposium in Costa Rica, which concerns how the notion of power users has developed within the project; how they were eventually selected; how we constructed the research design for the event, and how we imagined and planned for the 'power users' to engage with the work and learning process. In relation to this I will discuss the pedagogical design which was based on an open-ended, problem oriented PBL approach. The research design of the event should be read as a context in which the study in this thesis has unfolded and not as a detailed account of theoretical or methodological considerations in relation to this study.

This will follow in chapter 3 where I will discuss the methodological and theoretical considerations of the analytical framework and the analytical concept which will be used in the analysis. I shall focus on presenting and discussing the theoretical and methodological underpinnings of the analytical framework which is inspired mainly from socio-cultural theories of

learning and from interaction analysis, but also related theoretical and methodological approaches. I will discuss the unit of analysis by situating it within what I argue is a broader methodological and analytical move or change of analytical perspective within socio-cultural theories of learning. On basis of this I discuss how to approach the data methodologically and analytically by presenting the overarching analytical strategy. Then follows a description of what data has been collected (video, field notes, collected files, interviews), how the data has been worked with, and how I have selected the data-material to be analysed. I shall only briefly discuss some of the central analytical concepts, as the analytical concepts refer to the actual process of work.

Therefore in chapter 4 they will be further developed and elaborated through an initial presentation of the entirety of the data chosen for analysis. Here I will present an overview of the entire period chosen for analysis through a series of vignettes or quick summaries. It is from this overview of the chosen data that the analytical concepts can be initially identified and elaborated, which again will lead to a selection of four important moments that will be analysed in greater detail. These concepts will then be further elaborated throughout the analysis where they will be used to analyse the data.

In the chapters 5-8 I analyse the different moments that have been chosen for more detailed analysis. The moments will be presented through vignettes that give an overview of the particular moment, and I will enter into more detailed analysis of some excerpts or transcripts of their work. In between some of the analytical chapters there are vignettes or quick summaries describing briefly the activities happening between the chosen moments. I conclude the analysis by briefly summing up and discussing their final presentation in chapter 9.

On basis of the analysis follows three chapters 10, 11 and 12 which are chapters discussing and concluding on the questions posed in the introduction. These conclusions will also be briefly summed and related to each other in chapter 13, which is the final chapter.

In chapter 10 I shall discuss how we can understand learning as a process of patchworking and how it is related to the use of technology. I return to reflect on the pedagogical design as a condition for this patchworking process to unfold as a creative process of knowledge creation, and I shall discuss why notions such as patchworking and knowledge creation are particularly important by discussing it in relation to the knowledge and information society. Furthermore, I expand on the notions of understanding learning as

patchworking through discussing this in relation to socio-cultural theories of learning, such as Engeström's theory of expansive learning and Wenger's social theory of learning. Hereby I expand on the notion of understanding learning as a process of patchworking, and I present a model and some analytical questions through which I argue that we critically can investigate technology mediated processes of patchworking.

In chapter 11 I will follow up by discussing the relation between youth, learning and technology. This discussion will take its outset in a critical discussion of the notion of Power Users through drawing on both the findings of the analysis, but also by drawing on other studies of youth, learning and technology. Through this I will critically discuss relations between technology and learning, and ideas such as ways of learning are changing due to the rise of a new generation of power users, 'digital natives' or millennials. This will result in a discussion of the role of formal education in the knowledge society.

In chapter 12 I return to reflect and discuss on the analytical framework and concepts that have been developed as part of the thesis. Here I discuss the relevance of the framework by elaborating on the discussion of an analytical and methodological move within socio-cultural theories of learning. From this I will also discuss some of the limitations of this study and whether the analytical framework might have wider analytical currency than unfolded in this particular study.

Finally, in chapter 13 I conclude the thesis by briefly returning to the main findings.

Chapter 2: Case Description

The case in this dissertation is an outcome of the event organised by the 'Power Users of Technology' project. The event was called "Power Users of Information and Communication Technology International Symposium" and took place August 8th to 10th 2005 in San Juan, Costa Rica. However the history of the project and the work that led to this event was a longer-term process that started some time before the actual event.

Therefore, I shall give a more general introduction to the context of the case which is twofold. First, and in a broader perspective, it is part of the larger 'Power Users Project'. Secondly, it encompasses the process that led to the Costa Rica Symposium Event, which is both a story about how the power users were selected, but also a glimpse into the trajectory of the term 'power users' and the design of the research event.

It is important to point out that the following description of the case, the design of the research event and discussions of power users should not be read as a detailed account or understood as a methodological, theoretical or analytical discussion as part of this thesis (which will be the main focus of the next chapter). The case description and the description of the event should be read as a context in which the study of this thesis have taken place and developed. Therefore, I shall not go into detailed discussions and descriptions of the research design for the entire event, the project in general or engage in lengthier discussions of different notions and definitions of power users. I will only briefly touch upon the research design of the event and describe some different conceptualisations of power users. However, more elaborated reflections on the overall research approach of the entire 'Power Users Project' can be read in (L. Dirckinck-Holmfeld & Ryberg, 2005), and some more elaborated reflections on the research design and research questions for the symposium can be found in (Ryberg & Dirckinck-Holmfeld, 2005). Equally some initial considerations and reflections on the notion of power users can be found in (Ryberg, 2004). These articles can be found in appendix B along with draft and project documents describing and reflecting on the research challenges, research questions and research design of both the overarching project and the Costa Rica event. These documents were part of the preparation and discussions revolving around design of the Costa Rica Event, definition of power users and the broader challenges of studying young people and technology. These draft and project document have been written either by myself or in collaboration with other researchers

from the core-research group.

In the following I will start by giving a brief contextualisation of the entire project, as to provide some background for the rationale of the Costa Rica Symposium. This will also involve discussions of how power users are and were imagined within the project and how they were selected. Subsequently, I shall briefly describe the collaborative development of the symposium as a research event, and how our team approached, prepared and envisioned the research design. Finally, I shall describe how we imagined and designed for the learning and work process to unfold, which I will return to in chapter 10.

Background and history of the 'Power Users Project'

The term 'Power Users' originates from a global collaboration which formed around tentative ideas and hypotheses stemming from researchers and practitioners' experiences with children and adolescents' intensified use of technology. The core assumption of the research project is that a new generation of "Power Users of Technology" are emerging due to societal and especially technological changes. This is an interesting hypothesis to researchers and educators, but certainly also to the business sector, as this would feed right into future workforce development and what competences would be needed or should be nurtured for the future workforce.

One of the central ideas and hypotheses emerging in the project is that we can learn much about learning and problem solving by studying the use of technology in both formal and informal contexts where youth engage with various learning opportunities. Furthermore, that these insights can be used to create new, innovative pedagogical practices and to better educate the youth for the knowledge society. As such, the youth are seen as possessing an immanent transformative potential that can inform our educational practices both within school and work.

In the project descriptions one can sense a huge commitment to understanding youth and a bit of admiration for what youth might be able to accomplish:

> "We know who they are – our children, nieces, nephews, and students. We see them every day at home, in school, in libraries and after-school programs, community technology centers, and cybernet cafes. They play video games, talk to friends using instant messaging, listen to MP3s, and do their homework—all at the same time – multitasking, moving their focus from one task to another seamlessly, without ef-

> fort." (Malyn-Smith & Guilfoy, 2003, p. 4)

A central notion and assumption is that the increased use of technology and new media may fundamentally be reshaping culture, ways of learning and strategies for problem solving among youth, as also reflected in other metaphors such as digital natives, the net-generation and so forth. "Power Users" are imagined to think, behave and solve problems differently from us and from others who have not had the same intense relationship with technology:

> "By the age of 10-15 years old, they are confidently in control of their technologies and have become self-directed learners, seeking and constructing new learning from real and virtual environments and from each other. As experts with technology, they exhibit expert ways of learning and working." (Malyn-Smith & Guilfoy, 2003, p. 18)

From the project descriptions one can read that the power users challenge the existing power structures by demanding not only to know what to do, but also *why* to do it. In schools they are bored with the curriculum and challenge it because they question the assumption that it is useful to acquire knowledge which is ready-at-hand for them through the internet.

This shared interest in youth, technology and learning potentials crystallised into a global advisory board and the Power Users Research Initiative was born. The research initiative is envisioned to become a long-term research project lasting for 20 years, but how the project will develop is still open.

The 'Power Users Project' is headed by the EDC (Educational Development Center). EDC is an international, non-profit organization which is engaged in more than 325 projects within e.g. health and learning in 50 different countries. It aims at building bridges among research, policy and practice through programs and products developed in collaboration with partners around the globe. The work and projects span as diverse areas as: early child development, K-12 education, health promotion, workforce preparation, community development, learning technologies, basic and adult education, institutional reform, medical ethics and social justice.

The 'Power Users Project' was crafted by EDC members during 2001, but involves a number of partners from different sectors. It is guided by a global advisory board which consist of numerous people from the business sector having an interest in youth because of the importance of future workforce development. For EDC, who are heading the project, there is an interest in validating and exploring the notion of power users through research; but equally as an awareness project to raise knowledge of young people's com-

petences and potentials.

The "*International Power Users of Technology Directorate*" is the management and research control center for the 20-year research initiative. It provides the overall leadership and oversight; also it is in charge of directing and maintaining partnerships, research, development and dissemination. Secondly, the *Global Advisory Panel* was established in 2002 to provide advice and support to the overall initiative. The panel has representatives from various sectors as business, research and education and Lone Dirckinck-Holmfeld is a part of this advisory panel. Furthermore, a vision was to establish *Six Power Users International Research Centers* to raise awareness of the importance of the Power Users Initiative and to develop a shared research agenda.

Finally, there is an *International Council of Partners* that provides opportunities for corporate representation and foundation participation in the project; and thus the possibility of connecting the Power Users Initiative to the interests of their own constituents.

The project was officially launched in 2002 and was organised into four main phases (*Phase I*: Test of Concept, *Phase II*: Information Gathering & Design, *Phase III*: Partnership Development & Global Communication Activities and finally *Phase IV*: Launch of the Long Term Initiative). The three first phases were executed during 2002-2004 and continued into the fourth phase which is envisioned to run from 2005-2020. The Costa Rica Symposium was an important event to begin the work on the long-term initiative.

So far, there have been three major events and activities shaping the project:

- "Power Users of Information and Communication Technology Summit". The Summit was held at the United Nations Headquarters NYC, December 12–13, 2004 and was a kick-off event that publicised and launched the intent of the long-term research initiative.
- "Power Users of Information and Communication Technology International Symposium". This was held in Costa Rica, August 8-10, 2005. Here teams of young "Power Users" of ICT from 15 countries gathered in Costa Rica to work on their chosen millennium goals
- "Power Users of ICT at the World Summit on the Information Society (WSIS)". This was an event in Tunis, November 16–18, 2005 where an update on recent research on Power Users of ICT was presented by EDC's Global Research Network.

I became affiliated with the project during fall 2004 and have since been a part of the research network where I have attended the first events in New York and Costa Rica. As a result of the summit in New York I became part of the work on planning and carrying out the Costa Rica Event where the research group from Aalborg agreed to assemble, organise and head a 'Nordic Team of Power Users'. This was originally planned to be a Scandinavian (Nordic) team with Power Users from Denmark, Norway and Sweden. However, due to unforeseen events this was not possible, and the 'Nordic Team' became a Danish Team (but was still referred to as the Nordic team during the event).

The New York Symposium

Apart from leading to an inclusion in the core-research and planning group for the 'Power Users Project' the New York Symposium gave an insight into the complexity of the term 'Power Users' and the many different research perspectives from which this notion was addressed. The various researchers attending the event represented a great diversity in perspectives, methods and theories; spanning from ethnographic approaches to more cognitive and experimental approaches. This diversity in perspectives has continued since the New York symposium, which means that both the 'object of study' and the methodologies employed have been open-ended and under continuous negotiation during the research discussions that lead to the organisation of the Costa Rica Symposium as a research event.

The trajectory of a term

The term 'power user' have certainly not been a stable concept, but has acted as a continuously evolving 'boundary object' (Star & Griesemer, 1989) between the researchers, project management staff and external stakeholders. In this sense the term has had a developmental trajectory in itself where the ideas and concepts revolving around it have changed continuously. I shall briefly try to outline some of the different conceptualisations and ideas that were part of the discussions within the core research group, as to provide some context for the project and the design of the event. I shall return to these in chapter 11 where I will reflect critically on the thinking about power users on basis of the analysis and by drawing on other studies of youth and technology.

The developmental trajectory I will describe takes its departure in the discussions and documents that were part of the core research group's work in

advance of the Costa Rica Symposium (see appendix B). However, it is important to stress that the developmental trajectory of the term, as it is presented here, may not necessarily be shared by the other research teams within the core research group. The core research team was composed of different research teams with their own agendas, research designs, goals, theoretical and methodological backgrounds. Therefore when describing the developmental trajectory of the term 'power users' this is our local Aalborg research team's interpretation of these discussions.

To give an account of how the notion of power users was initially imagined and how it has developed as an 'object' under continuous scrutiny among the core group of researchers, I shall shortly return for a moment to the New York summit. At the New York Summit one of the important events was the presentations given by two young people who were characterised as Power Users: Titilayo Akinsanmi and Trevor Linton. They presented their own learning trajectories and how technology had become important parts of their professional lives. Though they both mentioned technology this was in very different ways, as they used it differently, but also because it shaped and was shaped by their activities in various ways.

Trevor was a self-taught computer-programmer who learned his skills through engaging in open source software development as a teenager. He stressed the wonders for him of these communities as: 'it is not who you are, it is what you know that counts'. Nobody really knows if you are a 13 year old or senior programmer at NASA. It was the technological skills displayed in helping others that counted and gave credit. Trevor now owned his own software development company and also worked as a senior programmer at another development company. Meanwhile, he was pursuing a degree in computer science where he worked with medical imaging and compression. His learning trajectory was formed around a very technical path into ICT, and actually he had been doing some early time hacking. But now his skills were more directed towards creating various applications and working with compression algorithms and medical imaging.

Titilayo worked with the SchoolNet Africa and were the joint program manager of the Global Teenager Project. She did have some computer skills as she told us, but mainly her passion was connecting people, ideas and resources. Therefore, she was engaged as a volunteer in many concurrent projects. She had a somewhat different pathway into the world of ICT than Trevor; she mainly viewed technology as an enabling tool. Sure, she had had some experience with programming in school, but this was not her pas-

sion, rather she stressed the potential of technological infrastructures to bring people together and share ideas. What was it all about anyway, as she asked the attendees, "technology or people"? She used technology to share her time, knowledge and "what I am" as she explained to the convened 'grey-heads', which she called the aging attendees.

The morale of bringing in these two very short stories is twofold. First of all, they illustrate what might constitute a 'power user' is not straightforward, but equally the stories do give some initial ideas for what a power user might be. The two alleged power users clearly had very different experiences and skills with technologies and their engagement with technologies also followed different paths. In Trevor's case technology itself seems to be the object of his work and devotion; learning to program and starting to hack for the excitement and skills themselves seemed to be the driving force (and of course being acknowledged for those technological skills in the community). Technology for Trevor is used as a transformative mean to create other useful technological tools, whether these are applications or medical imaging. Clearly, Trevor has managed to build up a considerable technological competence and he would probably fall into the category of a "computer-wizard" or "geek"[3].

The story of Titilayo is very different from this. To her, the technology itself is not the object, but rather a mean to bring people together, share ideas and transform communities through dialogues and exchange of perspectives. Though, being technologically proficient the outcomes of her activities are not new technological tools, rather they are about transforming people and communities. In this sense technology has a very important role, but it is only a mean to reach other goals and to participate in diverse communities of change.

So, from these two stories and the project descriptions in general we were confronted with different notions and conceptualisations of power users. It was not clear whether power users represented a small, highly advanced segment of youth, or whether the power users were a more widespread phenomenon within youth culture. Sometimes they were referred to as "geeks" and highly advanced users of technologies (e.g. programmers, hackers), while other descriptions of their characteristics pointed more towards a common pattern of technological behaviour for young people e.g. chatting, surfing, networking or gathering and searching information on the internet. In this way the descriptions and conceptualisations fluctuated between notions of power users as being unique individuals in their own culture and

different from their peers, to being a broader or common grouping within youth culture. At the same time there was an oscillation between stressing the individual as the main vehicle and then characterisations of their prime capacities being their relatedness and ability to engage in collective activities. Furthermore, it was not quite obvious what the role of technology really was in the definition of power users – was it "*power users* of technology" or "power users of *technology*"? It was not clear to which degree their technological capabilities were *the* defining characteristics, or whether it was their role as 'social change agents' using technology – the latter understood as the technological capabilities being important, but not necessarily a defining characteristic. The concept of Power Users then existed as an object that was stretched across three different axes, as I have tried to illustrate with the figure below:

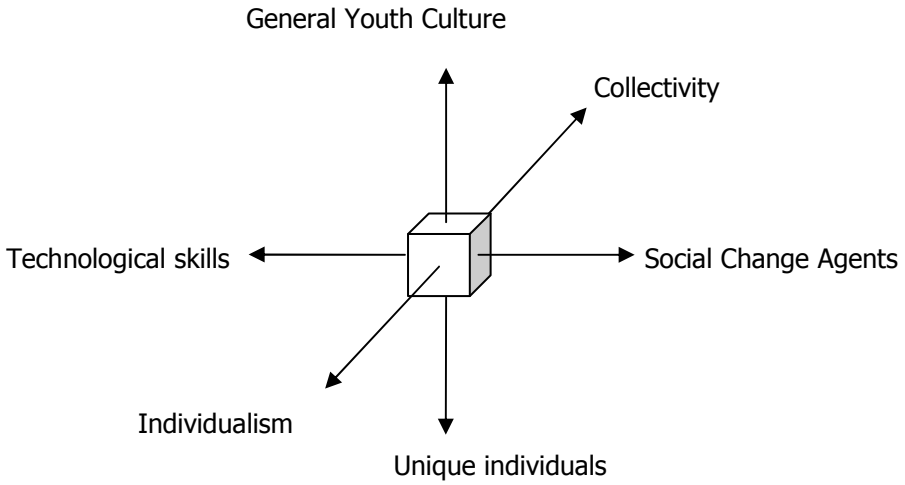


Figure 1: Different interpretations of the notion of Power User

As can be seen from these different interpretations the notion of power users was not a very stable or clearly delineated 'object of study'.

Defining more clearly different types of Power Users was indeed a thorny issue. Jeroen Ooijevaar and Jelmer Kamstra who carried out a quantitative questionnaire proposed some different dimensions of Power Users to be reflected in the questionnaire (Ooijevar & Kamstra, 2005):

> "(…) for example technological Power Users (those who merit in activities like programming), 'social' Power Users (those who use basic communication skills but set up online communities and connect people all over the world) information Power Users (those who merit in using ICT as a resource for knowledge) and gamers."

(Ooijevaar & Kamstra, 2005)

This was a valid and useful typology that could identify different area of power use. However, the categories seemed to be quite broad and raised some fundamental questions about what would be the identifying parameters for power use; should it be e.g. the frequency of the activity? Furthermore, seen from a learning perspective the questions should not really be framed as 'what do they do', but 'how they do what they do' and how they act within the different activities they engage in. Returning to one of the earlier mentioned quotations from the project descriptions where power users were defined more broadly:

> "Power Users of information and communications technology are individuals who break out of the confines of traditional learning, demographic, or technological barriers by constantly using, sharing, creating, producing, or changing information in creative, innovative and/or unintended ways so that they become force multipliers in their own environments" (Malyn-Smith, 2004, p. 61)

This could be summarized to traits such as:

- Application of their knowledge in producing artefacts and social relations
- Breaking confines and transcending borders
- Creating, producing or changing information
- Agents of change and development in their environments
- Engaging actively in various communities and social activities

Arguably, these traits are also very plastic and broad, but they are not confined to specific ICT-activities or types of technology (in fact they are not necessarily tightly connected to technology at all).

In the core research group we had to discuss the definitions, as we would need at least some criteria for selecting teams of young 'power users'. In the group opinions were divided between having very clearly delineated categories and definitions of 'power users', as to be able to select them and then a more exploratory approach where the symposium would be the scene for expanding and refining the understanding of power users. These discrepancies were also because of different research strategies. Some of the researchers aimed at creating a quantitative questionnaire ahead of the symposium that would narrow down and sharpen the definition of power users; especially by exploring the boundaries between power users and non-power users. The results then were to be presented as a paper for the symposium

(Ooijevaar & Kamstra, 2005). Hence, these researchers had a greater need to have more clear-cut categories in order to construct and make sense of the quantitative data retrieved from the questionnaire. In contrast we were ourselves aiming at a more qualitative, ethnographic approach where we saw the symposium as a research opportunity for gaining a better understanding of what a power user might be. We aimed at studying the power users intensively, while engaging with their tasks and thereby deriving an understanding of the notion 'power users' (Dirckinck-Holmfeld & Ryberg, 2005, Ryberg & Dirckinck-Holmfeld, 2005).

We had a fear that we might too early reify the term and definitions of power users; especially that we would focus too much on the individual, technological skills of a somewhat unique nature (e.g. persons like Trevor). Focusing on a very specific group of technologically very advanced youngsters could certainly yield very interesting results; but it might also exclude a large group of young people using technology in equally innovative and creative ways, though not being programmers. For example, some very interesting research has been carried out about 'fan-fiction' (Black, 2005) and evidently newly popularised phenomena such as Flickr, YouTube, MySpace exhibit an enormous mass of visual creativity and interesting remixes of different genres and media. One does not need to have programming skills or higher-level technical knowledge to produce interesting video-remixes, writing fan-fiction, maintaining a blog or creating beautiful photo-collages. In light of this, we felt that we were not sufficiently clear about what we actually wanted to study. Should we be focusing on a delineated group with hard-core technical skills or should we focus on power users as a broader phenomenon within youth culture? Would the technological skills be the most important or did we want to look at young people's roles as social change agents? Therefore, in our opinion, it would be too early to sharply delineate the 'object of study' into predefined categories of use or focusing on very specific skills.

Selecting the 'Power Users'

As the former sections also reflect there was a tension and challenge in doing research into a phenomenon which we were at the same time trying to define, as to guide the research. This was a tension we could not easily resolve and therefore we chose to follow a more exploratory, open-ended strategy in our research design. From this perspective the Costa Rica event would be a scene for expanding and refining our understandings of how to

define or operationalise a concept such as 'power users'. An alternative strategy would have been to narrow down the notion of power users to a certain agreed upon 'power users essence' forged from very strict and clear definitions.

Though, there were some common criteria for identifying power users, the selection methods also varied slightly between the research teams e.g. Susan Yoon who was the researcher connected to the US team created an extensive list of questions (See appendix B7) to identify possible power users, whereas we followed a slightly different path.

From the beginning the Nordic/Danish team was meant to have two senior researchers connected to the team, Professors Birgitte Holm Sørensen from the Danish Pedagogical University (Copenhagen) and Lone Dirckinck-Holmfeld from Aalborg University (Aalborg). We decided to bring a team of 8 power users in all, which was also the outline from the overall planning group for the Costa Rica symposium: Birgitte Holm Sørensen would choose four from the Copenhagen area and then Lone and I would choose four from the Aalborg area. As mentioned some general criteria were agreed upon in the core research group and overall planning group for the Costa Rica Symposium:

- 5-8 people pr. group
- Age range 12-16 years
- Gender mixed

And then there was also a general consensus revolving around four other variables:

- Socio-economically mixed
- Rural/Urban mixed
- A Balance between different types of Power Users
- Native tongue in groups

These criteria were very much open ended, though we on a general project level decided it was important to have a spread in gender and to a certain degree in socio-economical status. The distinction between rural and urban we did not ascribe much weight, as this distinction really does not make very much sense in Denmark; at least not to a degree where this would be an important variable to take into consideration. However, we were quite con-

scious that we did not want to focus narrowly on technological skills. In relation to Figure 1 our aim was to bring together a team that would be well balanced between the different dimensions. They would have to have good ICT-skills, but we did not want an exclusive team of programmers; rather we aimed at having some power users also possessing a certain political and global outlook[4]. We found this important, as they were to address some general, societal and global concerns related to the UN Millennium Goals.

We were not aiming at finding unique or extraordinary individuals, as we would also want them to represent 'a normal teenager', but equally we wanted some 'smart kids' that would be able to contribute meaningfully to addressing, formulating and solving complex problems in a group. The latter also meant that that had to be able to collaborate and function socially as a group, since they would have to rely quite a lot on each other. Each team was supposed to bring some grown-up chaperones and facilitators, but unlike some of the other teams, who brought parents, teachers or a familiar facilitator/chaperone with them, we chose not to invite parents, teachers or familiar grown-ups. Instead we brought three master students (and me) as facilitators/chaperones.

This also meant we had to take into account that we needed young people who were somewhat familiar with travelling and had a certain maturity; they had to be self-confident and mature enough to feel comfortable travelling to Costa Rica with four semi-grown-ups. Especially, because we would not travel directly to the comfortable and secure Marriott Hotel, but planned to spend a few days on our own doing some light field work, relaxing and getting to know each other in Cahuita. So, apart from the 'power users' criteria we had to take into account also some aspects concerning their maturity and general ability to cope with unfamiliar environments and new people.

Lone Dirckinck-Holmfeld had identified two potential power users: Samuel and Jack. They were 'smart kids': doing well in school, knowledgeable, internationally oriented and with political consciousness. They were regular users of various technologies, both in school and at home; they had somewhat different socio-economic backgrounds and were from different kinds of schools. They were not especially technologically oriented in the sense that they had very advanced skills within a particular area, such as programming, working with images or website-creation, but they were generally comfortable with using computers.

As to identify the last two power users for our team, we asked the young people to point out one they knew and they thought would fit the descrip-

tions of a power user. We explained to them why we had chosen them and what our thoughts were on power users. We then gave them the task of picking another power user. This also had the advantage that each of them would bring someone they knew of, liked and would function with socially. This resulted in Jack pointing out Laura and Samuel pointing out Diana. For the Aalborg group we also did an informal interview during a small meeting where we probed about their use of and relations to technology, as to affirm that they were indeed interesting to bring to Costa Rica as 'power users'. We did not use any specific guide, but the informal interviews were based on much of the work we had been doing in the research group and from the criteria we had agreed upon.

For the Copenhagen group, Birgitte Holm Sørensen chose 'power users' from the general criteria agreed upon, and also based on her experiences from previous research projects where she had collaborated with two of them (Angie and Jasper). She followed much the same strategy as we did; from the research projects she knew two of them well in relation to their use of technology, and she asked them to point to two others who would also fit the descriptions of a 'power user'. Angie and Jasper then pointed to Sophia and Neil. They were then the four 'power users' that formed the Copenhagen group.

Now they were eight in all:

Crafting the Costa Rica Symposium as a research event

The construction and crafting of the Costa Rica Symposium as a research event was a major task distributed between many different people. For one thing the symposium was not only an event for studying power users, but also an event that was to be attractive to different groups from the broader research environment, business, NGO's, practitioners etc. Therefore the research event had to be negotiated between many different persons and aligned with many different purposes and smaller events (e.g. general presentations, speeches, and paper sessions). Within the core research group we discussed the overall research design, the research questions and methodological and theoretical approaches in studying the power users, but also what the challenges for the power users should be.

The discussions and meetings in the research group took place through listserv discussions and online audio conferences in Illuminate where there

were regular research meetings. The meetings began in January and continued until the Costa Rica Symposium with different levels of intensity and frequency – sometimes there were weekly meetings, at other times there would be three weeks between the coordination meetings. The core research group within the 'Power Users Project' can best be described as a network of research groups with overlapping interests, but also with different approaches, theoretical backgrounds and goals; following from this there were also different methodologies and research designs guiding each team. As a result of this each research group created their own research designs which were shared with the other groups for inspiration and comments. The research designs, however, were guided by a set of overarching research questions for the entire project and a description of the overall goals for the power users research initiative (see appendix B6). The research questions reflected the different perspectives and interests within the core research group, and the various teams chose to focus on subsets of the questions in their individual research designs.

The overall planning group and the core research group also decided early on that the challenges the power users were to address were formulated and directly connected with the '2015 Millennium Goals' of the United Nations. In the spirit of not focusing too much on only the technical aspects, we felt that it was important that they addressed global, social, economical and human issues in combination with technology. Therefore most of the challenges were formulated as 'how can technology help in realising the specific Millennium goal'; but more specifically how the power users had to engage with this task before and during the event was left for the individual team to decide (see appendix C3 for the final challenges).

We agreed on a shared interview-guide for the power users. Because there would be more than six teams of Power Users we agreed that it would be very valuable to have some comparable research data; but we also agreed that each team should have the flexibility and freedom to pursue their specific interest as they saw fit. This reflected both the composition of the research group, but also our wishes of having a multi-disciplinary approach with a plurality of different perspectives. The multi-disciplinary approach was seen as a strength in trying to navigate the complexity of the object of research, as was expressed in the paper addressing a long term research agenda for the 'Power Users Project':

> "First of all, different methodologies should be applied in the power users project, and they should be viewed as complementary and interrelated. In accordance with the phenomenon of 'power users' as an emerging group of individuals / groups

> /culture we suggest tentatively to focus on qualitative inspired methods, which especially are suitable for throwing light on the practice of 'power users'. However, at the same time, socio-economic and global trends may be supported by quantitative methods, as well as cognitive developmental aspects may be explored systematic in experimental labs." (Dirckinck-Holmfeld & Ryberg, 2005, p. 10)

The way we envisioned the research that would take place before and during the Costa Rica event was partly crystallised in our research design, partly in the articles (Dirckinck-Holmfeld & Ryberg, 2005, Ryberg & Dirckinck-Holmfeld, 2005). The first article took up a broader and longer-term perspective in that it focused on the overall research approach of the entire 'Power Users Project' (Dirckinck-Holmfeld & Ryberg, 2005), whereas the other focused more on the Costa Rica Symposium (Ryberg & Dirckinck-Holmfeld, 2005) (see appendix B for the mentioned articles and work documents). Our team's overall approach mainly focused on qualitative methods where we envisioned an ethnographically inspired open-ended approach with intensive observations and documentation of their work during the symposium; this I shall describe in more detail in chapter 3.

The research design and whole setup of the Costa Rica Symposium could be viewed as a kind of design experiment or staged event (Bell, 2004; Collins, Joseph, & Bielaczyc, 2004; Sandoval & Bell, 2004). When I write experiment, I am not talking about a 'laboratory' in a traditional science environment; neither do I mean a lab for psychological tests. In fact, the Costa Rica Event was close to a 'natural' setting which many young people would recognise from e.g. school (if they are used to working with projects, which all the young people in the team were). At the same time the whole event and staging had some artificial elements. For one thing, the young people were brought all the way from Denmark to a fancy hotel in Costa Rica where they were positioned as the centres of attention and 'admiration'; they were to present their findings to a big audience of grown-ups from large well-known corporations, researchers and other stakeholders; they were followed intensively by a group of researchers who would interview them, ask questions and record their almost every move on camera; they had grown-up facilitators to carry out their wishes and help them; they were put in contact with knowledgeable experts and environments which they would not normally have access to; they were engaged with their work from early morning to late evening, unless of course they had to participate in big dinners with waiters and speeches.

In a sense we could call it a 'naturficial' setting, it was not completely strange and artificial, but neither was it an everyday, routine setting. When

we asked the young people about their perception of the event they expressed also this tension – it was not completely new to them, but neither was it like an everyday event. Furthermore, the whole setting, in their opinion, enhanced their performance and though they likened it to a school project they also articulated that there were some important differences in the openness of the task.

The organisation of work and learning: PBL and indirect design

In this section I will just briefly lay out how we envisioned they would work and what kind of learning process they would engage in. As earlier mentioned our pedagogical design of the event was based on a very open ended Problem Based Learning approach where we were more concerned with creating a setting or frame for the young people to act in; rather than designing specific sequenced events or deciding and controlling in detail what they should learn and how. We can call this an *indirect* approach to designing for learning (Goodyear, 2001; Jones, Dirckinck-Holmfeld, & Lindström, 2006) which we aimed at realising through drawing on a specific kind of Problem Based Learning.

The specific approach can be termed "The Aalborg PBL Model" (Kolmos, Fink & Krogh, 2004) or "Problem Oriented and Project Pedagogy" (Dirckinck-Holmfeld, 2002). This is because the notion of Problem Based Learning in general covers many different ways of organising and governing problem based learning processes. Before going into the differences between these I will just briefly touch upon the history of this particular pedagogical approach which is well described in Danish pedagogical literature (Adolphsen, 1997; K. Illeris, 1974; Knud Illeris, 1981; Olesen & Jensen, 1999). The pedagogical approach was the institutional pedagogical foundation for establishing Aalborg University (1974) and Roskilde University Center (1972) in Denmark, and in the late eighties it also became the basis for open online education programs and research within online learning (L. Dirckinck-Holmfeld, 1990, 2002; L. Dirckinck-Holmfeld & Georgsen, 1996; L. Dirckinck-Holmfeld, Tolsby, & Nyvang, 2002).

It grew out of the rapid, social changes happening during the late sixties and early seventies, both within the University, the Danish society and internationally (student rebellions, war protests, collectivism, the hippie movement

and so on). The approach represented a pedagogical turn and change in the ways of teaching and studying at that time. The focus shifted from a model based on delivery of information and knowledge (from professors to students) towards a more critical, experientially based pedagogy favoring learning as knowledge construction through collaboration in groups and through problem-orientation (Dirckinck-Holmfeld, 2002). The main pedagogical principles revolve around problem-orientation, project work, interdisciplinarity, participant directed/controlled learning and enquiry of exemplary problems. The entire learning process is formed around the students' enquiry into scientific and social problems. To understand and find a solution to the problem, the students go through different stages of systematic investigations: preliminary enquiries, problem formulation, theoretical and methodological considerations, investigations, experimentation and reflection. (Dirckinck-Holmfeld, 2002).

> "The students analyze and define problems within a defined interdisciplinary or subject frame. The students work together in groups on their project and submit a common project report" (Kolmos, Fink and Krogh, 2004 p. 10)

One of the important ideas concerns the nature of a problem within this approach, as this is fundamentally related to that of participants' control. This principle originates from Illeris (1981) who argued: *"A problem is not a problem in a psychological sense if the person who has to work with it does not experience it as a problem."* ((Illeris 1981, p. 83), translation from Dirckinck-Holmfeld (2002))). The students define and formulate the problem, wherefore they have 'ownership' of their problem. This is believed to create a more conscious, critical involvement and intrinsic motivation, as the problem is something they themselves strive to solve; not something which is given to them by others (extrinsic motivation). Theoretically, the model builds or refers to many different theories, concepts and theorists broadly referred to as pragmatist, constructivist or social constructivist e.g. (Piaget, 1969), (Dewey, 1933) or (Vygotsky, 1978). More recently, references have been made especially to social theories of learning (Lave & Wenger, 1991; Wenger, 1998, 2005), Cultural Historical Activity Theory (Cole, 1996; Cole & Engeström, 1993; Engeström, 1987; Wertsch, 1998), and experiental learning (Kolb, 1984). The first two are often assembled under the wider term socio-cultural theories of learning.

To return to the demarcation lines between broader notions of PBL and the Aalborg Model or POPP, these are well explained an article by (McConnell, 2002):

> "The focus is not on the usual PBL approach (…) where a problem is defined by the tutor and given to the learner as their starting point for PBL. In this traditional model, students acquire knowledge and skills through staged sequences of problems presented in context, together with associated learning materials and support from teachers (…) The kind of PBL examined in this paper occurs in an open, adult learning context where learners, who are already professional people, work in small distributed e-learning groups and negotiate amongst themselves the focus of the problem." (McConnell, 2002, p. 59)

To distinguish between different pedagogical models and also the distinction mentioned above it can be useful to highlight two different tensions: teacher versus participant control, curriculum orientation versus problem orientation. Graphically this can be represented as below:

	Curriculum oriented	Problem Oriented
Participant controlled	Self-study, portfolio, study groups	Projects, case work, Field work, PBL, POPP
Teacher controlled	Lectures, courses, seminars, tests	Laboratory, experiments, Problem solving, assignments (PBL)

Figure 2: Distinctions between different pedagogical models

These approaches are often mixed in practice, but the different dimensions/tensions can be more or less dominant in an overall pedagogical approach. PBL can be placed in two different categories based on who defines and decides the problem to be worked with, whereas the Aalborg Model of PBL or POPP is situated within the field of problem orientation and participant control. To better illustrate the dynamics between different ways of organising for PBL, we have developed the model below (Ryberg, Koottatep, Pengchai, & Dirckinck-Holmfeld, 2006):

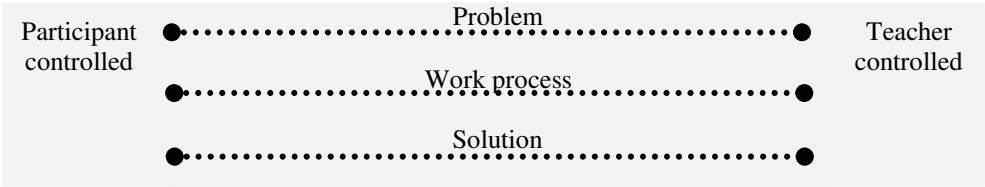


Figure 3: Different orchestrations of PBL-processes

Through the model above it was argued that three central dimensions of PBL/POPP could be extracted: the problem, the work process and the solution (Ryberg et al., 2006). All of them can then be more or less controlled

by either the participants or the teacher. 'The problem' opens questions about who controls or owns the definition and framing of the problem: teacher, participants or others? 'The work process' is concerned with how the work processes are organized and who controls them. Who chooses in what way to investigate the problem (theories, methods, empirical investigations etc.) and who is in control of the project? Finally, one can query into who owns 'the solution', by which I mean whether the solution is open-ended or fixed. To what degree are the participants expected to come up with a predefined solution and to what degree is the process one of exploration and knowledge construction? The three dimensions then can be thought of as stretched out between two poles of a continuum between teacher and participant control and as dynamic 'sliders' that can vary throughout a process (or for a pedagogical design).

I bring up this model to say something about how we envisioned the work and learning processes for the young people. We wanted it essentially to take place as a group work/project work take place on Aalborg University, namely as the participants controlling predominantly both the formulation and development of the problem, the work process, as well as the solutions. We envisioned our own roles as supervisors and helpers (just as groups of students at Aalborg University have a supervisor that can help, discuss and facilitate their work). Basically we told them to choose a topic among fifteen different very broad topics connected to the Millennium goals (poverty, education, gender etc.) and we wanted them to choose one themselves (which they in a way did), and we suggested a lot of different activities they could engage in – but they never did (which is also a mode of participant control). We asked them to come up with a problem formulation by themselves and we also asked them to suggest things they could do or places to go in Costa Rica to increase their knowledge on the topic. They were also predominantly in control of how they wanted to work (apart from some things we had to decide due to logistics or time pressure) and further we were acting (and treated by them) as supervisors, consultants they could draw on during the process. As I shall show throughout the analysis, we increasingly became "legitimate peripheral observers" and helpers. Sometimes we could help by posing good questions about what they were doing to help them reflect or move onwards, but at other times we asked "stupid" and annoying questions or asked them about things they had already done hours ago. At times they knew much better than we what they were doing.

Their work and learning process was therefore envisioned to be very similar to that of the Aalborg Model, with the exception that normally a group of students would work for an entire semester with their project, whereas they had far less time. They did the vast majority of their work in 2-2½ days effectively; though the process spanned a longer period they did most of the work while being in Costa Rica.

Here we arrive at one of our central question: How did they manage to do that, and how can we study such short, intensive processes of patchworking? The latter will be the main topic in the next chapter.

Chapter 3: The analytical framework

As have been laid out in the preceding chapters, the main concern for the analysis in this thesis is to understand how a relatively short-term, intensive learning process or process of patchworking unfolds. In their own words the young people essentially did all of the work while being in Costa Rica. This is not entirely true, as the process of their work stretched a longer period of time. It is partially true in that they accomplished the majority of their work while actually being in Costa Rica. The question then becomes how the young people manage to create a reasonable presentation within a very short period of time and how did they manage the entire process of patchworking? This represents a dual focus as for one thing, there is a focus on how ideas change, develop and matures, but secondly it encompasses how they managed and controlled the entire process of patchworking.

Therefore, in the following sections I will discuss the methodological and theoretical considerations of the analytical framework that will be employed in analysing the processes of patchworking. The analytical framework and analytical concepts have been developed as a part of this thesis and will be applied in the analysis of the data. Initially, I will focus on presenting and discussing the theoretical and methodological underpinnings of the analytical framework. This encompasses initially a discussion of the unit of analysis, and how different theoretical and methodological frameworks within socio-cultural theories of learning investigate and approach studies of learning. Also, I shall briefly introduce some of the central and more concrete analytical concepts, which are called cycles, processes and threads, but these will be further elaborated in the subsequent chapters and throughout the analysis, as they need to be related more intimately to and grounded in the case. Thereafter, I will discuss how I have analytically and methodologically approached the data and case at hand. This includes a discussion or description of how I have selected the data-material that will be analysed in greater detail in the chapters 5-8. Finally, I will describe how the data has been collected and worked with.

Given that the analytical framework and concepts have spawned through the work with the specific case at hand, it also encompasses some methodological and analytical considerations that are specific to the case. For instance, the major bulk of the particular analysis in this thesis will revolve around what happened during three days, but this does not mean that the analytical framework take such short processes as an exclusive unit of analysis. There-

fore, this chapter is both an introduction to how I have dealt with the specific case at hand, but also an introduction to what I imagine to be a wider and more general metaphor, or outlook, for how to study some instances learning. For this reason I shall take up some broader discussions of the theoretical and methodological underpinnings of the analytical framework, as well as discuss the specific methods for approaching the case at hand. In chapter 12 I shall return to discuss especially the wider and more general ideas that have spawned from the actual analysis of the specific case, but the germ-cells of these ideas are also represented in this chapter.

Standing on the shoulders of giants

The analytical framework and concepts have certainly not been invented out of the blue skies; rather they are heavily inspired by existing methodologies and theoretical frameworks. One inspirational source for the analysis comes from the theoretical and methodological landscape that can broadly be defined as a socio-cultural theories of learning, whereas the other source of inspiration comes from Interaction Analysis (C. Goodwin, 2000; Jordan & Henderson, 1995; Luff & Heath, 2000) and theoretical, methodological approaches within (mediated) discourse analysis that study social actions and practices (Norris, 2004; Norris & Jones, 2005; Scollon, 2001; Scollon & Scollon, 2004). Combining and using such theories and methods in conjunction is by no means a novel way of working; already in the early formulations of Interaction Analysis the relations between learning and studies of interaction were articulated (Jordan & Henderson, 1995). Since then many studies have drawn on interaction analysis or other related methodologies (e.g. conversation analysis, discourse analysis, ethnomethodology) in investigating learning and human practice (L. Dirckinck-Holmfeld, 1997b; Georgsen & Raudaskoski, 2002; C. Goodwin, 1994; Ivarsson, 2004; Raudaskoski, 2006; W. M. Roth, 2002; Stahl, 2006a; Whalen & Vinkhuyzen, 2001).

Basically, I theoretically situate myself within the broad landscape of socio-cultural theories of learning. These do not represent a uniform theoretical approach, but rather covers a wide range of theoretical approaches which are concerned with matters of social practice, learning, technology and development. The approaches are increasingly interacting and overlapping without representing a homogenous theoretical outlook. From a learning perspective the inspiration comes from theoretical frameworks such as apprenticeship learning or situated learning (Lave & Wenger, 1991; Nielsen &

Kvale, 2002), cultural historical activity theory (Engeström, 1987, 2005), cultural-historical psychology and development studies (Cole, 1996; Rogoff, 2003) social practice theories (Chaiklin & Lave, 1996) or social theories of learning (Wenger, 1998, 2005). These perspectives can all be said to belong to a socio-cultural approach to learning as they represent a broad network of theories sharing some central assumptions with only minor disagreements[5]. This diverse field of study has grown out of an increasing dissatisfaction with decontextualised, ahistorcial, acultural, individualist and cognitivist notions of human development, practice and learning and instead socio-cultural theories stress the socio-cultural and historical nature of development, learning and human practice. Socio-cultural approaches equally stress the importance of culturally and historically shaped artefacts and how they mediate, transform and develop cognition and human practice; be they mental or physical artefacts that have been shaped, produced, developed and crystallised from human activity over time.

From this follows also that learning and human activity should be studied in naturally occurring settings through studies of everyday practices and activities; rather than in controlled laboratory settings. In the book "Understanding Practice" (Chaiklin & Lave, 1996) many of these different approaches are represented through different articles, which (Chaiklin, 1996) summarises in the following way:

> "Taken as a whole, the chapters in this volume could be characterized as examples of research in a yet-to-be embodied tradition that I will designate as societally significant practices. Studies in this area try to develop a theoretical account of the actions (or possibilities for action) of individuals participating in a societally significant practice, while it is occurring, by an analysis that locates the practice in a social, societal and/or historical perspective. Many different theoretical perspectives and methods might contribute to the development of such a research tradition, including the research perspectives illustrated in this volume." (Chaiklin, 1996, p. 386)

Though, there are many minor differences and methodological diverse approaches within socio-cultural theories of learning, there are also many overlapping interests and shared views on how to understand the interplay between learning, cognition, practice and the wider societal or historical context. Also, as can be read from the citation, studies within this broader tradition try to address a complex field or interplay between different levels of societal and temporal scale.

Ways of entering into such a complex field have especially been through various qualitative research methods involving ethnographic fieldwork, participant observations, interviewing, document analysis, video-recording, his-

torical analysis; but also more action based, experimental or interventionist methodologies, such as design experiments, dialogue design, developmental work research or engaging with processes of organisational change have been a part of socio-cultural studies.

As one of the overarching interests in this thesis concerns learning, I will initially take departure in a very broad overview and discussion of how learning is understood and studied within different theories, and more specifically within socio-cultural theories. I will keep this a very broad and general discussion without going into details with individual theories, as the intention is to discuss different ways of approaching the analysis, rather than discussing the different theoretical frameworks.

Learning as 'some kind of change' and the complex context of learning

Learning theories are at large concerned with change and development, and though these concepts may be researched from many different perspectives, there seems to be no learning without a certain level of change. Whether the change is seen as happening as an alteration in cognitive schemas of the individual (Piaget, 1969); as changed participation in communities by developing identity through multi-membership in various communities of practice (Lave, 1996; Lave & Wenger, 1991; Wenger, 1998, 2005); or through the collective development of new 'tools' and activity systems (Engeström, 1987, 1996, 2005). What also emerges from different ways of investigating and understanding learning is that learning can be seen as happening on different levels of scale or levels of granularity. Some theories mainly see learning or change as a property of an individual; whereas in other theories, learning can be seen as a property of larger scale systems where groups, organisations or communities learn.

What kind of change we are looking for, how we investigate it and what different theories believe to be an instance of change varies greatly; but the notion of change stays intact. So does the notion that change is fundamentally related to that of process or temporality. Here again, theories may vary in the scale of their temporal unit of analysis: they may be following a person's development and change over lengthier periods of time (W.-M. Roth, 2004) or studying a particular chat meeting in a physics class lasting an hour (Stahl, 2006b).

Some suggest that even during very short periods of interaction, we can empirically observe cognition and learning occurring on different timescales

simultaneously. This is exemplified by Cole & Engeström (1993) in their analysis of how cognition is distributed in past, present and future, while simultaneously spanning the timescales of micro-genesis (moment-to-moment lived experience), ontogenesis (history of a human being) and cultural-historical time (societal, cultural development). They analyse this through looking at interactions between parents talking about their newly born baby. Here the parents lay out different possible futures for the baby by drawing on their own life-experiences and cultural-historically shaped conception of gender-roles "We shall be worried to death when she's eighteen"[6] (Cole, 1996; Cole & Engeström, 1993). This suggest that we can look at learning as processes that stretch over different periods of time; but equally we can look at how a particular moment stretches and expands different timescale and how different temporalities are encapsulated in just a small piece of interaction.

Cole (1996) uses another graphical representation to visualise different levels of scale, or the notion of context; namely a set of concentric circles starting from a micro-system and then proceeding outwards towards a macro-system. This visualisation Cole attributes to Urie Bronfenbrenner who speaks of embedded systems starting from the microsystem and then expanding through meso-, exo- and macrosystems (Cole, 1996, p. 133); Cole uses it to display the context of a teacher-child interaction in a school class.

Such a representation could equally be used to illustrate the different theories of learning and the ways in which they study learning; from the individual mind to broader socio-cultural or even historical contexts. We could also use the model to visualise the different ways in which these spheres are thought to interact with each other in the different theories, and if the circles are part of the analysis (or left out). The complex interaction between these different spheres, scales and context is what Cole discusses through the concentric circles mentioned above; namely how the different spheres are thought to affect each other or interact. Here he warns strongly against understanding context as that which 'surrounds' and 'determines' an activity:

> "To take our example of the teacher-child exchange, it is easy to see such events as "caused" by higher levels of context: a teacher gives a lesson, which is shaped by the classroom which it is part of, which in turn is shaped by the community and so on. While more inclusive layers of context may constrain lower levels, they do not cause them in a unilinear fashion. For the event "a lesson" to occur, the participants must actively engage in a consensual process of "lesson making" (Cole, 1996, p. 134)

I very much agree with Cole (and the many others) who do not situate the

individual or the interaction as uniformly determined or caused by higher-levels of context and instead view context as a relational accomplishment.

Viewing context as a complex that arises from the interplay between agency and structure and involving many levels of scale is a fundamental trait in socio-cultural theories. But how the levels are seen to interact, how this is studied and how the observations are accounted for and analysed vary between the different approaches. Some favour mainly ethnographical research, with extended periods of observation, interviews and immersion in a culture or community to explore the inner workings and mechanism of becoming a tailor or part of other communities of practice (Eckert, 1989; Lave & Wenger, 1991; Wenger, 1998) e.g. by studying development of trajectories of identity over time, through interviews, observation and following people over lengthier periods (Nielsen & Kvale, 2002; Pedersen, 2006; W.-M. Roth, 2004). These types of studies are often reported though ethnographies, rich descriptions or series of vignettes.

Others favour more developmental oriented activities where they might not immerse deeply into the culture, but instead work with development and change of a workplace; this may then be reported through historical analyses of the work practice, video-documentation and transcripts of interactions which are then used to demonstrate contradictions in the work practice to the practitioners (L. Dirckinck-Holmfeld, 1997a, 1997b; Engestrom, 2001; Engeström, 1996, 2004, 2005). Yet others work with designing educational interventions, where different pedagogical scenarios are tried out, refined and redesigned on basis of observations, video-logs and analysis of how the interventions affect classroom interaction and learning (Cole, 1996).

This is not an attempt to make an extensive, accurate or even representative sample of socio-cultural research as this is a much more rich and diverse field. Rather it is a sketchy way of highlighting that there are many different objects of study, ways of approaching the field, collecting, working with and analysing data; and also how the analyses are related to or grounded in the empirical data vary greatly.

Coping with the complexity

What arises from these broad strokes and descriptions is that socio-cultural theories form a diverse and multifaceted landscape which does not represent a homogenous theoretical, methodological or analytical framework. Rather, as Roth (2001) describes it, a ‘flurry’ of research has been happening in the past 15 years, which revolves around some fundamental, shared assump-

tions that have been articulated and investigated in very diverse ways and for many different purposes. From the above one can point to e.g. approaches that are more oriented towards immersion into the culture to understand how the participants make sense of their activities and practices, and then more interventionist methodologies that focus on change, interference and development.

Differences between the approaches often revolve around the 'zoom-level' of the analyses; zooming is a metaphor Roth (2001) uses to describe how he engages with data and analysis on different levels from wider ethnographical enquiries to very detailed microanalysis of interaction. I find the metaphor of zooming very useful in understanding the 'flurry' of theories, methods and analytical frameworks within socio-cultural theories. We can understand this as stretched between two poles of description and analysis, from microanalysis to more narrative or ethnographic accounts. However, as Roth (2001) argues these can be combined by working with multiple levels of analysis, depending on what the researcher want to illustrate and zoom onto:

> Central to my approach is the use of multiple levels of analysis (i.e., zooming), which reveal different aspects of a more general phenomenon that I call cognition. To locate the nature of cognition, we have to do analyses at multiple levels, which requires zooming. (…) Different foci of analysis and the associated changes in spatial and temporal scales require what are considered different methodologies. The study of gesture–talk–ground coordination requires video records and the possibility of precise timing. At the same time, if we are interested in developmental changes, these video records have to span considerable periods. Furthermore, these developmental changes do occur within larger frames, including the particular course students are enrolled in or even larger units such as the out-of-school worlds. Then, anthropological studies that draw on ethnography, participant observation, or apprenticeship as method provide the necessary data for constructing an understanding of culture and groupings. (Roth, 2001, p. 56)

In practice, however, this might be difficult. First of all it is quite time-consuming to do analyses at multiple levels and it may also require a stable research object. For instance Roth uses a physics class of his own where he can follow the participants closely throughout a whole course, videotape the lectures and the work, be part of the informal conversation, interview the students and so on.

In the case of e.g. developmental work research the object of study and development may be a health clinic or a court room which are both somewhat stable cultural and historical systems of activity. Likewise, doing extended ethnographical studies of tailors or claim processors in a large insurance company constitute a somewhat stable object of study which encompasses

recurring, historically and wider institutionalised shaped practices (that are often reified in systems, procedures, laws and so forth). Equally, other ways of approaching work practices encompass extended studies of relatively stable settings. Jordan & Henderson study stable, recurring, repeated practices to identify hot spots for microanalysis. Scollon & Scollon (2004) do extensive ethnographical work and media surveys to identify a 'nexus of practice', before subjecting the chosen 'nexus' to detailed analysis.

However, a pertinent question arises from this; what if we are not looking at stable, recurring practices, but shorter-lived, accelerated events or experiments that are not embedded in historically shaped organisational practices or are part of larger and sturdier systems of activity, which is the case in this study?

Accelerated moments of uncertainty vs. stable practices

The focus in the analysis I will engage in is double. A very important part is to focus on the developments and changes happening within a period of time, which means a focus on the ruptures, rapid changes and the acceleration of a learning process. But also it is about eliciting the processes by which this becomes possible. How this is a double focus I will try to illustrate by returning to Interaction Analysis as laid out by Jordan & Henderson:

> "The goal of Interaction Analysis, then, is to identify regularities in the ways in which participants utilize the resources of the complex social and material world of actors and objects within which they operate." (Jordan & Henderson, 1995, p. 3)

> "There are various types of research in the course of which videotapes are produced. Our own practice has been to do videotaping in conjunction with ethnographic fieldwork. We rely on participant observation, in-situ interviewing, historical reconstruction, and the analysis of artifacts, documents, and networks for providing the framing context. In the course of this ethnographic work, we attempt to identify interactional "hot spots" -- sites of activity for which videotaping promises to be productive. Ethnographic information then furnishes the background against which video analysis is carried out while the detailed understanding provided by the microanalysis of interaction, in turn, informs our general ethnographic understanding." (Jordan & Henderson, 1995, p. 4-5)

Here the ethnographical fieldwork is used as an entrance into identifying 'interactional hotspots' which are then subjected to rigorous microanalysis to build empirically verifiable generalisations. The ethnographic fieldwork is the initial sorting mechanism to select events from which regularities can be elicited, which we can depict in the following way:

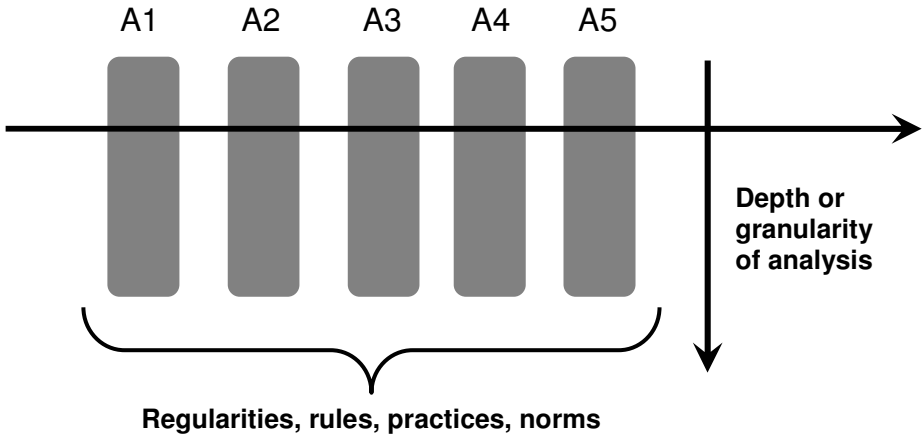


Figure 4: Analysing regularities, structures and norms

This approach has resulted in multiple very interesting studies of how work is done in control rooms, train operators, it-supporters, archaeologist and so on (C. Goodwin, 1994, 2000; M. H. Goodwin, 1995; Heath & Luff, 1992; Luff & Heath, 2000; Luff, Hindmarsh, & Heath, 2000; Whalen & Vinkhuyzen, 2001). Each of the 'events' can then represent a specific 'piece of practice' that re-occurs on a regular basis; they could represent: using a Munsel Chart, Landing a plane, directing a train or more mundane practices such as buying a cup of coffee, ordering a meal or the like. These are events that occur over and over again and have certain structures, regularities and rely on expectations and norms of what will (or should happen); but each time they are enacted, constructed and the structures and expected actions are made salient through utterances, gaze, postures and so on. Within the field of Human Computer Interaction such studies have vastly increased our knowledge of how humans in general interact with and in complex technologically mediated setting, or helped to design and develop specific systems for specific practices. Equally, such studies give us an entrance into general human interaction e.g. by laying bare the mechanisms of fundamental interactional resources, such as gaze, turn-taking, mutual attention, adjacency pairs, the meaning of proxemics and so on.

Though, I am heavily inspired by such studies employing Interaction Analysis (and other similar frameworks), there are some noticeable differences in relation to the unit of analysis and the focus of this study. First of all, I am not focused on uncovering 'interactional regularities' per se, but rather on identifying changes, developments and how ideas transform during the

course of a specific shorter-term process. Secondly, while long-term ethnographical data collection can often furnish the selection of interactional hotspots, this is not necessarily possible when we are studying practices that are not stable or re-occurring over longer timescales, but occur as shorter, accelerated moments in time involving many highly unstable activities or events.

While one could argue, that this might be something arising from the specific case in this study, I believe it is a change of focus that might have wider currency, and it was also a part of our initial ideas in relation to the Costa Rica Event (Ryberg & Dirckinck-Holmfeld, 2005). This was initially inspired by Engeström who argues that workplace studies have tended to focus too much on temporally and spatially stable practices, such as settings with the same people and recurring tasks:

> "Much recent ethnographic research on the organization of work practices has focused on temporally and spatially compact and stable "centers of coordination" (Suchman, 1997), typically different kinds of control rooms. We want to direction to another, in a sense almost opposite, type of work organization. We refer to work that requires active construction of constantly changing combinations of people and artifacts over lengthy trajectories of time and widely distributed in space." (Engeström, Engeström & Vähäaho, 1999, p. 345)

This is a perspective which is evident in many of the workplace studies already mentioned. However, in recent developments of Cultural Historical Activity Theory there is an increased focus on less stable and temporary configurations of human practice, which is described under the heading of knotworking:

> "Knotworking is characterized by a pulsating movement of tying, untying and retying together otherwise separate threads of activity. The tying and dissolution of a knot of collaborative work is not reducible to any specific or fixed organizational entity as the center of control. The center does not hold. (…) Thus, knotworking cannot be adequately analyzed from the point of view of an assumed center of coordination and control, or as an additive sum of the separate perspectives of individual or institutions contributing to it. The unstable knot itself needs to made the focus of analysis" (Engeström, Engeström & Vähäaho, 1999, p. 346-347)

Knotworking thus describes unstable, actively on-the-spot constructed relations and constantly changing configurations of people and artefacts. The concept of knotworking, according to Engeström, instantiates a new focus for research on e.g. organisational practices and learning, as he argues this is connected to historically new and emerging types of work, or ways of organising work, that will become increasingly dominant (Engeström, 2005).

A similar motion in the unit of analysis can be found in recent developments of the theory of 'Communities of Practice' (Wenger, 1998). In a recent research proposal by Wenger one can sense a movement from a focus on a 'Community of Practice' as the main unit of analysis towards an increased focus on how people move through, in-and-out and across the borders of different communities of practice (Wenger, 2005). This perspective was also present in the early theorising Communities of Practice, so actually it might be more correct to speak of a change of what is foregrounded and highlighted as part of a social theory of learning:

> "This simultaneous focus on constellations of communities of practice and individual trajectories will place emphasis on aspects of the theory that have not received as much attention as communities of practice per se: boundary structures, multimembership, cross-community trajectories, various modes of belonging, and largescale properties of composite systems." (Wenger, 2005, p. 17-18)

Here there are some parallels to the notion of knotworking where also the unit of analysis is moving away from stable practices, communities or activities towards notions such as boundary crossing, interaction and multimembership. This does not mean that the theories have abandoned notions of activity systems or communities of practice, but it just shows a slight movement of emphasis or expansion of the unit of analysis. This is, however, something I will return to in more detail in the final chapters discussing the analytical framework.

Understanding processes of patchworking

The object of study in this thesis is not stable practices, but rather the movements through a series of different, overlapping, unstable activities, and how this process was managed and orchestrated. Initially, we can graphically depict the intentions of analysing processes of patchworking in the following way:

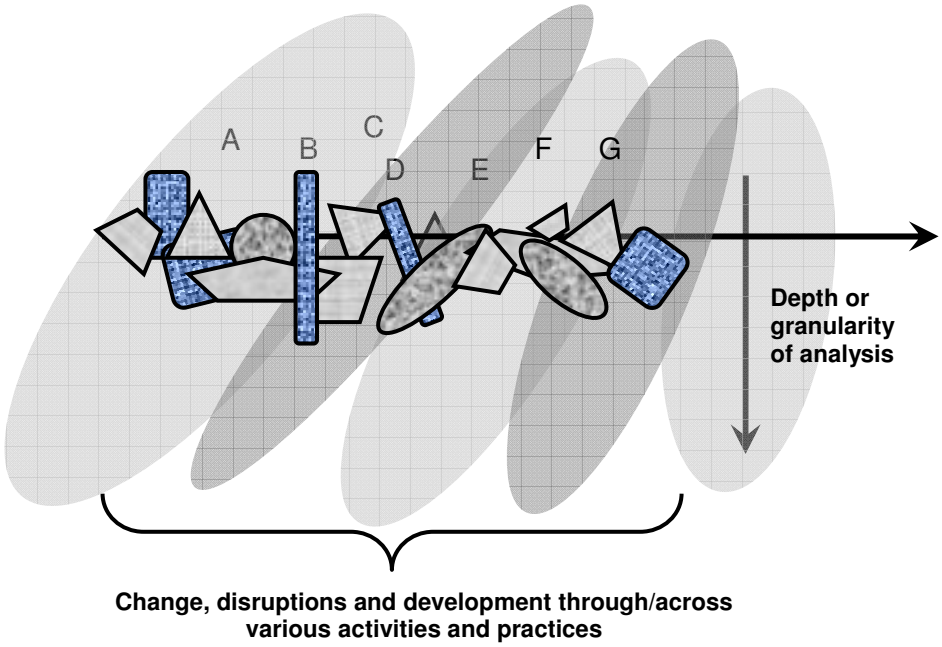


Figure 5: Initial depiction of analysing patchworking processes

Though, this is crude model, it illustrates a slightly different focus, than is expressed in the former model. The analytical focus aims at looking at movements, development and change across different types of activities and how this patchworking process was constructed or accomplished; rather than focusing on identifying interactional hotspots from stable, historical social practices that have recurrent and repeated patterns of activity over lengthier periods of time.

Change or development, however, requires that something is altered and there must be something which is transformed throughout the process. In the case of the young people and their work with the presentation, they have not just randomly moved through a series of events, such as coming up with ideas, interviewing, having a lecture, creating slides, subtitling a video or so on. Neither is the work process without any kind of structure, organisation or rhythm; rather I shall argue that their process is structured by some over-arching cycles of work which are represented in Figure 5 by the circles.

Furthermore, there have been some ‘threads’ that have stitched together and cut across the different events over time. I will return more to what threads

are, but in essence they can be e.g. a specific idea, a topic or an imagined presentation and so on. In this sense a 'thread' can to some degree be compared to the 'object' in activity theory; it is that which is worked on and collectively turned into an outcome (Engeström, 1987). However, the notions of threads are more ephemeral than the more sturdy objects of cultural-historical activity systems.

Equally, I shall argue, there are some processes around which the development and change of the threads revolve. For instance, I can point to a process of 'planning work' which is a continuous process of negotiating, who will be doing what and when. This sometimes become a focal activity, but at other times it happens through small conversations, remarks or just attuning to the others. Planning work therefore is an ongoing process which is an important part of carrying forward the work. In this sense the processes represent a horizontal, continuously constructed order.

In this sense analysing processes of patchworking is about identifying the horizontal lines of order and the threads that cut across and stitch together different types of events. Therefore an initial analytical move is to identify such cycles, processes and threads; and then to unravel and follow how they develop and change over time:

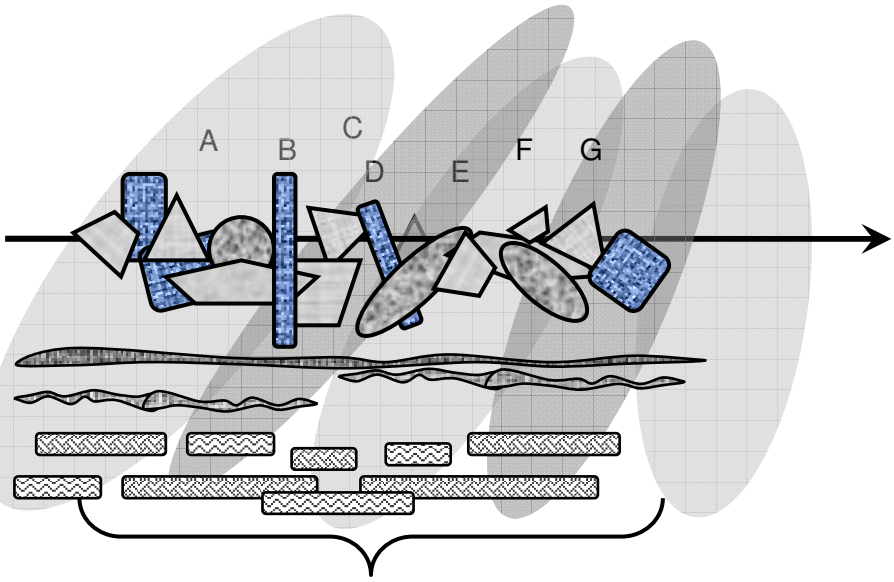


Figure 6: Second depiction of analysing patchworking processes

Identifying the order and regularity in processes of patchworking is not focused on similar 'vertical' events happening over time, but rather horizontal lines that create regularity or stability across different events; although the cycles, processes and threads are not stable or regular themselves, as I shall return to later.

Therefore this kind of analysis is in a way a 'compressed interaction analysis', as the way of analysing and engaging with the data is inspired by and similar to interaction analysis, but it is also altered due to the different temporal zoom, as well as the focus on change and development. When studying stable, recurring work practice one can assume that there is already a somewhat reified structure and order of events, which is then what one elicit and try to understand the inner workings of. Even though this order is understood as enacted and reproduced dynamically, this is a different kind of process than when this order needs to be established, negotiated and produced by the participants in a setting where there is no reified, agreed upon order or structure of the event. This structure and order must be actively constructed on-the-spot and the unstable knot itself needs to become the fo-

cus for analysis as Engeström frames it. This is not to make the claim that such unstable events or processes of patchworking occur in a complete vacuum with no pre-existing interactional structures available as resource, but just to say that there is a difference in studying the interactions in e.g. a control room, where (hopefully!) the procedures, practices, norms and regulations are more stable, than they are in the case of eight young people doing intense collaborative project work as a shorter-term event.

The difference between identifying similar, recurring practices over time to elicit the structures and regularities, and then studying shorter-term bursts of multiple, different, irregular events has some analytical and methodological consequences. The analytical consequences for one thing have to do with the depth or granularity of the analysis, as Roth highlighted it through the metaphor of zooming; but also it has consequences for the data-collection and the way of approaching the data.

MyZoom – between Scylla and Charybdis

As the metaphor of between Schylla and Charybdis suggests, I will argue for an analytical zoom-level that lies somewhere in-between. By in-between I am referring to in-between microanalysis and more general ethnographic or narrative account of the events which are also often used in conjunction with e.g. Interaction Analysis. Video-analysis or micro-analysis can take more or less detailed forms, which results in different ways of working with the material (e.g. transcribing, creating content logs, segmenting the data and so forth); and the same holds true for different ways of working with ethnographically inspired methods e.g. depending on the length of the observation, level of immersion in the field and the type of observation (Blomberg, Giacomi, Mosher, & Swenton-Wall, 1993). When using the metaphor of moving between Schylla and Charybdis, I do not mean to say that I am between two dangers; but rather that I am trying to construct something which lies in-between by drawing on some of the features of different approaches (while avoiding, what I believe would be pitfalls for the ways I wish to engage with the analysis).

Avoiding Schylla

By avoiding Schylla, I want to draw attention to the need of corroborating, making visible and grounding analytical categories or theoretical concepts in the empirical data, and not relying solely on ethnographic accounts or narratives as the analytical material. The notion of grounding the analysis in empirically observable data is one of the fundamental assumptions within

Interaction Analysis; and also expressed in other frameworks, such as nexus analysis (Scollon & Scollon, 2004) and multimodal discourse analysis (Norris, 2004) that all share an ethnomethodological heritage:

> "Another widely shared assumption among practitioners of Interaction Analysis is that verifiable observation provides the best foundation for analytic knowledge of the world. This view implies a commitment to grounding theories of knowledge and action in empirical evidence, that is, to building generalizations from records of particular, naturally occurring activities, and steadfastly holding our theories accountable to that evidence." (Jordan & Henderson, 1995, p. 3)

This is also a predominant view within the field of computer supported collaborative learning (CSCL) as argued by e.g. (Koschmann, 1996, 2001; Stahl, 2006a):

> "CSCL research has the advantage of studying learning in settings in which learning is observably and accountably embedded in collaborative activity. Our concern, therefore, is with the unfolding process of meaning-making within these settings, not so-called ''learning outcomes''." (Koschmann, 2001, p. 19)

The same considerations are articulated by (Arnseth & Ludvigsen, 2006) who argue that researchers operating within socio-cultural theories of learning need to make analytically and empirically inspectable their claims of how different levels of scale and context interact. They argue that such relations are often claimed without being sufficiently grounded in the actual analysis:

> "For example, even though many studies claim to adhere to more social and cultural approaches in theory, how the meanings and functions of CSCL tools are actually constituted in practice are rarely demonstrated analytically."(Arnseth & Ludvigsen, 2006, p. 168)

> "[…] depending on the unit of analysis and level of description preferred, either individual's changing participation in dialogue or institutional orchestrations of learning could be highlighted in the actual analysis […] the aim is not to understand how different variables covariate, but rather to understand how the meaning of knowing, knowledge and artifacts is constituted in dialogue between participants, who through their actions are responding to various contextual features of the setting and are thereby making them relevant." (Arnseth & Ludvigsen, 2006, p. 172)

Here they are articulating a critique that can in principle be applied to many theories and analyses relying primarily on ethnographical or narrative accounts e.g. situated learning or communities of practice (Lave & Wenger, 1991) (Wenger, 1998) and more recent studies within apprenticeship learning (Kvale & Nielsen, 2002). This is not to take a punch at the validity or usefulness of the analytical or theoretical concepts that have spawned from this research, as the level of zoom is appropriate for that particular way of

doing research (also they have amply demonstrated their worth and great value). But the analytical concepts are somewhat black-boxed and need to be re-opened by others when employed analytically. This is in a sense a great strength, as they can be appropriated and used within many different spheres exactly because they are open to interpretation and translation. However, as Raudaskoski (2006) points out, the "black-boxed" concepts can make it difficult to employ the concepts analytically in relation to empirical data. What is actually meant by 'negotiation of meaning' and how can we study 'legitimate peripheral participation' in the course of everyday interaction or through micro-analysis (assuming that we can)?

This critique should, however, be discussed in the light of the zooming metaphor and the earlier citation from Roth where he argues that multiple levels of analysis *reveal different aspects* of a more general phenomenon. This raises the question if the analytical categories and observations can actually "travel" between the different scales. Wenger, for instance, describes identity as a scale-free concept:

> "I have argued that identity is the scale-free foundation that cuts across levels of aggregation in social systems. We can identify with our family, our neighborhood, our city, our nation, our species—all within one identity. Similarly, our identity as an engineer encompasses at once all the engineers in the world, our local team, our regional society, our engineering specialties and subspecialties (mechanical, automotive, brakes), our university degree, and the few things we consider ourselves especially good at. These levels may have different degrees of intensity or resonance. They may even conflict. Still, our identities can cover the entire fractal structure of learning systems with their multiple levels of nested communities. Our identities are both local and global in scope. In this regard, learning involves a local/global interplay in that it transforms the entire range of our identities through the whole fractal." (Wenger, 2005, p. 22-23)

The notion of identity as a scale-free property and as spanning the local and global interplay is a very interesting theoretical construct, which I think is perfectly true; but the question arises if the notion of identity is also analytically scale-free (which, I might add, is not what Wenger argues). If we investigate identity at e.g. the level of ethnographically inspired narrative accounts would the concepts and categories we find also be applicable at other levels of scale e.g. through more detailed analysis? Equally, we could ask if or how larger institutional or societal discourses are visible and empirically inspectable from the perspective of actors in their daily interactions; how does structure and agency interact and can we ground such claims in empirically, verifiable observations, at all levels of scale? These questions also seems to become even more pressing when looking at shorter-term acceler-

ated moments and especially if these are 'experimental' as is the case in this study; can we study institutional or societal levels of scale in such short-term processes which are not part of everyday practices? Or can we analytically elicit how 'knowledge' might travel and transform between different contexts? I do not mean to answer such questions in general, but I will return to these questions in chapter 12 after the analysis.

Avoiding Charybdis

While I strongly subscribe to the notion that we need to ground and verify our analytical categories, theoretical concepts and observations in the analyses by holding them accountable to empirical evidence; I would argue that we simultaneously need to critically reflect on the level and detail of the analysis in relation to the overall argument we wish to present. Going deeply into detailed analysis of small segments within a large corpus of video data could render the process and development over time invisible; unless this overarching structure and order has already been thoroughly established through ethnographical field work or other types of survey and studies (Scollon & Scollon, 2004). Essentially this is a balance and choice of analytical horizontality and verticality – or breadth and depth with which to approach the data.

By this I do not mean to convey the message that I will not enter in depth with the data and the analysis, only that I am not entering microanalysis in the way in which this is often understood and practiced. Often microanalyses draw on conversation analysis or other very detailed ways of approaching smaller chunks of data, as it is present in some of the Zoom-levels in Roth's (2001) analyses and in many of the workplace studies already mentioned. But these in different ways rely on the notion of recurrent, repeated practices from which then the structures and regularities are elicited. When looking at somewhat stable, recurring and repeated practices, such as landing an airplane or customer exchanges, which have been identified through thorough ethnographical work; starting to go into the details of such practices makes good sense. However, when we are looking at multiple, unstable, changing activities this becomes a less viable strategy; especially if one wants to focus on 'threads' that develop and change over shorter periods of time. Thus, the analytical consequences have to do with the depth or granularity of the analysis, but also it has consequences for the data-collection and the way of approaching the different stages of analysing and making sense of the data.

Analytical strategy and overview of the data

The metaphor of navigating between Schylla and Charybdis is misleading in the sense that I am not trying to avoid two evils. The different perspectives and approaches make perfect sense in their pure form and also in conjunction with each other. However, as I have argued, there is a difference in the temporal unit of analysis, but also in the focus of the study. Whether one is trying to identify structures and regularities from an existing and somewhat stable, reified practice, or whether one is focusing on how ideas, processes and threads change and develop, through more temporary, unstable settings – and how this unstable setting and the order of events was constructed and managed. The latter is the analytical focus in order to understand processes of patchworking.

These analytical strategies can briefly be summed up as:

Object of study	
Studying a wider societal and historical practice	Studying more specific occurrences or shorter term events of a temporary and unstable nature
Collecting data	
Extended periods of ethnographic field studies and other types of surveys	Short-term intensive process with heavy collection of ethnographical data and a lot of video recordings
Analytical approach and purpose	
Identify ethnographic hotspot and recurring, repeated practices that are then subjected to video-analysis. Elicit and understand in depth regularities and structures of the interaction and how the order of events is continuously reproduced.	On basis of the collected data the aim is to understand the overall flow of the event, through identifying overall cycles and threads that carry through the material. Understand the processes by which these are constructed, developed and change over time.

Therefore, this particular analysis has some specific features compared to some of the other approaches, I have mentioned. First of all, the overarching object of study is a 'specific occurrence or shorter term, unstable and temporary event'. In this thesis, it is the 'naturficial experiment' of bringing a group of young people to Costa Rica to work on solving the problem of

'how to reduce poverty in the world'. However, it could equally be other settings and events that could furnish the ground for such studies. This is something I shall return to in Chapter 12 where the notion of knotworking and other concepts will re-appear, as to discuss whether this kind of analysis and the metaphor of patchworking have wider currency.

In the following, I will describe how I have approached the different stages of analysing and making sense of the data.

- Hoarding data and selecting the material to be included as part of the analysis and what to be left out on basis of a full understanding of the entirety of the material
- Gaining an overview on the entirety of the chosen period on basis of the selected analytical material
- Identifying cycles, processes and threads
- Selection of 'important moments' to analyse in depth
- Analysis of the important moments

Hoarding data and selecting the material to focus on

When the overarching unit of analysis is a specific occurrence or series of events within a shorter-term period, this also has an impact in relation to data collection. Essentially, it is not possible to go back to the field site, and like another Columbo return with 'just one more question'. It may also be very difficult to retreat from the 'field site' for shorter or longer periods to review notes, reflect on interesting observations, as to decide where to focus the attention, and then return to the field site with a camera to focus on specific events. In this sense the video material and other data become the field site. This in a way is an inversion of the sort of interaction analysis carried out by e.g. Jordan & Henderson (1995) and nexus analysis of Scollon and Scollon (2004), where the ethnographic field work function as a selection mechanism for identifying hot-spots or nexus of practices.

Essentially, many of the different activities will be 'one-shots' where one will have to document as much as possible. In the case of the entire "Costa Rica Event" we had to treat all activities as possible field sites, which might in turn show out to be important in the overall process. In the course of the entire process a lot of different activities were undertaken, suggested and some were also carried out, whereas others never unfolded. Therefore, one has to hoard data which might turn out be less useful or interesting, as time

goes by, but since it is not possible to later return to the field site (unless of course this is digitally stored), it might be a good idea to follow the strategy 'better safe than sorry'.

As for the case in this thesis, the entire process stretches from us selecting the young people and meeting with them in May 2005 to their final presentation in August 2005 which in a sense concludes the occurrence or event. As I have earlier mentioned, the main part of the analysis will revolve around events that took place during the stay in Costa Rica and a work meeting that took place on the 27th of July shortly before leaving. However, in the following I shall briefly outline the activities that we initiated and documented, as to give a sense of the entirety of the process. After this outline I shall discuss in more depth the empirical methods and the processes of collecting and working with the data.

Overview of activities prior to the Costa Rica Event

Here I will describe some of the activities and the data we collected prior to the Costa Rica Event, even though few of these activities and data will enter into detailed analysis of their process of patchworking. But as argued it is important to collect a lot of data in relation to do a study of an open ended experiment that runs for a shorter period of time. Furthermore, these activities were important in preparing the young people for the event and for them to get to know each other, as I shall later return to.

In these descriptions of the activities and ways of collecting data I have only incorporated activities that involved the power users' work with the topic or the Costa Rica Event. A lot of correspondence and coordination of more a practical nature also took place (such as sending out sheets and contracts for them to sign, arranging for vaccinations or email correspondences to coordinate their availability for meetings and so forth). All of this work was time consuming and very important for the actual event to succeed, as I shall return to in chapter 10 when discussing and reflecting on the PBL approach and the notions of indirect design. However, it was not something the young people collaboratively engaged in; neither did it concern the topic or problem they were to engage with. Following this, I have not included the many meetings between the researchers, research groups, facilitators, chaperones, as they did not involve the power users directly. The entire work process involving the power users spanned approximately two and a half months and included different kinds of activities and ways of collecting data.

First meeting with the Aalborg Group of Power Users – 26th of May 2005:

After having contacted each of them separately, we set up a small, informal meeting which was held in Lone's house. The idea was for all of us to meet and get to know each other, so besides the power users also the facilitators/chaperones were invited. Apart from just getting to know each other, we wanted to hear more about their interests and use of technology to get an idea of whether they would be interesting to bring to Costa Rica. Secondly, we also wanted to give them some initial ideas of what would be happening in Costa Rica, what they were supposed to do over there and why we were interested in doing research involving them. It was a very informal event with pizza, pancakes and just chatting; we also showed them a video Lone had about Costa Rica. The main idea was just to touch bases and getting to know them, as to hear a bit about their thoughts on the whole event. We did, however, record their talk about their interests and use of technology. The recordings were not transcribed as we have the more thorough interviews that were carried out during and after the Costa Rica event; this in essence made these recordings obsolete. Apart from the recordings we also snapped some pictures.

Video-meeting between the Power Users in Copenhagen and Aalborg – 7th of June 2005:

As the teams of Power Users (4 from Copenhagen and 4 from Aalborg) were from two different cities and had never met before, we arranged a video-conference, in order for them to meet each other. Therefore, we asked them to present themselves and ask questions to each other. We introduced them to the LearningTimes environment as to stimulate some online discussions of their topic or for general questions. Furthermore, we asked them to introduce themselves in LearningTimes, to discuss their topic and put questions, links, comments and whatever in there. We also presented them with the idea of creating a homepage about the trip, blogs and a t-shirt for the team. One important task was also for them to discuss the challenge they would like to work with from the list of challenges we had compiled from the UN-millennium Goals. There were different opinions on whether they should choose Poverty or Environment as their main challenge, which they did not manage to resolve during that meeting, so they were encouraged to discuss the matter further online. The entire video meeting was recorded through the video-conferencing software (DVD1 – Title 1).

Second meeting with the Aalborg Power Users and their parents – 12th of June 2005:

This second informal meeting took place in Lone's house and included the parents of the Power Users, as we had to give them a lot of information about the whole project, the travel plans and also they needed to sign a lot of different contracts, consent forms and so on. Apart from that, the Aalborg Power Users met again and they spent some time creating a design for a t-shirt (which they also accomplished, but we never got to actually produce the t-shirts, as we got the message that all power users would have to wear the same yellow t-shirts). I was not able to participate in this meeting, as I was travelling Thailand and Malaysia (as part of a research project). During the event we only took some pictures, as this was just an informal meeting primarily for the parents to get to know more about the Costa Rica Event.

Online discussion period – 7th of June to end of July:

During their online video-meeting we introduced them to the online environment called LearningTimes and then continuously encouraged them to debate, ask questions, upload files, references, pictures and whatever else the could come up with concerning themselves or the topic. These discussions were all collected, printed and digitally stored, but I shall not go further into these postings; even though some interactions and correspondence regarding the topic or processes of socialisation occurred, it was very limited and eventually much richer and interesting data spawned from the video data. Therefore, I have not added the postings to the appendices and I will not go into analysis of the online postings.

Online chat-meeting – 30th of June 2005:

On this day we set up a small meeting within the LearningTimes Online Meeting Room (where one can collaborate though using video, audio, shared whiteboard and the usual videoconferencing tools). Only two of the power users were able to join the meeting and we had to rely solely on the chat (as one of them didn't have a microphone or camera). Once again we encouraged them to discuss which challenge to address and to put forth some arguments for their choice. We encouraged them to move on with choosing a design for their t-shirts and we agreed that they should create a blog (which they never did). The chat session was stored, as were some very brief minutes from the meeting. Actually, the whole meeting inside the meeting room was supposed to be stored (so one could review it, as it happened), but for some reason the meeting is no longer stored[7]. But since we

mainly relied on the chat it doesn't matter much. The chats will not be made subject of analysis; they were only two persons and of the important points of the meeting was to nail down the topic – poverty or environment – and since the two young people present both agreed on poverty there was not much real discussion and we just coordinated some practical things instead.

Work meeting in Aalborg - 27th of July 2005:

This day consisted of an initial online meeting between three of young people in Aalborg and then some of the young people from Copenhagen as well. Thereafter, the group from Aalborg worked for 3 hours on refining their problem formulation, finding resources and information about poverty and Costa Rica. (The topic had now been resolved, or rather chosen by us – the online discussions did not really develop very much and they didn't seem to care profoundly, whether the topic would be poverty or environment).

We asked them to create a problem formulation and come up with some suggestion of how they would address the problem. They sketched out some general ideas on a poster and asked some questions of what they will be doing over there, and what would be expected from them. It seemed they had difficulties getting started, so I asked them to search for some information about poverty and Costa Rica online. First they did this together and then individually by their 'own' computer. They searched information, joked with each other; discussed Danish politics and also the information they found. However, they did not think that they had really found very much when they came back to a second collaborative session. Here they talked about what they had found, and they created two different problem formulations on a poster, and outlined how they could work with the problem. The problem formulation represented two very different ways of working and addressing poverty in relation to Costa Rica; either through seeing Costa Rica as a success story and model for others, or seeing it as a country in which many problems still need to be resolved. In relation to these, they discussed things about Costa Rica abolishing the military and investing in education instead. They discussed the need for an independent economy and the possible problems of relying too much on trade agreements and large corporations. Also they touched upon ICT in relation to development. However, they did not really think they achieved that much during the session (and neither did I, at that point in time); but, as we shall see from the analysis, they did actually find out more than they thought.

I shall get back to the physical workshop which we recorded on video. The

online meeting, however, is no longer available; and since we relied on being able to replay the meeting later, we did not store the chat. Fortunately, the group work of the Aalborg Team was recorded on video and this meeting provides a rich set of data. I shall return in more depth to analyse this meeting in chapter 5.

The work meeting on the 27th of July was the last joint event we had before going to Costa Rica – the next time we saw them was in the airport where also the two teams met each other IRL (In Real Life) for the first time.

Data collection and working with the data

In the brief overview of activities before the Costa Rica event I have already outlined some of the data material that has been collected and how. Essentially, this way of collecting data has been prevalent throughout the process, so apart from video also a lot of pictures were taken and files were later transferred from their tablets onto my computer (a selection of these can be found in appendix D). As earlier mentioned our research team relied mainly on qualitative methods, where we envisioned an ethnographically inspired open-ended approach focusing on participatory observation, interviews, collecting documents and especially video data for subsequent analysis. The major bulk of the empirical data are the many hours of video-material.

Ethnographical work – quick and dirty ethnography

As mentioned earlier in relation to Interaction Analysis and other studies, the ethnographic work is often used as an entrance into selecting more specifically what will be the focus of subsequent analyses; or ethnographical work is used as way of engaging or immersing deeply into a 'culture', through longitudinal studies, whether this is at a workplace, at AA-meetings or among tribal people (Spradley, 1979, 1980). This results in thick descriptions and ethnographies that deliver insightful and interesting accounts how the members of the studied group understand themselves, the world and how they order and structure their lives in interesting ways. This is certainly not the kind of ethnographical work I would claim to have carried out. Rather, I would term it a quick and dirty approach which is ethnographically inspired. This type of "quick and dirty" has also been used within workplace studies, HCI studies and by technology designers (Blomberg et al., 1993). I did work with field notes, in-situ interviews, document collection and other ethnographically inspired ways of collecting data, but in relation to this it is worth mentioning that I had many different roles during the Costa Rica

Event and in all the work leading up to it. Essentially, there were three different roles and working groups: Researchers (who would present their work and study the work of power users), Facilitators (who would help the young people with their work and support them), Chaperones (who would be taking care of the young people when not engaged in work – some of the Power User Teams from other countries had brought their parents or a teacher). Before and during the event I was essentially acting and working as all of these; I would have to facilitate and carry on their work, study them and also take care of them. Luckily facilitation, care-taking and note taking during the event became distributed between me and the other members of the team. In this sense, the roles for the facilitators/researchers/chaperones were fleeting and flexible and all aspects of data collection, facilitation, discussions, supporting and engaging with the young people were very much a team effort. But still it meant that I had to partake in meetings, research presentations and other things during the event; and I was expected to be the middle man between the organisers and the other people in the team (a role I quickly asked to be distributed between us :-).

Nevertheless, the engagement with the young people, being there, taking notes, shooting pictures, following the process, discussing with the others and being updated by them when having been away has given me a good background knowledge which might be difficult to work without. This background knowledge, I believe, has been very important in interpreting and making sense of the videos (they built up shared jokes, internal references and talk about a lot of stuff, which is not necessarily documented in the recordings). This background knowledge also fills out blanks in between recordings where what happened can be reconstructed through field notes, pictures, documents and the memory I have of the event.

Interviews

As mentioned we also carried out 10 interviews in all based on the agreed upon interview guide (see interview guide in appendix B8). We did one individual interview with each of the young people plus we did a focus group with the Aalborg team and Copenhagen Team respectively after the event, as to have them reflect on the process. The individual interviews especially evolved around them and their own thoughts on the meaning of being a Power User and their use of technology. As this study and analysis have progressed, I have become increasingly focused on the young people's learning process and how they organise their work, which has backgrounded the individual interviews. I will return to the notion of power users and sum

up on their use of technology and the role of technology in their work and learning processes, but rather than drawing on the interviews, I have chosen to draw on other, broader studies in understanding the relations between youth and technology; also because the interviews fit well within the broader patterns identified in other studies.

For the retrospective accounts of their work, which were the objects of the two group interviews, I have used them mostly as background material as well. Both the individual and collective interviews were shared across the groups, and the formulations of many of the question for the collective interviews are about how they managed their work, what they did during the symposium and what information they used from different sources. Essentially, large parts of the interviews are reconstructions of what is (for me) readily available through the video data, but for some of the other teams relying less on video-documentation the interviews might be of greater values. I have used them and consulted them as part of the analytical work because their accounts of the activities also tell a story of what they found important and which resources they drew on in their work. In this sense the interviews have supported the analytical work of gaining an overview of the data, the threads and the processes and acted as orientation devices. But in relation to the more detailed aspects of the analysis (as pursued in the chapters 5-8), I find the video data richer sources of analysis and better representing the concrete work and development of their problem, the threads and the processes.

Collecting files, documents and written notes

As a final way of supporting and documenting the analysis, we collected most of the documents and files from the tablet PCs they used during the event. This is essentially a rich collection of data which I shall refer to throughout the analysis. For one thing having the files and documents are very important in understanding what is going on. As mentioned the camera could not possibly capture all the monitors at once, so in identifying what they were working on or referring to in their conversations, it has shown to be very important to have the files available. The files or the content on their computer will not be made a specific subject of analysis, but often I refer to a file or document,which can be found on the accompanying DVD (Appendix D). I managed to transfer, to the best of my knowledge, most of what they are working on during the event; although there is a single document they refer to or seem to be working on that I have not been able to recover (notes from one of the interviews). This might be because they have stored

them somewhere on the computer that I did not look (e.g. I did not check in the systems folders for documents). However, it might also be that they have worked with documents as only a temporary reification and then have deleted or overwritten their notes later.

Secondly, we managed to collect some of their handwritten notes, but certainly not all of them, as they were often used as intermediate or temporary 'storage devices' before typing or transforming them onto the computers or by summing up their work in one document. Hereafter they might have left the notes, thrown them out, forgot them and so on. Also we were not that focused on their notes and meticulously collecting and storing all of them during the process. The notes collected are mainly part of the background for the analysis, and I shall not go into a specific analysis of the notes, as they do not constitute unique material in order to understand the process (as many of the handwritten notes are eventually reified in other forms e.g. digitised, put on the whiteboard, read aloud on the video recordings and so on). However, some of their notes for the presentation can be found in appendix E5.

Collecting and working with the video-data

First off, a lot of the pre-programme events have been videotaped, as we found it useful to document as much as we possibly could. The material covering the pre-symposium activities was actually put on a different DVD/CD, and we meant to give it to the young people as a remembrance of the trip. Jonas who compiled the video data onto a DVD, made a special DVD and CD with recordings from their 'spare-time' activities. This was more of an artistic compilation and narrative of their trip. However, as I went through the analysis, I felt that there were some things missing and therefore I had a CD made with a compilation of all of the spare-time material – it was not as nicely cut and staged as the other one, but it contained a long, noisy discussion with a political science student from CINPE (and this small piece actually turned out to have quite an importance in relation for their the work process).

The video data amount to approximately 20 hours that was recorded during the entire work process (including their video-meeting on the 7th of June, the interviews they did and their presentation). I have not made all of this video-material part of the appendices, but in appendix F those who have the DVD-appendix available (the PhD committee) can find video-files of the video-sequences I have zoomed in on in the analysis (more material can be

made available upon request from the committee members).

All of the video-data was compiled to seven DVD's (plus a DVD featuring a more artistic movie-like compilation and a CD with pictures and a smaller version of the 'spare time' movie). The video recordings were initially stored on multiple DV-tapes, which were then transferred to the seven DVD's. The seven DVDs were then ripped to MPEG-files, as to be able to move them into the Transana program; a software for qualitative video data analysis (Woods & Fassnacht, 2006). A process I shall return to after discussing the quality of the data.

Quality of the video-data

As Jordan & Henderson (1995) argue, it is a good idea to reflect on whether people's activities and actions have been affected by the presence of a camera. Most often, as Jordan & Henderson also point out, this is not the case, but should be taken into account when using video to collect data. There are no (or very few) indications in the video material that they actually even notice the camera, and even when they do it does not seem to change their course of actions subsequently; sometimes they might put their whole face up in the camera, wave or interact with the person holding the camera, but then they return to their work. Secondly, such considerations might also be more important if one is trying to capture e.g. people's actual work practices (where they might act as ideal employees or the like); but the whole setup of the Costa Rica Event is a special event in itself. So if something has affected their activities, I would argue, it is more likely to be the fact that we have brought them to Costa Rica as 'chosen ones' to present in front of hundred grown-ups, than recording their work with a video camera.

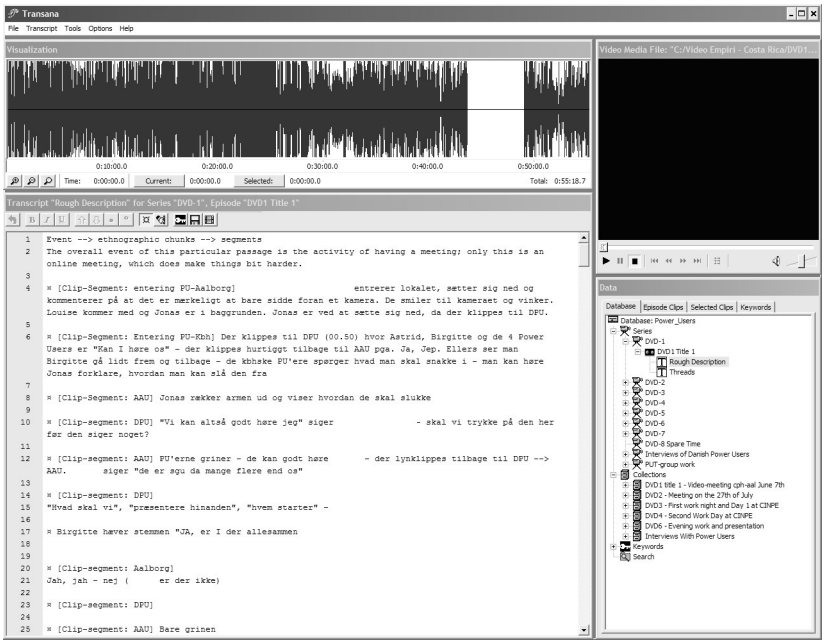
Another thing is the placement of the camera, the quality of the sound, the work area covered with the camera and so on. They spend most of their working time in a room at CINPE where we had a somewhat good overview of the whole room whenever the camera is stationary. But the camera is often taken on a tour around the table, which we did to get an idea of what they were doing on their individual tablets. When the camera is stationery and placed with the best overview of the room, it is next to impossible to see what exactly they are doing on their screens; but most of the time it is easy to discern their overall activity, as they are often collaborating in dyads and discussing their work. This in turn also means that the document, slide or whatever they are working on can be identified from the files we later collected from their laptops.

We could not follow what was happening on people's screens all the time and we do not have extensive data on how they e.g. work with subtitling their movies, but we tried to capture moments of computer work when the camera was taken on a tour in the room. This is not really a problem for the level of analysis I have chosen to work with, and neither in relation to say something about the entire process. It might constitute a problem, if we wanted to study in detail how they interact with a specific program (e.g. to see if they improved their skills over time), or make detailed analysis of how drawing a character on the computer is coordinated through speech with a group member in dyadic interaction. However, for grasping the overall activities and the discussions they engage in, the data are quite good. Equally, the sound quality is surprisingly good. Even though, people who farther from the camera might drown a bit if the person closest to the camera speaks up loud, it is possible to hear all the participants most of the time. The good quality also means that, even though people may be out of the camera view, it is possible to hear what they say (and for some reason it has been quite easy to distinguish between their voices. Only in a few cases I have had to put question marks in the transcripts). In spite of the good quality there are times when it is impossible to hear what a certain person is saying. In most cases this is due to overlapping speech, noises or if a participant mumbles or whispers.

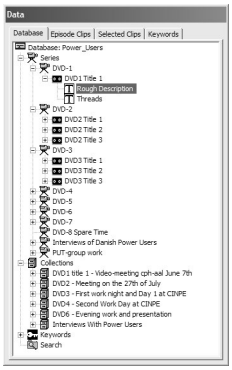
The documentation of their activities is quite extensive and the process is well documented by the data material I have available; both in terms of the quality, but also the quantity of the video material. It is a very thorough foundation for the level of analysis I wish to engage with.

Working with the data in Transana

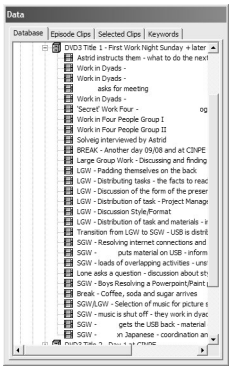
Transana was, at a certain time, a freely available, open source software application for qualitative video analysis (From version 2.20 it costs 50$). It was originally created by Chris Fassnacht, but it is now developed and maintained by David K. Woods at the Wisconsin Center for Education Research at the University of Wisconsin-Madison[8]. I will not go into detailed descriptions of the program, but discuss more broadly how I have used it, as it has been my way of structuring and working with the video data (which has been very much inspired by Jordan & Henderson (1995)). In that sense using or appropriating the program also represents an initial, rough level of analysis. Below you can see a screenshot of my Transana application.

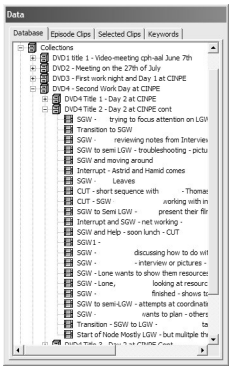


A video file (Mpeg or the like) is imported as an episode which is part of a series. I used the series to refer to the different DVD's, so as you can see below, the series are named after DVD number and each title on the DVD was then made an episode (the DV-tapes hold approximately an hour of recording, so on most of the DVD's there are three titles which correspond to three DV-tapes). The numberings of the DVD's follow the chronological order of the recordings[9], so DVD1 is the initial video meeting in June, whereas DVD6 holds the final presentation (DVD7 has all their interviews with the different experts and the clubhouse people). The DVD's were then ripped and transformed into Mpeg-files (mpeg is a video file format), as to be able to import the data into Transana. When ripping the DVD's, I maintained the initial logic of the DVD numbering, so each title from a DVD became a file that was named e.g. DVD4 – Title 1.



For each episode one can attach multiple transcripts, which I initially used to create a summary or description of each episode, simply by writing notes of what happened in more or less detail (before importing the ripped DVD's into Transana, I also made some content logs of the DVD's in a regular document to be able to roughly remember what was on each DVD). The notes or descriptions changed in level of detail depending on their activity, and it was written in Danglish (which means some in Danish, some in English and some mixed). One of the (many) nice features of Transana is the function of inserting time codes anywhere in the description which would then be synched with the video; so as the descriptions became gradually more elaborate the number of time codes also rose. The second part of the proces was to work with collections in Transana by adding clips. Clips are any part of your transcript or description that has time codes; that is, a beginning and end (but there can be several time codes, within a clip). Collections are usually used for thematic structuring of the video data (e.g. collecting all clips where they work with a whiteboard, or all clips where they are interviewing, drawing, discussing taxes or whatever). I did not use the collections as a way of creating a thematic structure; instead I used the clip-collection to segment and sequentially order all the data, as can be seen from the screenshots below. The clip collection I constructed followed the logic and order of the DVD's. This became my way of working with 'Structuring the events' (Jordan & Henderson, 1995, p. 19) as an analytical focus.





As part of the analytical foci within Interaction Analysis, and more specifically related to the structure of events, Jordan and Henderson (1995) mention 'beginnings and ends', 'segmentation' and a number of other analytical foci: rhythm and periodicity, participation structures, trouble and repair, spatial organisation, artefacts and document.

These concepts have been part of my perspective or body of knowledge in working with the data, without being a rigorous framework. In constructing the clip collections, and thereby structuring the events, I have not worked with a rigorous definition of what a segment/clip would be, and what would be the demarcation line of a clip (which does not mean it is completely random). First of all, this was a conscious strategy, as I wanted the structure to emerge from the empirical data, rather than applying a certain demarcation framework from the beginning; in this sense I followed more the approach of Bamberger & Schön as cited in Jordan & Henderson (1995) where they looked for "*observable phases or organic chunks within the continuing course of participants' work"* (Bamberger & Schön, 1991 cited in Jordan & Henderson, 1995, p. 19).

Secondly, as I have mentioned in the former sections, it is worth noting that the young people engage in many different activities over time, and all of these involve widely different beginnings and ends, segmentation, rhythm and participation structures. For example, the structure of events in the initial video-meeting was mainly constructed by the adults and the segments are most of the time clearly marked; partly because there was an agenda they needed to go through, but also because one of the researcher, acting as the moderator, often raised her voice and signalled that they should now move to the next part of the meeting. It also had a quite clear beginning and end (of transmission basically). But this was not a type of event that was typical for the work process. Later they have lectures, do interviews, work

in small groups, work in larger groups, create drawings, present, sit in a bus, rehearse their play and all of these 'events' encompass different ways of structuring the individual event. So, as I mentioned earlier, there are not many specific recurrent, repeated activities or practices, as there might be if one has studied more stable and institutionalised work practices.

Thirdly, I work with a double focus; for one thing, the interests revolve around 'how they organise their work and accomplish what they do', but equally important is 'the content' of their work: the topics, the discussions, when a problem formulation settles, when someone mentions an idea that has previously come up and so on. This also needed to be a part of the way I structured the data-collection. The double focus is also intimately related to the notion of being between Scylla and Charybdis. My claim would be that working in details with turn-taking, trouble and repair, how gaze is used, or how the participants co-construct notes on the whiteboard would eventually lessen the focus on the process or how their problem changes over time. Analysing in great detail how a slide on a computer screen is mediating their interaction in very complex ways would lessen the focus on why the slide is actually used, their discussions of whether to use it or not, where it comes from and how it finally ends up forming part of an argument for a solution to poverty (which I shall return to in Chapter 8).

However, working with a conscious awareness of the concepts identified by Jordan & Henderson (1995) and those of many others (C. Goodwin, 2000; Norris, 2004; Norris & Jones, 2005; Scollon & Scollon, 2004) has impacted the analysis and the crystallisation of the analytical concepts.

The notions of participation structures and spatial organisation have been very important concepts in the work of identifying processes and cycles in their work, which I will go into in the next chapter. These concepts turned my attention towards the way in which they fluently and organically move between different group constellations, change places, exchange tasks (e.g. one can be engaged in subtitling and then move over to another person to help looking at interview notes). It also made me note the contractions and dynamics between working as a large group and then continuing in smaller groups. Equally, the notion of rhythm made me notice the pitch and speed of their conversations, as a good indicator for intense idea generation that might be interesting to look at more closely (this has been helpful in finding exemplary pieces from lengthier discussions). Likewise, other studies of collaborative work from e.g. within CSCL have acted as a perspective, background and body of knowledge in approaching the data and in discern-

ing or identifying processes as analytical foci (L. Dirckinck-Holmfeld et al., 2002; Goldman, 1992; Guribye, 2005; Gutwin, Stark, & Greenberg, 1995).

This way of structuring and approaching the data has been an entry into identifying the cycles and processes which I shall return to in the next chapter.

A note on the transcripts

The level of transcription is quite crude, as can seen from the example below:

Angie: and things like that ehm I think that would work out very well (1.0) I don't know (3.0)

Diana: I know we also [talked about

Jasper: [(inaudible)

Diana: We talked about at some point in time to compare it to Denmark, but wouldn't that become a little toooo

As I have argued through the metaphor of navigating between Schylla and Charybdis, the aim of the analysis is not to dive deeply into the structural aspects of their interaction through rigorous microanalysis of gaze, posture, proxemics, turn taking and so on. My main focus lies on identifying the larger processes and cycles and looking at how different threads develop. I believe the level of transcription reflects and serve fully that intention, as will become visible from the analytical chapters:

- what they say – their spoken conversation
- pauses indicated in seconds: (2.0)
- overlapping speech: Is marked with [and indentation
- inaudible passages: (inaudible)
- *Some* actions are also noted or commented on e.g. (laughing), (gesturing), (being ironic)

The transcripts have been translated from Danish and the original versions can be found in Appendix G.

Overlapping speech and pauses have mainly been incorporated to indicate the pitch and speed of their conversations, as it sometimes accelerate and at other times decreases. In some of the chapters I have broken lengthier conversations or discussions into smaller pieces, although they sometimes cover the same aspects or topics. There are also excerpts where lengthier pauses indicate a change in their orientation e.g. a change from discussing the problem formulation to talking about the presentation. I have not meticulously noted actions, gestures or laughs, but at times where all are laughing, gestures are made part of the analysis or it is important to point out that what they say is ironic I have added these in the transcripts.

I have also inserted pictures from the video sequences along with the transcripts. This is both to give the reader a sense of the setting and the activities, but also because the texts or transcripts in themselves have not been the main source for the analysis; rather the analytical observations have come from watching the video material over and over again, gradually refining and expanding the content logs and descriptions, as to understand the activities they engage in. The vignettes that I use in the different chapters to illustrate their overall activities during a selected period of time are written on basis of these gradually refined logs.

Commenting on the selection of the material

In the former section, I described the process of sorting the data and deselecting some material. This might sound like an easy and painless process from the descriptions above, but this does not reflect the actual work that went into the selection or de-selection. For instance, I made an overview of the entire pre-symposium process in an excel-sheet where I put in all the different events on a timeline, linked to pictures, notes and other resources, while coupling this with the different postings from the forums, as to see if there were some patterns or rhythmic organisation of their online work that could be connected to the other events.

Coming to an overview and understanding of the entire data material take many analytical steps that might never go into the actual analysis or in reporting the findings. In relation to this study, understanding the material has especially spawned from looking through the video-data multiple times, while holding them up against the general ethnographical background knowledge from the participant observation undertaken during the event; as I have tried to illustrate to some degree in the descriptions of how I have worked with the video-data. But it also meant looking through the online interactions that occurred, pictures, notes from meetings, emails, sound re-

cordings, the subsequent interviews where they reflect on the process, looking through their presentations and files collected from their laptop, the interviews they made, the official programmes from the event and so on. These cycles of analytical work are much like a vulture circling around its prey in still smaller circles before actually settling to begin the feast (well, maybe more like a vulture flapping to and fro over its ever-moving prey).

Therefore, selection of the data to be further analysed is not a random choice, but something which has gradually emerged over time through the analytical work, which will become more evident in the next chapter. Though, this process might seem awfully short and quickly dismissing a lot of different data; the selection and de-selection is based on the full understanding of the situation. The decision represents a first rough cycle of analysis which is however based on a full understanding of the entire process. It is only through having an overview of the entirety that one can determine what should be rendered important or unimportant for further analysis.

In analysing processes of patchworking one of the important parameters in determining this is to what degree we can start to see more stable threads appear; or where they are in their infancy or germ-stadium. The threads, processes and which sequences to focus on have spawned from looking through the video-data again and again and by following the different threads that start to emerge. This is a continuous analytical work process, where I have followed how ideas develop through tracing forward in the material to see how they unfold and change, but also through tracing back in the material. Where did a certain slide or a picture that ended up in the final presentation come from, why did they use it? What didn't they use? As I shall return to the final presentation can be used as a point of comparison to establish initially some threads that ended up in the product. However, as I shall later argue, it is not satisfactory to just trace back how different idea or patches of information ended up in the final argument. This is essentially because we should equally be concerned with how the participants actually manage, maintain and construct the process and the threads.

The threads, the order, the selected sequences have thus emerged as important through the continuous steps of gradually refined analysis and by going through the material over and over again. From these analytical steps cycles, threads and processes start to emerge and become increasingly visible. In the next chapter, I will illustrate this through briefly discussing their presentation, as this also makes it visible why I have focused on this particular pe-

riod of time. But equally in the different chapters where I go more detailed into the specific sequences that have been chosen for further analysis, I have aimed at grounding the analytical observations in the actual empirical data by analysing shorter, transcribed pieces of interaction.

This concludes the first rough step of the analysis; namely the selection and de-selection of the material to be included as part of the first wider analysis. In the next chapter I shall enter the phase of gaining an overview of the analytical material that will furnish the more detailed analysis.

Chapter 4: Sharpening the analytical focus

After the initial sorting and selection of the material we can start to create an overview of the material selected for analysis, which is what I shall do in this chapter. The first move will be to create an overview of the process that has been rendered most important for analysis. This will be done through a series of vignettes or summaries of the entire process, as to give the reader an overview of it. This enables subsequently the next step of the analysis which is to identify processes and cycles that can be elicited from the understanding of the event. In this case, this initially evolves around a discussion of their presentation, but will then become a discussion and analysis of the entire process chosen for analysis from which the cycles and processes will be further elaborated and documented.

Therefore, in this chapter there are four main activities to be undertaken:

- Gaining an overview on the entirety of the chosen period on basis of the selected analytical material
- Identifying cycles, processes and threads
- Selection of 'important moments' to analyse in depth
- Analysis of the important moments

The overview of the entire process has spawned from the repeating cycles of looking through the video-data and the entirety of the material, but is reported here in the form of some vignettes and summaries. This represents several previous steps of analysis, but is essentially also a step into the analysis in itself, or way of structuring and representing the event in the most comprehensive way, without going too much into detail. This should also give the reader an overview of what happened during the period of time chosen for analysis. The overview is an initial window into identifying threads, processes and cycles and a way of transforming these into analytical categories and concepts. This finally crystallises into the selection of important events which have been selected for more detailed analysis.

Pre-programme events

As part of constructing an overview of the entire process, it is important to just briefly sketch what happened before the actual symposium started, as we did spend some days travelling together with the young people, and they got some time to get to know each other. The entire trip and the days before

the actual work started were important for all of us to get to know each other better, but also for them to feel comfortable and relaxed in our company. Much of their socialising and attuning to each other was very important in relation to their work process. This is, however, very difficult to demonstrate or establish from the data that I have. But in Chapter 5 I analyse how three of them attune to each other and how they negotiate and construct what I shall term a moral blueprint. This happens largely through small social exchanges of an informal nature, and I believe they did exactly the same during their days together ahead of the symposium. There are, however, far less video-data from the pre-programme events, and they are temporally more dispersed. Furthermore, they often focus on specific events (arriving somewhere, beautiful nature, a quick pan at the morning table or the boys bathing in the rain); not three hours of informal conversation in the bus on the way to Cahuita.

A second reason why these pre-programme events were important is that we as researchers, facilitators and chaperones agreed that it was central to create an atmosphere in which we would not be considered their 'teachers', 'parents' or other types of obnoxious authorities to be silently resisted, circumvented and avoided. It was important to build a certain level of trust and an atmosphere where they would know that we would do everything to help and support them; without controlling, monitoring and limiting them by treating them as kids ("keep your bedtime", "don't chew gum", "be careful by the pool" "don't jump into the water, use the ladder" and so on). We 'demanded' or expected quite a lot from them in terms of their ability to cope with the tasks and challenges. Following from this we would need to treat them as we expected them to be – like responsible, mature and sensible persons (and they certainly were).

Vignette: Travel descriptions and pre-programme events

On the 3rd of August we left Aalborg and met up in Copenhagen Airport with the Copenhagen team. We met their parents who wished us all good luck, and then we were left with eight young people. Now we were four young chaperones/facilitators/researchers (age 25-29) who were suddenly left with these high-spirited, happy youngsters eager to go to Costa Rica. It was about that time we realised we had the responsibility for them, which was actually quite scary for all of us. As to add to the fun, our plane to New York was delayed for several hours and we would have very slim chances of actually catching the connecting plane to San Jose; so probably we would

have to spend a night on a hotel in New York. To make the best of time we got them something to eat and paired them up – boy and girl from Copenhagen and Aalborg respectively were teamed and we asked them to interview each other, as for them to get to know each other a little better. This resulted in some very different and funny interviews.

They quickly connected with each other and started to play with their computers, play cards, listen to music and just chat. We were pretty amazed at how quickly they actually connected with each and basically dissolved the boundaries between the two teams through engaging in shared activities and conversations, as it can be seen from the pictures.

When we arrived in New York, we were sent to a Hilton hotel to stay overnight, which they were actually very excited about; free food and a very nice hotel was obviously to their liking. We had a late dinner and went to bed, as to be ready for the next day's flight to Costa Rica. Unfortunately, we had to split into two groups, as we could not all go on the same plane. Jonas and Jasper volunteered to catch a later flight, which gave them a few hours in New York, whereas we enjoyed ourselves during transit in Houston Airport

(I think Jasper and Jonas greatly benefited from this agreement :-)

Arriving in Costa Rica and leaving for Cahuita

We arrived in the evening on the 4th of August in San Jose, Costa Rica, and marched right into lovely weather and a high-spirited crowd playing music and cheering. Apparently, a young man had asked his girlfriend to marry him on her arrival back to San Jose and to add to the romantic mood he had brought a mariachi band. We were greeted by Rosmary Hernandez from CINPE who took us to our hotel in San Jose, where we would stay overnight; or rather we would have to leave very early in the morning for Cahuita[10]. So, we had a light dinner and went to bed, as to be ready for the next day's early departure.

So, on the morning of the 5th we took off and settled for a beautiful (but long) drive to Cahuita, where we arrived early afternoon. Cahuita is a beautiful, small city which is known for its relaxed, laid back environment and Caribbean mood, as well as a National Park[11]. Cahuita is mainly inhabited by descendants of Afro-Caribbean fishermen, which means that many of the inhabitants are English-speaking blacks whose culture and language is quite different from other areas of the country (Rastafari people as the young people called them, because of the reggae music and dreadlocks). When we arrived the tropic weather set in and we enjoyed a heavy rainfall which made the boys dance around in the streets in their beachwear. The hotel was very nice and we enjoyed the afternoon with fruit juice, ice-cream and some Costa Rican cuisine.

In the evening we went to a local restaurant and had a wonderful dinner and the boys accompanied by Jonas and me went out to listen to some reggae music, while the girls wanted to stayed at the hotel and enjoy themselves. Well, actually, the boys just announced they would take a stroll in

the city and have a look around, but we thought that we better keep them companied, which was not originally part of their plans.

Arriving back at the hotel later in the evening we chatted a bit with the others before going to bed. On the next morning (the 6th of August) we visited the beautiful National Park which was a tropical forest. We walked in the park for a while before settling on the beach to have a swim. Even though it started to rain heavily we enjoyed the beach and the water, which was a nice break from all the travel activities.

Originally, we had planned to do some work with them during the stay in Cahuita, where they could interview some of the local people, as to get to know more about Costa Rica and poverty. However, since we arrived a day later in Cahuita than we had expected, we felt that time would be better spent relaxing and giving the young people some space to socialise, relax and have fun (we knew the next days would be fully occupied and very busy). From the beach we went back to the hotel, checked out and set our course for San Jose and the Marriot Hotel where we arrived late afternoon/evening. Now vacation was almost over. They enjoyed the evening in the pool, had dinner and explored the hotel which was probably the most luxurious hotel they had ever stayed at (at least for most of them/us). But the next day vacation was over and they were in for hard work (but also a lot of fun).

Overview of the work they did during the Symposium

In this section I am going to give a brief overview of the entire work process during the Costa Rica symposium.

Quick summary of the first work day (evening) in Costa Rica – 7th of August 2005

This was not really a workday from the outset, but it became a workday as the young people started their group work in the evening. The whole day was scheduled by the organisers, as there was an initial welcome to the power users and some brief safety information (the overall program for all of the work days can be found in appendix C1 & C2). After this follows a long day where they visit Paos Volcanoes and the InBio Parque where they have lunch and some more briefing on the days to come:




On their way home in the bus they talk for quite some time with one of the guides, who is a political science student from CINPE, and he gives his view on Costa Rican politics. He tells them, amongst other things, about distrust between people and the government due to some corruption scandals. After a long day they return home late in the afternoon, ready for dinner. Right after this they start to work. They work on coming up with questions for their interviews the next day. They are working in small groups of two, but later some of them start to work in a larger group as to gain some inspiration and review each other's questions. They are not quite sure, whom

they will be interviewing, and they have only been given some very quick and broad descriptions of the interviewees by us. We do not know much either (basically, the interviews were settled pretty late[12]. While we were travelling to Costa Rica or were in Cahuita, Lone managed to identify some persons the young people could interview). In their small groups they come up with a lot of different questions revolving around taxes, education, jobs and a lot of other things. Their problem formulation is not discussed during this evening where the main activity is the creation of the different questions, but also they start to discuss ideas for their final presentation. They do not have time to coordinate their questions across all the groups that evening, as they are already working quite late (according to the rules they are supposed to be in bed by 10 PM, though it probably gets a bit later); but they will have some time the next day. The questions they come up with revolve around taxes, jobs and education, and they discuss among other things the problem of brain drain. They think taxes are important in relation to ensuring education for all and wonder if people would be willing to pay more taxes. But also they discuss that people do not seem to trust the politicians due to the corruption scandals and they think that might be connected to a lack of willingness to pay taxes.

Quick summary of the second work day in Costa Rica – 8^{h} of August 2005

In the program there were quite a few scheduled events with some VIP-talks, presentations and the Power Users' teams were also introduced. They get to leave for their field sites about 10 AM and are then transported to CINPE where we have been provided with a room we can use for the next two days. They immediately try to connect to the wireless, but we cannot do that yet. Instead one of the chaperones (Louise) starts to facilitate their work by discussing and listing their questions on the whiteboard. I suggest that they head the work themselves which they take control of for almost the rest of the work process. They start to discuss their presentation and try to imagine how different suggestions will work in practice, and how much work it they will require. They finally end up with two different suggestions for the final presentation.

We several times try to connect to the wireless network, but without luck, and the technical support person (Hamid) cannot figure out why we cannot access. Instead they start to discuss their problem formulation, which takes quite a while, in between they talk about different solutions and causes for poverty. Here the abolishment of the military returns and they talk about

tourism as an important economical area. Also they discuss the trust between people and government, and how large corporations like Intel might have both beneficial and detrimental effects (and how the same is true for trade agreements). They wonder how taxes could be distributed more evenly between different groups and how the government could invest even more in education; but they also discuss that their perspective rests on a very Scandinavian model which they do not want to impose on others as a universal truth.

Through these discussions they arrive at a new problem formulation that will guide their work, instead of the problem formulations they worked with during their first work meeting in Aalborg. The problem formulation maintains the tension between the two perspectives of the original problem formulations, but does not articulate these tensions in the same manner. Now they need to work more with the questions for the interviews; especially because they realise that they need to come up with some new questions for one of the places they are going – the Intel Clubhouse. They form smaller groups and while most of them are working with creating, refining and translating the questions for the different interviews, two of them have started to work on an animation about taxes. The animation is an idea they have come up with through their discussion that day, and which they agree on that they want to do. Apart from that they are not entirely sure what they will do for the presentation, though a lot of different ideas have come up.

All the teams are to meet at the Intel Clubhouses to work (Intel Clubhouses are clubs providing internet access and computer training to young people). We have arranged that they can interview the manager of the clubhouse and some of the users, while they are there. But they need to come up with some new questions, as the manager and the users might not be experts on taxes, poverty or development in Costa Rica (as some of the other interviewees are). At approximately 2.30 PM they split into two groups and two of them will interview Richardo Monge and the rest will go to the Intel Clubhouse to interview one of the managers, and hopefully one of the users. We are however not sure there are any users, as they have closed the Club House, so that the Power Users can use the premises. When we get to the Club House they manage to do two interviews; one with a manager and one with a young user of the Club House. Unfortunately there are not as many computers as we had imagined, but some of them can work with their own computers during the two and a half hours they are there. As an exciting event, the Latin American CNN is there and they interview one of the Danish Power Users.

They are picked up by busses and arrive back at the hotel at approximately 5.30 PM. In the evening there is no time for work, as there is a cultural exchange dinner and dance, but as they get to their room at least two of them work on the animation until 2 AM.

Quick summary of the third work day in Costa Rica – 9th of August 2005

The next day they head straight to CINPE after breakfast and start their work. Lone and I are attending a research session with paper presentations, so we are not there until later. This morning a 30 minute presentation/lecture has been arranged for them; Two CINPE researchers Maurico Dierckxsens and Keynor Ruiz give them a lecture in English with the title 'Balance of Millennium Goals in Central American Countries'. The presentation is about poverty and development in Central America. After the lecture they ask some questions and then ask for the slides which they put on a USB-pen. Two of them leave, as they have to interview another expert Manuel Bersone, while others start to work with the interviews they did the day before. They want to use some of the clips from the interviews as part of the presentation, so some of them are working on subtitling and finding clips that will be good for the presentation; others review the notes they did during the interviews and yet others are working with the animation. Two of them are looking through the slideshow they just got from the researchers to see if there are slides which could be interesting to use as part of their presentation. One of them wants to talk about a plan for the presentation, but the others are too occupied with their work. She manages to put some ideas on a whiteboard, but they are mainly occupied with the work they are doing in their smaller groups.

They work until they have to head for lunch and then continue the work afterwards. Some of them start to look for pictures to use in the presentation, even though they have not yet come up with a final plan for the presentation yet. After a while some of them call for attention and suggest they plan the presentation and distribute the work between them. This becomes a longer session where they brainstorm on the presentation using the whiteboard, but also discuss how to construct and structure their argumentation. They discuss all the different causes and solutions of poverty they have been working with, what they have learned from their interview and which of the slides from the lecture they might be able to use as part of their arguments. They discuss the abolishment of the military, investments in education, Intel Clubhouses, how to address distrust and corruption, trade agreements and

relations between poverty and education.

During this long brainstorming session one of them is searching the web for a lot of different facts to illustrate the gravity of the problem. They then discuss which of all these different facts they should use, and how they should present them to the audience. They finally end up with a word document with a work plan sketching out the presentation, and who will do what parts of the presentation. This they distribute onto all of the computers with the USB-pen. Then they start to work in small groups again on their different tasks, but often they need to work with different people, as they have small bits of the presentation that they do in different constellations of people. For the rest of the day and evening they work very hard on preparing slides for the two different slideshows, subtitling interviews, finishing the animation, finding clips to show, creating the second slideshow and finding music for their presentation; also each of them need to figure out what they will say in relation to their specific subpart of the presentation which they have to do in English. Late in the evening they are ready for their first test-run and rehearsal of the presentation. Initially, they perform it in their working room at the hotel, but they get to rehearse it a second time on the stage where they are going to perform it the next day. After these rehearsals they go to their rooms as to be ready for their big presentation the next day. Their work is almost complete, apart from them presenting it of course. There is no more time to add slides, change music or video-clips.

For the presentation I would like to go a bit more into detail than done in the summaries above. Looking in more detail at the presentation will also serve to discuss more broadly the way of approaching analytically the notion of patchworking.

Fourth work day in Costa Rica – 10th of August 2005 – presenting a remix and patchwork of their thoughts

The final product of the entire process is of special interest. Not because I believe that what they have learned throughout this process is equal to what can be found in their presentation (actually I think they learned much more and their argumentation and discussions were more advanced than is reflected in the presentation). Neither do I mean to focus on the product as such, but the final product represents an interesting entry point into the process. An initial description and analysis of just a small part of their presentation is an initial step into seeing how many different ideas, pieces of content and various resources were tied together and spun into a narrative presenting their work. It is interesting as a ‘point of comparison’, from

which we can see how some of the threads (here especially some of their ideas, patches and pieces of information finally ends up). It is also an opportunity to sharpen the lens a bit on how analysis of processes of patchworking can be understood and carried out.

The more detailed description also serves another purpose. I will eventually dive into much more detailed analysis of their activities and processes, and therefore it is important for the reader to be somewhat familiar with the final presentation. This is important to be able to connect some of the ideas that come up during their process with the final presentation, as to get a sense of how they changed over time.

The presentation was a complex accomplishment, which I shall initially try to illustrate by going through just a very little part of it, lasting approximately one minute. This was what we could call the prelude of the presentation (for the readers who have the DVD the presentation is appendix F11, but there is equally an elaborate description of the entire presentation in appendix A).

Their presentation – threads and events start to appear

They are all seated in their chairs which form a half-circle. Eric Clapton's 'Tears in Heaven' starts to play while on one projector screen (screen two) a slideshow with pictures of 'poor people' loops. On the other projector screen their task or problem formulation is stated – "how can we improve a poor society". The slideshow with poor people runs in the background, and it does so throughout the whole presentation. They sit quietly without saying anything until the music fades out.

The emotional appeal of this prelude I cannot help on commenting, as I still get goose bumps every time I see the sequence. These feelings are of course very difficult to convey through the pictures and texts above; and it may also be that the strong emotional effect is due to me being there and having the bodily remembrance of the moment. Within theories of rhetoric this sequence of the presentation could be defined as a pathos appeal which is characterised by appealing entirely to the emotions (as contrasted to logic or reason) of the spectator. The ways of achieving the pathos appeal are through the interplay of the sad and grave music, pictures and them just being seated without uttering a word to stress the seriousness of the message. Without going deeply into a genre analysis of this sequence, it carries a strong resemblance to e.g. infomercials from humanitarian organisations which often rely on lyrical montages and strong pathos appeals (Højbjerg,

1996). In this sense the sequence could be characterised as intertextual or multimodal because other texts and media products are talking through it. It might represent a common body of knowledge within youth culture, where young people are highly aware of and able to mimic different visual and narrative genres from television, movies or other media, as suggested by (Christensen & Tufte, 2005).

Even this very short piece is a complex 'remix' of many different mediational means and communicative modes (text, pictures, music, bodily positions, animation) and from a media perspective or from the perspective of multimodal discourse analysis we could look at the individual segments of the presentation and go into detail with the communicative modes and means that are part of the presentation (how are the transitions rendered visible through their bodily movements, how the timing is made between statements on a slide and their oral delivery of the statements) (Kress & Van Leeuwen, 2001, 2006; Norris, 2004). Another way of working with this analytically could be to engage in interpretations of how the inspiration for this sequence might come from their media consumption, their own homemade productions over time or the thousands of infomercials they have seen through their lives from Red Cross, Amnesty International, Greenpeace and so forth. We could analyse the different genres, narrative styles, rhetorical appeals and lay bare the possible intertextual references, genres and registers they draw on in accomplishing this patchwork or remix.

However, the analytical interest in understanding processes of patchworking revolves around: "how did these ideas come about, and how was it done?" Here I am not only referring to this particular example, but the presentation as a whole. The analytical path and interest revolve around questions of why and how different resources, ideas, arguments and different series of events eventually led to this particular presentation and their way of performing it. This entrance or path might not be able to trace the genesis of this sequence back to e.g. broader cultural bodies of knowledge within youth culture, discourses, genres and so on; but it might be able to say a lot about how these particular young people constructed and reflected on their presentation.

In better explaining this path I will return to a discussion which revolves around how to grasp and understand the threads. In a sense we can work in two different directions from the presentation – we can trace the genesis of different ideas and patches and pieces (such as slides, pictures, statements and so forth) by going back through the material; but we can equally work our way up to the presentation by tracing forward and following the devel-

opment of the threads. In either case the presentation itself is an interesting point of comparison. The discussion of tracing forward or tracing backwards also highlights the importance of having the understanding of the process as an entirety.

Tracing backwards or tracing forwards?

The small piece of the presentation evokes many different moments in time and brings back to life many different resources, artefacts and discussions. This moment can function as a "worm hole" that allow us to travel back through time and investigate how the ideas came into being, and how it crystallised into its final form. This resembles to some degree an archaeological excavation where one has only traces of events: a piece of pottery, a document, a law or a piece of art. In the case of archaeology we are left only with the reifications, whereas the process of how they came about is forever invisible to us. However, from the collected data material there is a rich repository of videos, notes and other material that allows us to consult, reopen, investigate and re-construct to different degrees the processes of how an idea came about. From a small piece we can jump back several other places and moments of shorter and longer duration.

We can jump back to the night before where the young people coordinated and choreographed their presentation which only existed as oral presentations, written on pieces of paper (see appendix E5) and the PowerPoint files (appendix E1 & E4). The narrative structure and sequential ordering existed, but the spatial use of the stage and the placement of the projector screens could not be finally stabilised until acted out on the stage.

We can move back to the discussions revolving around what music to use for the presentation, from what happened to be on their computers, or what they could download through Itunes. We can dig out moments where they discuss the use of the music or other types of media resources. We can find discussions of what mood they wanted to convey and their reflections on the use of different presentational means. We can move back to their search for pictures of poor people, which opened discussions on what 'poor people' look like, and we can revive the work of Neil in collecting, resizing, colouring the pictures and timing the slideshow of the 'poor people' in PowerPoint.

We can also move back to many different discussions that revolved around the problem formulation; what did they want to investigate? How should they do it? What would they need to know? What were the most important

entry points into working with their broader problem?

Wherever we grab a leaf and start to pull, a complex net of roots, threads or series of events start to emerge; and several different moments can suddenly be dragged into the open. Some of the roots or threads are longer and buried deeper in time, some have grown thicker and evolved over time; some have gradually become thinner in their way towards the surface; some never surfaced, but were detached and stayed buried under ground. Thus, I could a tale unfold of almost every little piece, picture, the choreography, why a president was mentioned, arguments presented and so on by tracing back in time the events that led to the incorporation of the particular piece.

This in turn leads us to a methodological and analytical problem: Where should we start, what would be the most important pieces for analysis and how can we identify these? The problem is that all the ideas, resources and discourses have their own little fascinating story of how they came about. There are several moments which can be dragged out into the open and be inspected, as I have illustrated briefly in the former paragraphs. Although, following all these pieces, arguments and artefacts back in time could lead to many interesting stories, there would also be a grave danger of ending up with multiple stories without a connecting thread, a beginning, or an end, as the example below illustrates:

> "(…) One trick is to tell them stories that don't go anywhere. Like the time I took the ferry to Shelbyville. I needed a new heel for my shoe so I decided to go to Morganville, which is what they called Shelbyville in those days. So I tied an onion to my belt, which was the style at the time. Now to take the ferry cost a nickel, and in those days, nickels had pictures of bumblebees on them. Give me five bees for a quarter you'd say. Now where were we, oh yeah. The important thing was that I had an onion on my belt, which was the style at the time. They didn't have white onions because of the war. The only thing you could get was those big yellow ones." (Simpson, A. in (Kogen & Wolodarsky, 1993))

Tracing back through time and reconstructing how different parts of their final patchwork came about can demonstrate how different threads or roots developed over time. This is a very valuable way of working with the data ‘under the hood’, as way of understanding threads and identifying them by continuously moving back and forth. However, a focus on an individual idea, a picture, specific patches and pieces, I would argue, become too scattered and fragmented and would overlook the way in which the presentation is actually a whole. Even though their presentation is a remix of different materials, ideas, resources, and interpretations, it is also a complete narrative and argument. Just like a remix within music is in itself a ‘whole’, though it

has been composed of many different pieces, and just like a collage or a patchwork is in itself a 'whole', though it has been patched together by many pieces; their presentation is also an integral whole, as I shall try to make more explicit in the following. If we analytically stress too much the archaeological tracing of the individual parts that made up the whole, we might in turn loose the focus on how the entirety and relation between the threads have come about.

Especially in the case of the Costa Rica Event this is important, since the young people, due to the overall approach chosen (PBL/POPP) and their own eagerness, controlled and managed the learning and work processes almost by themselves. In relation to talking about learning, change and development it is important to understand how different information, interpretations or arguments made it into the product; as I earlier mentioned, a more critical view might show that the construction of the product was a mindless exercise of copy-paste behaviour and spurious reasoning.

As for the Costa Rica Event, I have already stated that this is not the case; but it should be part of the analysis to account for and critically investigate the process that led to the final product. This might be to uncover if it was actually a random exercise of piecing together different stuff, but also the final product might not fully reflect the work actually done. Some threads and ideas might have been cut for one or the other reason, which should also be made part of the analysis. Likewise, not all of the argumentation and reflections that may have been part of the process are necessarily visible from the final product. Examining critically the process of patchworking is an important analytical enterprise to uncover the possible depth or superficiality of the process.

This is why I argue that we need an understanding of the wholeness or entirety of the work process. It is this overview that allows us to see, not only the different threads, but also what processes and cycles were instrumental in relating and connecting the threads into a 'whole argument'. The presentation did reflect a whole argument or narrative and was not a random piecing together of disparate 'patches and pieces', which I will illustrate in the next session.

The structure of their final presentation

Let me start this by giving a brief, narrative summary of the structure and overall content of their presentation, which I will present as different segments (please also refer to the more thorough description with pictures and

slides that can be found in appendix A).

Introduction

The presentation starts. They sit on their chairs, quiet, while the music plays and a picture slideshow loops in the background. Samuel stands up and starts by introducing the team and talks about what they have been working with and why they have chosen that topic. They all stand up and form a line. An animated slide with different facts that emerge and disappear is shown, while each of them step forward and state a fact simultaneous with the emerging fact.

The Success story of Costa Rica

Angie and Sophia present Costa Rica' success and explain they have chosen to work with Costa Rica's as a good example of how to fight poverty. Sophia takes over and talks about one of the former presidents who started a civil war and became president. She explains how he made a lot of social and political reforms (e.g. creating a constitution and abolishing the army). They show a video-clip with Ricardo Monge who explains why many Costa Ricans do not like the idea of having an army. They continue their oral presentation and Angie explains that after they shut down the army, they used the money to fight poverty and started to invest in education. She explains the importance of education for all and that it should be free for every kid to go to school. They then show a second video-clip with Ricardo Monge who explains that Costa Rica has a long history of sending all kids to primary school without having to pay. They continue and explain that after the abolishment of the army and the investments in education fewer people live under the poverty line and it is getting better and better. This they illustrate through showing a graph that shows how well Costa Rica is doing in comparison with other Central American countries.

The Latin American Problem

Jasper and Neil get up to present "the Latin American problem". Jasper starts by explaining a graph about primary and secondary education, which shows that Costa Rica has a high level of education compared to the other countries; but still there are a third of the population that do not finish a secondary education. Neil continues and explains a graph that shows the connection between longer education and decrease of poverty and the importance of achieving a secondary education. They argue that it is important for many developing countries that more people get a secondary education

The future?

Diana and Jasper get up and Diana explains about Intel Clubhouses which

are clubs where young poor people get the opportunity to use ICT by getting involved in projects of their own interest. In that way they move their focus from crime and violence to constructive learning, which helps them to build a future. They explain they have talked to a clubhouse manager and a young user of the clubhouse and show the two video clips. The clubhouse coordinator explains that it is very important that the youth change the focus of their life. They learn to study and they change their perspective on life a bit, which makes the communities grow, poverty is reduced and more jobs are created.

In the second video clip the young user of the clubhouse talks about how she used to hang out with people that had a bad influence on her. But then she met the people from the clubhouse and they have helped her and taught her a lot of things.

Samuel and Jack get up and explain that they will show a little animation they made to show the importance of taxes. They show the animation that tells the story of poor Fernando and rich George who lives in 'the land of no taxes'. They both break their leg, but only George can pay for treatment and Fernando must go home again with a broken leg. They then explain the concept of taxes and argue that if they pay tax, both George and Fernando could be happy – so 'thumbs up for taxes' as the final slide says. Jack follows up and explains taxes are also necessary for education, environment and social security. He argues that if the government does not invest in education only the rich people will get an education, but when paying taxes poor people will also gain access to education.

Neil and Laura get up and Neil starts to explain that people in Costa Rica know that taxes are needed to improve their society. Costa Rican people are paying 13% of their paychecks each month, but that is not enough Neil states. Laura explain that they do not trust their political system enough to give them their money and they show a video-clip with Manuel Bersone who says that there are mixed feelings about raising the taxes – some people are for and others against. If the taxes are raised the citizens want to see results; they want investment in education, insurance, social security and better roads – but there is not enough trust between people and the government. Laura elaborates that there is no trust between civilians and the politicians due to a lot of corrupt actions within the government, so the civilians are not paying much attention to the politicians any more. This is something that has to change, Laura states, and argues that if there is no collaboration between government and civilians, a society will never work. To make people

understand the importance of paying taxes, they will have to learn about it at school and also people need to get more involved in, and get more information about politics.

Conclusion

They all stand up and form a line and on the main projector screen the concluding statements emerge one at a time. Each of them steps forward when their statement emerges:

- Taxes are very important, and the governments need to use the civilians' money properly.
- We have to stop making trade agreements that makes workers from poor countries unable to sell their products in their own homeland.
- It's important that the student learns about politics, so that they understand the importance of it.
- It's very important to have governments that the people can trust, so they will believe that their money is spent reasonable.
- The world needs more education initiatives, like the Intel clubhouses.
- The whole world has to co-operate on fighting poverty, every country has to makes its own effort.
- It's important that everyone has access to health care.
- The money used on war and weapons, should be used on education for everybody

After this they take each others hand and bow while the 'thank you slide' is shown.

The arguments of their final presentation

The presentation outlines an overall argumentation revolving especially around taxes and education, but also many other things are drawn in as causes of or solutions to poverty: Corruption, lack of secondary education, clubhouses as an opportunity for young people to gain a new perspective in life and education as a mean to provide civic engagement. Costa Rica is positioned as both a very good example of what can be done to reduce poverty, but also as a country where there is room for improvement and development. The different patches and pieces that are assembled 'statements and facts', 'video clips', 'stories of presidents' are little pieces that are used as exemplary or corroborative evidence for their overall argumentation of the

importance of taxes and education (and how the two concepts are intermixed and intimately related to each other). As to channel more money into education the idea of abolishing the army is presented; or rather they suggest that less money should be spent on wars and weapons and channelled into education instead. It is not just a matter of education, but also it is an argument revolving around social equality (access to education, health care etc. for all), which is especially explored in the tax animation. The message of taxes, however, becomes more complex in when they connect to the notion of 'trust' between the people and the politicians.

The concluding remark about trade agreements seems to be somewhat unexplored throughout the presentation, but it is actually, as we shall see, a very prominent thread in their work (and why it disappears, I shall return to later). As can be seen from the structure of the presentation, there are many different little patches and pieces that are dragged in to shed light on poverty and argue for the importance of taxes and education. The narrative is structured around a temporal metaphor in the sense that it starts by looking at what Costa Rica has done and what was the situation once; this is then used as an argument that others could follow the same track as Costa Rica, as they argue for what are the wider problems of poverty in Central America. However, they also lay out arguments for how Costa Rica (and others) could develop even further, through the focus on secondary education.

Apart from the fact that the presentation is composed of different ideas and arguments, it also encompasses many different elements, media and means: there is the self-made animation that illustrates taxes, video-clips from four different interviews, music, slides, graphs to illustrate points, oral presentations and the choreography. This means that they have within less than three work days managed to pull in information from four different interviews, slides from researchers and a lot of other resources. As I earlier stated, the question arising from this is how all these patches and pieces were assembled and why they were assembled in the way they were? Here arises also the critical questions; was this just randomly stitched together by whatever they just happened to find, or was it a reflexive, creative and challenging learning process? Therefore, as I have argued it is important to focus quite closely on how the narrative and the arguments actually came about; how did they construct this narrative and patchwork? From the short summaries we can see that ideas and problem formulations changed over time, so how did they end up with this particular line of reasoning that is reified in the presentation; and what was the role of technology during this process?

A first move into identifying threads, processes and cycles

The overview of the entirety or wholeness of the work process that has been constructed through the quick summaries of the work days and overview of the final presentation can now serve as a platform for introducing some of the processes, cycles and threads that will function as analytical categories and concepts in the subsequent analysis. This overarching understanding of the entire process further serves as a guiding principle in identifying the 'important moments' or 'hot-spots' to be analysed in more depth. The processes and cycles do not crystallise just from creating these summaries or vignettes; rather the analytical categories and the concepts have spawned from having the full overview or the understanding of the entirety work process.

Working with and understanding threads

Threads are the metaphor I employ in the analysis to point to some 'organising principles' or 'connecting threads' in their work. Prominent threads were for an example the problem formulation (their research question) or that of the presentation; but also the metaphor of threads refers to some prominent ideas that were prevalent throughout their work. For instance, their notion of education as an important factor in decreasing poverty was prevalent throughout the process. But it developed from a more general 'education is good' to 'education can be statistically shown to have a major impact on poverty; and furthermore it is a key condition for civic engagement and democratic participation in a society'.

Threads are thus connecting principles throughout their work around which 'patches and pieces' such as ideas, interpretations, arguments, information, digital files start to cluster and form 'patchworks'. In this sense, threads can become stronger and thicker throughout a process and form small patchworks; but they can suddenly become weak and thin, or they can start to fray and other smaller threads can emerge from the main thread. The notion of threads is highly metaphorical and does not constitute a detailed, hierarchical analytical framework clearly distinguishing between different levels of thread. Some threads are, however, more critical and serve as backbone threads. A thread forming around an idea of tourism as a potential for economic growth can wither and die without stark consequences; whereas leaving, redefining or cutting the overarching thread of poverty as the topical focus and problem formulation would have major impact on their work. I shall return to a discussion of the metaphors after the analysis to assemble

the threads, so to say.

Just as we can trace threads back in time and recreate a series of events that went into the production of different parts of the presentation, I argue that we can follow some threads and processes that are prevalent throughout the whole process and which function as the organising principles around which their work revolves. The threads are very dynamic, but at the same time they act as stabilisation devices that keep them on track in their work. However, these threads are not just there, but are continuously constructed, maintained, changed, foregrounded and backgrounded. Therefore, we need to understand how they accomplish this and how they control, manage and construct the entire process of patchworking. An initial pathway into this is to describe the processes and cycles that we can identify by going one step further into the analysis.

Entrance into cycles and processes

When looking from a bird's eye view at the empirical data and following from the process of writing detailed descriptions of what happened, categorising, analysing and segmenting, some patterns started to emerge. They will be unfolded in greater detail in the individual chapters, but as to render it visible to the reader why exactly these moments have been chosen from the many hours of data the bird's eye view is necessary.

One of the first things that emerged from engaging with the data was their ways of organising the work. During the Costa Rica Event they took complete control of the work, while we (researchers and facilitators) were left with only minor impact on this. Essentially we only interfered (or were allowed to interfere) when it concerned logistics, e.g. splitting up the large group in two, as some would have to go for interview and others for Intel Clubhouses; or deciding when we would leave for lunch, for the hotel and so on. The constructions and distribution of the tasks, what work to engage with, and how the work should be coordinated with others, were decisions we were not involved in. Often during their work we queried into, whether they actually knew what others were doing, if they had coordinated their work, if they had a plan, if they knew what tasks they would need to undertake?

We were often very unsure and worried about whether they were on track, and knew what they were doing. But whenever we asked, we were kindly told that they knew what they were doing 'Sophia is working on that', 'Yes, we discussed that and we have made a list of tasks to be done', 'We dis-

cussed that earlier today and have compiled a common list of questions'. Looking through the video data it became clear (though it is hard to admit) that we were just often completely out of the loop. I wondered during their work and also afterwards how they had actually coordinated and organised the process, and how we did not notice it happening (in our defence it is worth mentioning that we were often other places and doing other work, such as presenting papers, having meetings or getting food for them :-).

From the summaries and the overview we can sense an overarching pattern where there are continuous shifts between working as a large group and then working in smaller groups. They work in their small groups, but then come together and engage in lengthier discussions, where after they dissolve into smaller groups again. Furthermore, from the video data, I started to notice how they fluently moved between groups that were never completely stable; apart from just peeking at someone's screen to be updated there were also times when someone would join another person or group for a while and then return to other tasks or another group. These changes between different ways of working and social configurations were an important part of organising the project, though these moves were often quite invisible.

What cut across these different ways of organising their work and in a sense spun or held the work together, were the different "threads". The development of threads and their fluid movements across smaller groups were, however, part of the larger rhythm or pulse of their work; as organised between working as a large group and working in smaller groups. The threads, rhythm, pulse and group sizes were connected to the two overall cycles of their work.

Cycles

During their work as a large group they would take up discussions of the more overarching backbone threads 'what should be our focus', 'how should we do the presentation', 'should we talk about trade agreements or leave it out'. Through discussing, brainstorming, querying, criticising, coming up with ideas they continuously fluctuated between reaching provisional stability (agreeing on a way to do things) and then re-opening the debate creating moments of destabilisation.

The work organised in large groups is what I have called *cycles of remixing and patchworking*. These cycles are initially fed with the results of the work in smaller groups which are then reopened, discussed, criticised and reorganised. This results in the different patches and pieces getting worked to-

gether in new ways, creating a provisional stability which carries over in the small groups, where they develop, operationalise and carry out what they have agreed on. This work I have called *cycles of stabilisation work and production* as it fortifies, develops and carry on the results of the patchworking processes; but also opens to questions and doubts that are negotiated during the process which will then again be more thoroughly discussed during the *cycles of remixing and patchworking*. The fluctuation between these two configuration happens for instance, when they sit on the first work night and come up with the questions; here two dyads get together and start to discuss their different questions and approaches, thereby creating a shared patchwork, to which they have both contributed different pieces and then joined and re-assembled them together. The next day this is then presented and discussed in the larger group, where they add, remove, rethink some questions and then ending up with a list of questions, they all agree on. Hereafter the questions are translated (from Danish to English) and polished by two persons who then create the final interview guide.

Processes

The cycles are very overarching and general characterisations of their overall work processes. Through the analysis, I will draw out processes which are important parts of this work. These concern e.g. how they manage to find the 'patches and pieces' that go into the patchworks which I have termed *foraging and gathering*. These processes happen both individually and in smaller groups, but they are continuously building up what I term a *shared pool of knowledge* through conversation, remarks and pitching ideas. Apart from gathering or finding 'information' they are equally constructing digital (and other) artefacts, either to help them in their work or as for instance the construction of a their presentation; as such they are involved in *production of artefacts*.

There are also processes that revolve around how to get the work done and how to work with different task, as to accomplish their work within time. This I have termed *planning work*. Those processes are also connected with figuring out expectations and requirements in relation to their presentation and what they are supposed to deliver. Another process is related to trying to imagine and foresee how the presentation might be received by the audience or foreseeing possible counter-arguments which could render their arguments less believable; this I have called *anticipative work*.

Underlying many of these processes is their work on *creating a sociable*

and funny atmosphere where they pitch jokes, create funny drawings or start singing. This may often be thought of as non-task related or even disturbing the work, but as I shall show that this is also a part of them *stitching a moral blueprint* for their work. These processes are not directly visible from the summaries, but will be unfolded in the analysis in the different chapters.

Selection of the important moments

Each of the analytical chapters are 'important moments' or 'hot-spots' that give analytical grounding to the processes, cycles and through which the development of the threads are explored. These moments are distributed across the process and represent different points in time that can both give an insight to the development of the threads they are working with and the processes that are part of this work.

In choosing these moments, I have especially given analytical primacy to the cycles of remixing and patchworking, as these are the most interesting in relation to learning and in understanding processes of patchworking. This is essentially because it is during the cycles of remixing and patchworking the arguments, ideas and patches and pieces are critically discussed, negotiated, reweaved and developed into new patchworks. Through these cycles they reach stabilisation, agree on and come up with e.g. a problem formulation, an outline for the presentation and discuss the more overarching and conceptual questions in relation to their work. In the subsequent cycles of stabilisation work and production they work more concretely with the things they have agreed on e.g. by producing slides, translating questions, making drawings for their animation, subtitle video and so on. Measured in time, the cycles of stabilisation work and production are more prevalent than the cycles of remixing and patchworking which can be understood as somewhat more explosive and intense periods or events. While I shall especially focus analytically on the cycles of remixing and patchworking, all the chapters also contain descriptions and analysis of cycles of stabilisation work and production.

Each of the analytical chapters encompasses vignettes which explains more broadly what happened during the session. The moments chosen for analysis are of different length, which also means that sometimes the vignettes are not used only in the beginning of the chapter, but equally used between smaller excerpts (transcribed interaction), as to give a better flow for the reader and maintain the temporal order of events. Each session is thus analytically unfolded through these series of smaller excerpts that go more into

detail. The excerpts are transcripts of their conversation which are supported by pictures from the actual video material to illustrate what is going on and to give the reader a more rich experience of the work they are doing.

The analytical chapters follow the chronology of their work process, but do not encompass detailed analysis or descriptions of all of the work that they carry out. Therefore I have filled some gaps between some of the chapters with quick summaries which just very briefly summarise and go through what they engage in during the time between the chapters. Below I have described each of the important moments briefly while arguing why they have been chosen.

The work meeting on the 27th

This meeting is particularly interesting, as this is the first time where more stable threads, arguments, ideas and different patches and pieces start to crystallise into small 'patchworks'. During the earlier video meeting (June the 7th) and through online discussions they were supposed to discuss, argue for and choose a challenge and a problem to work with. They had boiled this down to be about either poverty or environment, which they then had to discuss and argue for, as there were different preferences. However, their ideas and arguments were very sparse and could essentially be summed up as 'because I think poverty is a bigger issue', 'environment would be interesting', 'with poverty there are just more things to look at, I think'. There were no concrete arguments or ideas for more specifically how to work with the challenges or ideas for topics to look into (such as education, trade-agreements or the like)

During this meeting we see the first threads emerging, both through the construction of a problem formulation, which is a very stable backbone thread, but also the different topics and ideas that come up will be further developed throughout the entire process.

First work night on the 7th of August

The next moment chosen is their first work night on the 7th of August. This has been chosen, as it gives a good insight into what I have termed *cycles of stabilisation work and production*. In smaller groups they prepare questions for the interviews and ideas for the presentation which are then discussed in the larger group the next day.

First work day at CINPE – Monday 8th of August

This session has been chosen, as this is where the ideas the smaller groups came up with the night before are scrutinised, criticised and developed. Dur-

ing this cycle of remixing and patchworking they discuss the final presentation, both in relation to form and the content of it, and they discuss several different solutions to poverty. Finally, they also stabilise on a new problem formulation, where after the move into a cycle of stabilisation work and production, as they start to finalise their interview guides and prepare a new one.

An afternoon at CINPE – Tuesday 9th of August

On this day I have chosen a session where they engage in a lengthy cycle of remixing and patchworking that emerges rather spontaneously after a long time of stabilisation work and production. They engage in constructing an outline of their final presentation and how to structure their argumentation for the solutions they have come up with. This is a quite intense cycle of remixing and patchworking where they connect all the different patches and pieces, arguments and ideas into the final presentation. The cycle abruptly transforms into a final long period of stabilisation work and production which I have reported as a quick summary.

Thereafter in chapter 9 I will return to the final presentation as to discuss and sum up the development and the composition of the different threads in their final patchwork.

In the following analytical chapters, I will further develop, clarify and explore the notions of patchworking, through using the analytical concepts of cycles, threads and processes. Through analysing these four important moments I shall demonstrate how the threads develop and how different small patchworks, patches and pieces, arguments and ideas are assembled and connected into the final patchwork of the presentation. I shall argue how their discussions can be understood as processes of creating and reweaving patchworks by bringing in different 'patches and pieces' and continuously reorganising and realigning the different patches and pieces. Through these processes where the threads develop and little patchworks are connected, also a conceptual blueprint of the entire argument and presentation starts to take form.

Furthermore, I analyse how this entire process of patchworking is accomplished and what the roles of technologies are in this process. After the analysis I shall discuss in more depth how we can understand learning as a process of patchworking and how we can approach such processes.

Chapter 5: Work-meeting 27th July – Creating a problem formulation

In this chapter we shall see how they negotiate and produce a problem formulation and a mind map on two posters. Through zooming in on their work of creating these posters, we will see the emergence of some durable backbone threads which will be prevalent throughout the entire process (for instance a problem formulation and some hypotheses). But also some topical threads revolving around different causes and solutions for poverty emerge in this session. This happens through three phases: an initial brainstorming phase that leads to a phase of searching for information, as I sense that they need to find some more information about poverty and Costa Rica. After this information search we initiate a third phase where they brainstorm on a problem formulation and how they want to work with the topic of poverty (method).

They do not think they have come up with much from the information search, but I shall argue that this phase of foraging and gathering information is instrumental in creating a shared pool of knowledge between them which they draw on during the third phase. But also I analyse how they negotiate and construct a moral blueprint. This happens as a part of their creation of a social atmosphere which they establish through informal exchanges and sharing little funny patches and pieces of information. In the third phase I analyse how they draw on their shared pool of knowledge and start to relate and stitch together the different patches and pieces they have found. This is what I term a cycle of remixing and patchworking process which I argue, is closely related to the processes of planning and anticipating. The latter are both about trying to work with the yet unknown, either through imaging, simulating and foreseeing possible barriers and possibilities; but also how to manage and control the work whole process. Some of the threads that will be identified in this chapter will show to be very sturdy, whereas others will dissolve and disappear over time, which exactly is the idea of following these through the process. But lets us turn our attention to the first brainstorm phase.

Vignette I: First Brainstorm and collective information search

DVD2 – Title 1: (00.00.00 – 00.21.30)

The first part of the day was composed as an online meeting where some of the young people from Copenhagen were also present through chat and camera.

We now shift to a face-to-face meeting where three of the young people from Aalborg work for approximately two and a half hours on gathering material and coming up with a problem formulation and establishing how to address their problem.

Initially they sit down and just chat for a while. We talk a bit about the rules during the stay – they are not allowed to drink, smoke and they have to wear special clothes. They joke about the rules and ask whether they need a special haircut. We then discuss briefly the other teams that are coming and where they are from.

I start to explain what they are supposed to be doing during the day and I

offer them some paper and pens as to initiate a mind map and some thoughts on a problem formulation. Laura opens a question on what kinds of technology we are talking about; if it is only related to mobile phones and the internet, or whether it could also be other technologies as a tractor. I reply that their final solution does not necessarily need to be a technological solution, as such. We, as researchers, are more interested in how they use technology as part of their work. This leads to some questions about the final presentation and what should be the content of it. I tell them that the presentation should outline their solutions to the problem and that they could create e.g. a PowerPoint, a movie a webpage or something like that and we discuss that they probably will have approximately 20 minutes to present their final results. Laura understands from what I am saying that they will have to present as soon as they come over there. Therefore, she raises a question of how to incorporate the team from Copenhagen, but Jonas clears up the misunderstanding by explaining that they have to present on the final day. We assure them they will have some time to work together in Costa Rica, so what they need to do today is to begin to discuss "what the problem is" and "how to work with it" e.g. interviewing people or whatever they would like to do. Samuel thinks it is a good idea interviewing people and they start to discuss a bit about this; how and who can they interview about poverty and what would they get to know from that. Does it make sense to ask people why they are poor and what can be done about it? Jack briefly mentions taxes as important and Laura asks me if Costa Rica is a poor country. I give her the answer that this is relative, as compared to some of the other countries in Latin America they're not poor as such; but I encourage them to find some information about that.

Laura follows up and says that they cannot avoid including things such as school and education, though others are specifically addressing these issues (as they were told during the video-meeting). I suggest that this is also a

bubble on their mind map and Laura puts it down. I ask if they need to look for some more information on the web and Samuel replies that they might need some definitions of poverty. Jonas brings some books he has borrowed to the table and offers them as resources. I start to re-organise the table so that they can use my computer to search, while also projecting it onto the whiteboard. Laura mumbles something about 'what is poverty' and writes it down – Jack does not think they need to write everything down, they can easily remember it. After setting up the shared workspace they start to search and find a site with some statistical information about Costa Rica. They find some stats on how many people live under the poverty line of 2 USD per day and Laura concludes that Costa Rica is not a poor country as such; the others add some nuance to that stating that there is quite a number of poor people and Jack ironically point out if people are rich when they earn three dollars a day. Laura agrees and adds that the interesting part is not only how many are poor; but why they are poor?

They start talking about that the US, as one of them mention the vicinity of the US to Costa Rica, and are slightly ironic about the US being a great country. They sit and chat a bit, until I suggest that they can each have a computer and search on their own. I give them some papers with information about how to log in and Laura and Jack gets up and find a computer of their own. They now work "individually" for quite some time.

Entrance – notes on roles

First of all, I shall like to point out, how some of the data in this particular section is co-constructed by me. As one might notice in from the vignette above or those that will follow, I add suggestions, both for how to approach the problem and how to frame it. This, essentially, is not very strange, as apart from being a researcher, I was also acting as a facilitator for the team of 'power users', which meant I was to guide and facilitate them throughout the process. Furthermore, the whole session was staged as a session where they were expected to come up with a problem formulation, as to be better prepared for the Costa Rica event. As a second note, I also really wanted them to reify their work during the process, which was partly for their own sake, partly a self-centred wish from a PhD student wishing to use these reifications for analysis later ;-)

I raise the issue, because I am a more active participant in this session than for the rest of the entire process, where we as grown-ups were increasingly pushed into the background, ignored or even graciously granted the right to

talk. My hope and approach was to let them govern the work process to the largest degree possible. But during this meeting, I several times felt the need to interfere, re-organise and facilitate discussions to carry them forward. I say this to direct the reader's attention to this role and notice how it changes during the process. As written in the introductory chapter, I was a bit worried after this session. I was quite confident that they were smart, well-oriented and politically interested. However, they did not feel overly optimistic after the session either: 'they did not think they found much relevant information and that it was difficult to find this in general'. As mentioned I had a feeling that I had to 'push them' much more than I really wanted to, and that their energy and motivation during this session was not really as high, as I had hoped for. In retrospect, I think they actually came up with quite a lot already at this stage. They did actually come up with some interesting thoughts during this session and some more durable threads started to emerge from this meeting.

This is first of all evident from the mind-maps and problem formulations that were an outcome of the meeting:

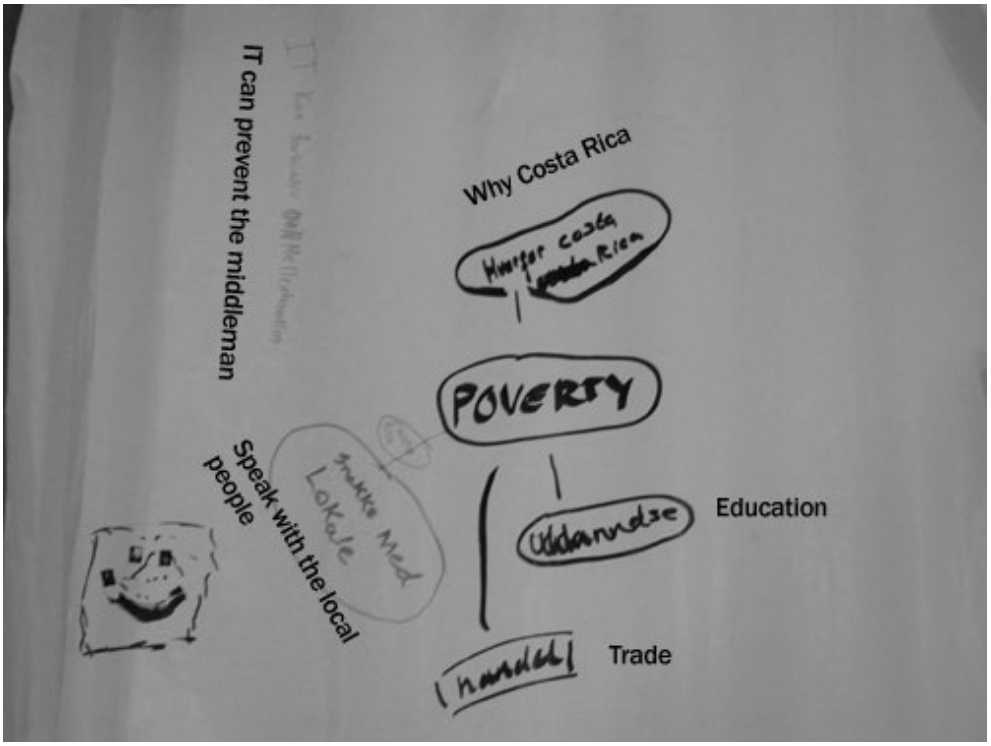


Figure 7: Picture of mind map

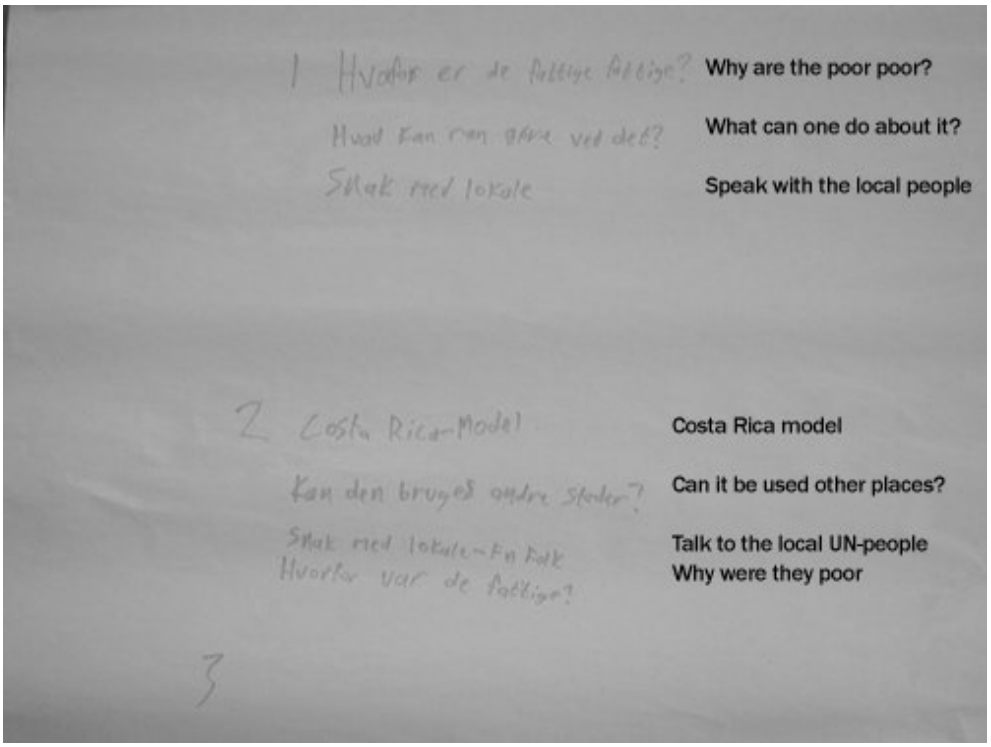


Figure 8: Picture of problem formulation

As to give a very quick overview of the session, which is not fully encompassed in the first part of the vignette, the session was structured around five major events (of which the two first are captured by the vignette):

- First collective discussion/brainstorm
- Finding information collectively
- "Individual" search for information
- Second collective discussion/brainstorm
- Writing final post for LearningTimes – collective work

During the first collective discussion, as reported in part one of the vignette; we gave them some paper, as for them to start working on a mind map. Laura starts working on the first poster almost immediately, here she draws the initial outset for the mind map (Figure 7) "poverty" and they add to it throughout the first discussion session. During the second collective discussion they also add the "trade" bubble (and the drawing of a face). The sec-

ond poster (Figure 8) came into being during the second round table discussion, which I shall return to in more depth.

Identifying and initiating backbone threads

The reason for bringing the final outcomes of the meeting in from the beginning is because it gives a good sense of some of the overarching threads which were important throughout this particular meeting. But more importantly they become quite endurable threads that are prevalent throughout the whole process, as will become increasingly visible from the analysis. For me as an analyst they represent small unstable patchworks at the end of an activity, and as signifying provisional stability. The patchwork and its status as providing *provisional* stability is something, I shall draw out throughout the entire analysis, because this stability will be continuously reconstructed and reweaved. The patchworks they form throughout the process are continuously unravelled and inspected; a process of from which new threads will emerge, but also from which existing threads develop and are enforced. Though, these posters may seem to be very crude entrances into a large and complex problem they do actually represent some important reflections that are taken up in their initial form during this meeting. Initially, the concepts are small seeds that are planted during the first brainstorm session and start to sprout during the second brainstorm session. Before going more into the process and products of the meeting, we can initially identify three main threads that are reflected in the posters:

- What are the problems and how do they want to frame the problems? (Why are the poor poor, what can one do about it, Costa Rica model, Can it be used other places? Why were they poor, Why Costa Rica)
- How to work with their problem? (Speak with the local people, talk to the UN-people)
- Possible causes and solutions? (Trade, education) – here arises a question of transfer.

The three threads can also be translated into: Their research question(s) (problem formulations); their methodology; and their hypotheses (causes and solutions). From these overarching threads many sub-threads or branches have already started to emerge (sub-questions, different suggestions for empirical investigations, different causes and solutions) and more will emerge over time. In this sense we could characterise them as *backbone* threads, which, however, does not mean they are stable throughout the proc-

ess.

Problems or research questions are rarely stable entities, but change and develop during a research project, until they are finally reified in a dissertation or article and rhetorically configured as stable entities 'this is what I have been looking at, this is how I did it and these are my findings'. This is not to strike a point about whether scientific findings are 'constructed', 'reflect and represent reality' or the like; I just want to make the point that, as one starts to work with a research question or problem, collect data, ask questions, shoot atoms into other atoms or whatever, new ideas, perspectives, questions, problems, hypotheses and so on start to emerge. Though, the content and perspective of a research question may change, *having* a set of research questions or problem formulations is a stable orientation device. What becomes of analytical interest in understanding learning processes (or research processes) is then, how problems and questions change and what cause them to change?

The backbone threads are present at all times, but are at some points in time acting more in the background to a degree where they are almost invisible. Though, they may not be immediately visible they operate as framing and orientation devices throughout the entire process, and everything they do, orient to or are guided by these backbone threads. They do not suddenly deviate completely from their main problems and start to work in a completely different direction. Whenever asked about what they are doing, they would say e.g. "I'm trying to find some pictures for the slideshow of poor people", rather than "Well, our problem formulation is 'how to improve a poor society' and due to this we have decided to visualise poverty as a mean to illustrate the wider global problem of poverty; and as a subset of this overarching endeavour, I am right now trying to find some pictures for the slideshow".

At other times the backbone threads surface very clearly and are the topic of their negotiations, as for instance in the first and second collective discussion in this session, where they are consciously working with a problem formulation, causes and possible solutions. As the overview of the entire process that was laid out in the former chapter indicates, these threads develop and are built upon throughout the entire process. As we shall see throughout the analysis the problem formulation is developed and changed, as are the other threads. Even during this meeting there are some developments in their lines of thinking about poverty.

Before going more in details with some of the threads, I would like to men-

tion another backbone thread that is also visible in this particular session and throughout the entire process; namely the 'presentation and how they are supposed to present it'

- The presentation - how are they supposed to present it?

This is essentially about presenting their findings and it will also surface a little during this meeting, although this thread does not really unfold much during this workday. But I will return to how they are starting to align, imagine and orient towards the presentation.

However, looking at their problem formulation and crystallising the threads from the visible reifications, is not enough to understand how these threads are actually worked with and how they emerge. It tells us very little about, how they have actually come about and the processes they engage in, as to accomplish this. I shall argue that there is a leap from the first brainstorming session to the final outcome of the session. In the first session they are very hesitant and the pace of the brainstorm is quite slow, which is also why I suggest that if they want to, they can start to look for some information.

During the first brainstorming session they are not sure if Costa Rica is a poor country, what the definitions of poverty are and their general conceptualisations of the topic are very broad. Jack mentions something about taxes and Laura says they cannot avoid the issue of schooling and education, but these issues are only vaguely touched upon as sort of 'headlines' or 'bubbles' without much real content, as is also reflected in the mind map they produce. This is not to say that the mind map is void of meaning, but rather that the meaning of these concepts are not there initially, but emerges and come to life during the work process. This can be seen in its infancy as they start their collective search activity, where they sit together and look at some statistics and discuss the meaning of them. Here they also find a definition of poverty which they discuss a bit. However, I get the feeling that they might need to sit by their own computer, as they seem to be loosing the momentum a bit, so this is what I suggest they do. This initiates a sequence where they do 'individual' search for information, and I shall argue, they actually do gain some ideas from this (through they do not themselves seem to think so).

Vignette II: 'Individual surfing'

DVD2 – Title 1: (00.21.30 – 01.01.21) & DVD2 – Title 2: (00.00.00 – 00.20.57)

They sit quietly and surf, but often they also speak out loud stating something interesting they have found, a fact, a page or the like. Jack asks Samuel if he has found something and he has found something about poverty, ICT and a UN-task force, which has something to do with getting rid of the middleman. There are long periods of relative silence, typing and searching, which is mainly broken for some requests for pens, prints, help. They speak up when they find something of interest. Samuel mentions something about the debt of Costa Rica, while Laura chips in that they have made great progress. Jack confirms with some numbers of average life time and how it has improved greatly from 1960 to 1980. They talk about this having to do with the abolishment of the army and Jack mentions that it was a good idea that Denmark would just have telephone answering machine saying 'we surrender'. They laugh and talk about the politician who actually said that; one that they really don't like, as he is openly racist. Samuel follows up on the army issue and mentions something with a spy plane that was invested heavily in before abandoning the project, madness, they think. They relate it to Denmark lowering the development aid, which they are strongly against. The Government gets quite a beating, as they are not happy with the politics and the distribution of money – only the rich gets richer they claim. They get back to their search and after a while Laura has found a thesis about Costa Rica, but also mention she finds it difficult to find information about Costa Rica; Samuel has found something about their main export – bananas and coffee, but generally they agree with Laura that they don't find something which is really good.

They return to discussing politics and are making fun of people being racists "the immigrants are the cause of all evils" Jack says in a distorted voice as a parody. Samuel has found something where Costa Rica is termed the Switzerland of Latin America, whatever that is supposed to mean, he laughs; Jack asks what idiot came up with that idea – they all laugh about the Latin America Switzerland. Laura is browsing some pictures and Jack is working, while singing, humming and making funny noises – Laura also hums and sings once in while and Samuel is making funny comments.

I ask if they have found some interesting stuff, which they don't really think they have. Laura has found some funny pictures and the other's get up to see them. They laugh a bit, while saying that it is actually not very funny and go back to their seats. Candy arrives and we provide them with some sugar which the boys fight over. Laura has (ironically) just found some pictures of people starving and she's quite disturbed about how thin they are; she then watch some videos. Samuel has found some poverty reduction strategies from different countries in Latin America and tells the others that he has downloaded something about Costa Rica and Mexico, which is very long and boring, as he frames it. "Why can't I find anything interesting" Jack says and yawns. Laura, too lacks some inspiration – maybe that it what starts a small candy war with them tossing candy at each other. I suggest to Jonas that we convene them by the table again…he agrees.

Emergence of the threads through the process of foraging

The 'individual' search for information, as described in the vignette above, is part of what I more widely refer to as a process of '*foraging and gathering information*'. In the following I will argue how they, through these foraging processes construct a *shared pool of knowledge* that they continuously add to; but also from which they can all draw out earlier observations or facts. As can be sensed from the vignette, they continuously share facts, information or interpretations with each other in a very informal and casual way. At times it becomes so casual and informal that one might be tempted to dismiss as merely having fun or as socialising. While they do indeed continuously try to create *a sociable and funny atmosphere*, I will argue that this is actually also an important part of them stitching a *moral blueprint* for their work. Through these negotiations they are developing an 'ethos' or perspective that will be prevalent throughout the entire work process. In the

following I will unfold these processes by looking in more detail at their interactions.

Excerpt 1 – (DVD 2 – Title 1: 00.42.58 – 00.45.33)

Jack: Ok, listen to this (2.0) from 1960 and 1980 the average life time in Costa Rica it ri- ra- ROSE from 47 to almost 73 (1.0)

Samuel: That's pretty well done

Jack: Yeah I think that is pretty [good too

Samuel: [Did they get rid of the plague then or something like that (3.0)

Jack: but ehm the reason they might be poor is also that there have been some big civil wars

Samuel: Yeah

Jack: In the history of Costa Rica (6.0) and then they have progressed again because they abolished the military

Samuel: Yeah

Jack: Abolished the army, then they suddenly had money for something else

Samuel: Yeah

Jack: I really think we should do the same here

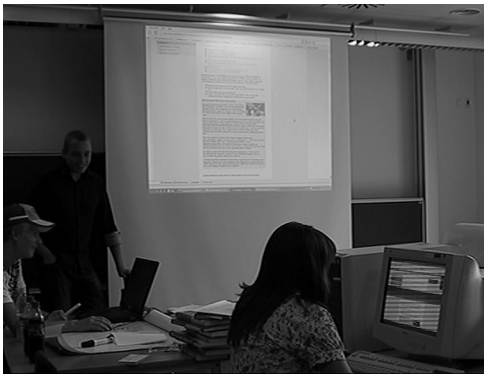
Samuel: Yeah, there are no reasons for us to have one

Jack: I think it was a damn good idea that thing with having an telephone answering machine that says ”we surrender”

Thomas and Samuel: (Laughing)

Thomas: It was the only realistic idea Glistrup has ever had

Jack: Let us take all the blacks and shoot them into space with a
[rocket (funny voice)

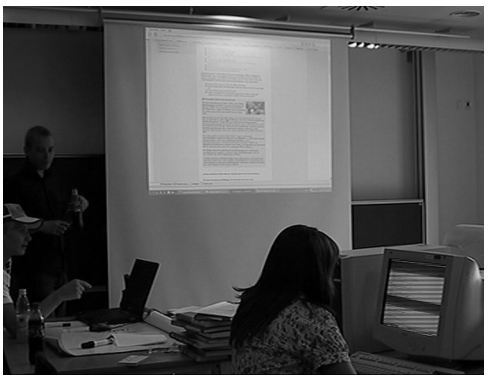


Samuel: [No the mo- moslems [13] (1.0) my guess is that he would have said – (laughing) (1.0)

Thomas: And he says that only to annoy them as he knows very well that they don’t like to be called Moslems

Samuel: Yeah (3.0)

Jack: It was at least something he said – that we should shoot all the Moslems into space (0.5) with a rocket (1.0) good idea (in sarcastic, ironic tone) (1.5) Foreign Policy issuuuuees (in funny voice)



Samuel: I think it is a very good idea that we should have a spy plane (1.0) (ironical)

Jack: Woah?

Samuel: Some people think it is a good idea that we get a spy plan

Jack: Yeah ha ha (3.0) Which we would use for what?

Samuel: (inaudible) then we can spend a billion on that

Jack: We should spend a billon on?

Samuel: Yeah, they reserved a billion to develop a spy plane for Denmark – they spent half a billion before they abandoned the project

Laura: (Laughing) Really?

Jack: A spy plane? What the hell should we use a spy plane for?

Samuel: (inaudible) I don't know

Thomas: But how about

Jack: It is a pretty big jerk that came up with that idea

Laura: Jack wasn't it you who mentioned something about governmental aid and poverty (2.0) didn't you write something about that when we chatted

Jack: I don't think so

Laura: Heh heh

Samuel: That is developmental aid

Jack: Oh yeah

[devel-
Laura: [There was something
Jack: Yeah
Laura: it says something about it (2.0)
Jack: Ehh [I just said that Denmark's
Samuel: [there is a goal for that as well
Jack: developmental aid is less than 1 percent after (inaud)
Samuel: Yeah, what is it - all EU countries are supposed to have it above 1 percent
Jack: Yeah
Samuel: Before 2008

The whole segment is initiated by Jack who shares some facts he found about Costa Rica, one about the average life time, another about the civil wars that have raged in Costa Rica and finally the fact that Costa Rica have abolished the military, which leads Jack to the conclusion that this is a possible cause for their rapid positive development. This is just one of many examples from this the 'individual searching' where one of them puts into the open a certain fact, observation, interpretation or possible solution to their problem. This is how they build a shared pool of knowledge; by constantly dumping small pieces and patches of 'information', interpretations, ideas, causes etc. into collective pool of knowledge. Some of the patches and pieces may never see the light of day again, but sometimes they are fished out of the pool again, as can be seen from Laura remembering something Jack mentioned in the chat about 'governmental aid', which Samuel corrects and rephrases as 'developmental aid'.

These are just very informal exchanges and they don't seem to write them down or necessarily discuss them further, but sometimes they re-appear in their conversations, as will also become visible, when they engage in the second brainstorming session. In a sense these small 'patches and pieces' represent small unstable clusters of ideas composed by the small pieces of information that they find from different websites. The 'patches and pieces' give them some different ideas and pointers which are then later, stitched

together in a more coherent form during the second discussion/brainstorm session. In this process of 'foraging' or 'gathering', they are acting like little octopuses grapping a bit here and there from many different places and 'storing' it in their little shared pool of knowledge; Here they might later be retrieved for digestion, but the edibility of the pieces need to be negotiated, as I shall return to. This 'individual' search for information is actually a very collective activity, and in a sense it could be likened to a sort of 'playful brainstorming'.

Playful brainstorming

Apart from constructing a shared pool of knowledge, they are also engaged in the constant creation of a sociable and funny atmosphere; they are feeding the fun pool, as well as the pool of knowledge and they are doing it at the same time, as it becomes visible in this excerpt.

After Jack takes up the serious issue of abolishing the army, he immediately cites Mogens Glistrup. During the cold war Mogens Glistrup suggested that Denmark should abolish the army and just put up a phone answering machine saying 'we surrender' in Russian. Jack goes on to parody some of the other ramblings of Mogens Glistrup, and does this by making a funny, distorted voice as to parody and make fun of such claims 'as sending all Muslims out in space'[14]. In this excerpt they continuously and rapidly shift between funny remarks and real political issues which are treated in an ironical, humorous way. There is a sort 'stream of consciousness' feeling to this, where the abolishment of the Costa Rican army reminds Samuel of the (in his opinion) stupid spy-plane and it seems that the billion Danish kroner (the Danish currency – DKK) Denmark have invested in this apparently 'lost cause' reminds Laura that Denmark's development aid for poor countries has been lowered; to which Samuel adds that he thinks that all EU-countries have promised to raise their developmental aid to one percent before 2008.

The same sort of weaving between real political issues and having fun can be seen from the vignette, but also a situation where Samuel raises a general concern on how Muslim families are seldomly portrayed in a positive manner in the public Danish debate (DVD 2 – Title 2: 00:00:00 – 00:02:12). This leads Jack to make fun of people being racists, drawing on a person he knows (a boyfriend of a friend - "Lotta's stupid boyfriend", as he is called). Jack parody him by using a dumb voice, from which they all get a good laugh. Laura then shifts to her not being able to find anything useful on Costa Rica but a lot on Nicaragua (prompting Jack to make funny noises over the word Nicaragua). Shortly after, Samuel shares the seemingly, abso-

lutely nonsensical fact about Costa Rica being the Switzerland of Latin America, which make him and Jack laugh. In this way there is this constant interweaving of seriousness and fun; an oscillation between negotiating serious issues, pitching jokes and making fun. Through mixing these spheres they are continuously trying to create a sociable atmosphere. So even though I have written that they are engaged in two sessions of brainstorming and discussions, they are actually all the time throughout their 'individual search for information' engaged in this kind of playful brainstorming. This is not something that is happening all the time, as there are also extended periods where they just look through web pages and read various stuff, but when they find something they think is of interest, they pass a comment about it. These small comments are all part of constructing the shared pool of knowledge; though not all of the comments may be discussed instantly, they can show up at other times, as in the example where Laura suddenly mentions something from the chat session earlier that day.

The playful brainstorming is for one thing part of constructing the shared pool of knowledge and creating a sociable atmosphere. However, at the same time as they are having fun, they are also displaying and laying open their 'political identities' to each other. This they do through aligning with broader concurrent political debates (the spy-plane and developmental aid), as well as their very local contexts (the racist Jack knows). Through this playful brainstorming they are connecting and weaving these broader issues into the ongoing activities and relating it to the facts they find about Costa Rica. In doing this, I will argue, they are also negotiating and creating a shared moral blueprint, through developing a common ground or shared perspective for their engagement with the challenge of understanding poverty and development.

Negotiating and aligning their perspectives

What they engage in are processes of negotiating mutual perspectives and aligning identities. The alignment of identities concerns attuning to each other, but also an alignment in relation to how to address the overarching problem of poverty. This is because this aligning and attuning to each other is also important for the processes of pooling knowledge, as adding facts or observations to the pool is equally a work of negotiating what constitutes meaningful and relevant contributions (and what does not).

Clearly from their conversations (and the wider context of the entire work process), suggestions to reduce poverty by tossing out immigrants, increasing poor countries reliance on trade agreements or lowering taxes to attract

large corporations would be more contestable than suggesting increased developmental aid and more education. In this way they are also negotiating and configuring the overall problem space and the possibilities of identifying and coming up with causes and solutions, which is intimately connected to their identities or ethos. As such what they are engaged in could be likened to the negotiation of what Wenger (1998) terms a 'regime of competence'. A regime of competence is the sort of more or less tacit rules of what constitutes competent behaviour and relevant knowledge in a community of practice e.g. for a scientific community what constitute good or bad science and for a community of wine tasters it could be relevant ways of describing the taste of wine. This is not to say that they are a 'community of practice', but I think the notion of a 'regime of competence' fits well, what they are negotiating here. Even though, it is in a very provisional and unstable sense, as there is little history or previous interactions to draw on between them (e.g. Samuel does not know Jack and Laura very well). But through these playful interactions, brainstorms and pitching of ideas they do lay bare their identities and ways of viewing the world.

Though the Danish government's decision of investing in a spy-plane is not directly related to the notion of poverty it becomes somewhat connected, as they link this to that the developmental aid for poor countries that were lowered by the current government with 2 billion DKK, and compare this with the EU-goal of all countries spending at least 1 percent by 2008 (which was the former level of the developmental aid before 2001 where the government changed). Neither, do the stories of racism and their ridicule of Glistrup and Lotta's stupid boyfriend seem to connect to the problem at hand. However, through these small narratives and informal exchanges of Lotta's stupid boyfriend, the Danish Government's decision on cutting back the developmental aid, the telephone answering machine (and other ramblings of Mogens Glistrup), the spy-plane and the EU-plan for developmental aid they are mutually negotiating a belonging to a sort of left-wing political view of the world (this is quite visible from their conversations, but also we learned that Jack and Laura were members of the Social-democratic Youth Party).

This opens to another notion from Wenger (2005) about the fractal nature and scalability of identities. The scalability of identity is understood as that which enables us to bridge these scales and imagine ourselves or aligning ourselves with larger structural ideas e.g. that of being of a certain nationality, belonging to a wider community of researchers or incorporating the values of e.g. an environmental community. These are, according to Wenger

acts of scaling our identities, through imagination and alignment (Wenger, 1998, 2005). In my interpretation, this is exactly what they are doing; they are engaged in a process negotiating a 'regime of competence' or 'creating a moral blueprint'. Their ways of accomplishing this creation of a mutual perspective is through engaging continuously with different levels of scale, from drawing on wider societal discourses and political issues to more local experiences with friends and acquaintances.

This blueprint is quite important as it acts as a framing device for their enquiries, but it acts very much in the background, as a tacit moral blueprint. However, this also allows them to see, or give them access to the wider idea that we live in a complex world where problems are far from simple. Rather, they are problem spaces that can be researched and investigated from many different and often conflicting perspectives. What will become interesting is when such a disturbance of this blueprint occurs, when it will be eschewed, challenged and how this will affect their problem and their solutions. This is not very visible at this stage of their work, as they are in a phase of coming up with ideas and trying to imagine and plan what they will be doing. However, in the next excerpt, where they work with problem formulations and causes/solutions we can see small glimpses of this process.

The intermixture of these processes, where they forage and gather information, create a shared pool of knowledge and a 'mutual perspective' or 'moral fabric' later furnishes the processes of patchworking, which will become more visible, when we dive into their second collective brainstorming session. Here they return from their 'individual' search, with the message that they have not found much, but as we shall see some threads and patchworks start to form.

Vignette III: Second brainstorm: remixing and patchworking

DVD2 – Title 2: (00.20.57 – 01.01.21) & DVD2 – Title 3 (00.00.00 – 00.02.35)

They move to the table and we re-organise the cameras. I start by asking if it provided them with some more ideas. Not very much, says Samuel; Laura says she found some information which was good, she has saved the bookmarks. Samuel says that bananas and coffee are the main export 48% "I don't know what we can use that information for, but I found it" he says and laugh. Laura says that she read somewhere that they didn't believe that

Costa Rica would be able to reach the millennium goals – Samuel confirms, he read that as well. Samuel says that they cannot get any support from other countries unless the other countries receive something in return; therefore, they are a bit on their own and he refers to some Americans that did research on the issue; he adds that it seems to be the general picture in Latin America. Jack has found out that they have had several civil wars, that they are social democrats and from 1960-1980 average life time rose from 47 to 73 years. He adds to that they cancelled the military in 1949 and invested the money in education, which could also have something to do with their rapid development.

I ask if it gave them some more in relation to what topics to work with and how to work with them? They go quiet. Laura remarks that they have not found out why some people are poor and if it has something to do with their international trade that is not working out so well or it has something to do with their own economy. And in turn, when it is only 6-7 % percent who are poor it is difficult to generalise, she argues. Samuel, however, raises the trade issue; Costa Rica made a trade agreement with the US, so the US can export rice way below actual price (because they get subsidies) and therefore the local peasants are in trouble. Samuel points out that this has not actually happened yet, but it is something people expect to happen. Laura comments that this is also happening in other places; the thing is that we ruin their economy and they'll never be able to get their own economy flourishing, Laura says. I ask if that is a bubble as well; they reluctantly agree and Laura draws a bubble.

We start talking about if Costa Rica is a poor country and a number live under the poverty line Laura and Jack also point out that they are developing very quickly due to good educational programs and that economical measures are not the only way of looking at the issue. I propose two perspectives to them, the first being seeing Costa Rica as a success and model for others, the other being a perspective from which there is still much to be done. Laura follows up on this idea and asks what they have actually done in Costa Rica. Samuel mentions cutting down the military and investing in education; They talk about Costa Rica better known for their progress than their poverty, so that might be the way to go – but maybe also to talk about social inequalities would be relevant.

I tell them we have imagined that they could formulate three different things; a problem formulation, how you will investigate it and which technologies you will use. Finally, I tell them they need to think of how they will

present the problem and create the final product; they could also think along the lines of a final product which is more than just the presentation – like a movie or a homepage or other thing that could be more widely disseminated after the Costa Rica event. "Anything you can come up with - doors are wide open, but you'll have to choose a perspective", I tell them and encourage them to come up with three suggestions or models for how to work over there. They go quiet and there is a long silence. "Awkward Silence", Samuel says.

I suggest that they could start by looking at that perspective with CR as a poor country; how could one work with that? We could start by looking at why they are poor, Samuel says and Laura agrees. But it is difficult, they say, because all the internet sites they found came up with reasons for why they are not poor anymore.

We flip the paper and they start to write some problem formulations. Suggestion number one says Jack, "why is Costa Rica poor - why are the poor poor". Samuel writes and adds "What can we do about that". They talk about the other way of approaching it, to find solutions for global poverty with Costa Rica as a model. Samuel asks if that is another problem area and I suggest that it is. Samuel puts numbers by the statements - one, two and asks what else he should write? Just write something, we know what it means, says Laura. We start discussing how to work with it and they wonder if it would fit both problems talking to people over there. They find it a bit difficult coming up with a third model, and I suggest that they focus more one of the others. Laura states that it is important not to forget those who are poor, just because some are doing well. They start to joke about making it easier for themselves just choosing the second perspective. I point out that they will also have the next few days to work with it before going there. But they are not sure they will benefit from that, they don't think they can find much more – and poor people do not make homepages, as Samuel points out.

They start wondering about if the model of Costa Rica can actually be used in other places; do the other countries have the same conditions? Jack suggests that they also need to think about how it was previously in Costa Rica "Why were they poor?", Samuel writes. I ask which one of the models they are most comfortable with. They agree that it is number two, but they are also intertwined Laura says. We get back to discussing ways of working. They want to do some interviewing of people and find out what Costa Rica has done to develop and improve their economy and welfare.

Maybe when they know more, they can also search more specifically, Laura thinks. Jack starts talking about the presentation, he prefers a PowerPoint compared to a movie, as that might be more difficult. The others agree, but Laura mentions that it might be a good idea to record the possible interviews and that it is nice to have different media. Samuel follows up that PowerPoints can also incorporate pictures. I tell them they will have computers, camera and sound recording equipment available, for whatever they want to do. I mention that one thing is the technologies they use over there, but add that technology might also be part of the solution - "how can ICT be used to reduce poverty" I suggest. Laura mentions some things that are good; if they have ICT they can skip the middleman and communication is important as well. I mention the clubhouses and explain about how poor people get access to technology; and also the Intel factory in San Jose. Samuel adds that it is problematic if they have only grown due to a big computer company, this might be difficult to transfer. They start to discuss the need of poor countries not only relying on primary education and natural resources, as it is much better business selling secondary and processed products.

We start to wrap up the session and I ask them to put their conclusions into LearningTimes, while they eat the pizza we have ordered for them. They all move to the computer. Laura starts writing and Samuel takes over; now their parents are here to pick them up. They wrap up their work and post their contribution to LearningTimes.

Development of the threads and the problem space

Though they don't believe they have found much information which is relevant, I think actually there are improvements in their understandings during this work meeting; both of Costa Rica and the general topic of poverty. There is also a development from the first brainstorm session, where they are not sure if Costa Rica is a poor country or what the definitions of poverty are. Also during the first session their conceptualisations of the topic were very broad. As I wrote, the mind map was not void of meaning, but this meaning is actually negotiated and fleshed out here in the second session. Therefore, let us have a look at some of the seeds that start to sprout after their initial gathering of information and their lines of thought on these:

Excerpt 2 – DVD 2 – Title 2: (00:21:32 – 00:23:20)

Thomas: Did it give you some ideas searching a bit?

Jack: No

Samuel: Not very much

Laura: I just got the information- I found a pretty good one that I might read (2.0)

Thomas: Did you save it some-where?

Laura: Si si ((Italian)) it is saved in shortcuts to power users folder as (inaudible) file

Thomas: Okay (2.0)

Samuel: I found out that the biggest export articles are coffee and bananas

Thomas: Yes, okay

Samuel: That is 48% of the exports – I don't know what we can use that for, but I found it

All: (Laughing)

Laura: And I also read something about those goals things for 2015 – they didn't believe Costa Rica

Samuel: No

Laura: Could achieve them or something like that

Samuel: That was also what I found out – it was some Americans but that- or there was- they wouldn't get support from other countries unless they could have some money in return (0.5) and therefore they are a bit on their own and then they can't achieve them (1.0)

Thomas: Okay

Samuel: Some American researchers had found out

Thomas: Okay, that means that no one will support without [having

Samuel: [No

Thomas: money in return

Samuel: No and that was the same story with all the countries in Central America (1.0)

Thomas: Ohh, (2.0) okay (1.0)

Jack: I found out that they have had a lot of civil wars which meant something [that

Thomas: [Yeah

Jack: Then I found out that they are Social Democrats (1.0)

Thomas: Ohh

Jack: Social democratic governance and that (1.0) from 1960 to 1980 the life expectancy age rose from 47 to 73

Thomas: Okay

Laura: Damn – That's a lot

Samuel: And they abolished the military in 1949

Jack: To get money for something else

Thomas: Yeeah, that

Jack: That could also have something to do with why they have developed so fast

Samuel: Yes

Thomas: Yeah

The excerpt above gives a feeling of how the session progresses. Interestingly they start by reporting that their information search really did not yield very much and they did not benefit greatly from it. A bit reluctantly they start to give small inputs in the form of the different 'patches and pieces' of information they have found (or have stored). As part of stating and sharing these 'facts' they also start a process of stitching them together and relate them to each other, through their ongoing dialogue. This can be seen when Laura mentions that Costa Rica might not be able to fulfil the 2015 goals, Samuel follows up that this *might* have something to do with trade agreements (or that nobody will give support if they do not get something in return). Equally, when Jack mentions the rise in average lifetime, Samuel could be interpreted to link this with the abolishment of the military, through mentioning this. Jack follows up on and says this was to get money for something else and suggest that there might be a connection between the decision of abolishing the army and then their fast development (a connection which he also highlighted earlier on when sharing the piece of information in the first place).

In the dialogue immediately after the above (DVD2 – title 2: (00:23:59 – 00:25:10) they continue this linking of ideas, as also described in the vignette.

Laura states that they don't know why some people are poor, but Samuel mentions a trade agreement which is to be signed between the US and Costa Rica. Here he argues that some predict this agreement might impoverish the local peasants, as they cannot compete with cheap, subsidised rice from the

US. Thereby he also suggests that such agreements could be a cause for the local peasants possibly being in economic trouble in a wider sense. Laura follows up and argues that this has been the case in other countries, so it might be broader issue. She then brings up the issue she also mentions during the first session about the importance of having an independent economy.

This type of interaction is very much how the rest of the second brainstorming session runs. In turn they might have found some disparate facts and different unrelated patches of information, but as they get together and start to mention them, some collective work is done on actually connecting some of these pieces of information, as they appear through the conversations. Through these dialogues and the getting-together of the different 'patches and pieces' of information lines of argumentation, relations, connections, causes and solutions are slowly starting to emerge as little patchworks.

Below I have sketched this out, as a way of summarising their thoughts during the session. This is not presented as the thoughts appear in the session, but is my way of crystallising some of the ideas into clusters that emerge from their discussion, and are also visible from their mind map and problem formulations:

- Abolishing the military and investing in education. Here they also mention that economical measures cannot stand alone; one needs also to take into account the level of education of the population in relation to speaking of development and poverty – though they do not explicitly mention this, they are in a sense taking about the 'cultural capital' as a condition for sustainable development. This is also coupled with the need of not only relying on natural resources, as further economic growth is easier through processing and production of secondary goods, as they mention. This point is also seen as fitting both their problem formulations, as it can be viewed as both a cause for Costa Rica's rapid development, but also as a condition for further development and a possible solution for other countries.
- The need to establish an independent economy is a topic that is initially brought up during the first brainstorming session; and during the second session they stress that it might be dangerous relying on trade agreements which may turn out to be less beneficial than expected, as it could harm the local peasants considerably. This is also touched upon in relation to reliance on big corporations, which might not be sustainable as they can suddenly move if the conditions

change.

- ICT for development is quickly touched upon, as I suggest it as a topic. Here they raise issues of enabling communication and getting rid of the middleman in relation to trade, but it is not unfolded very much and there are no new perspectives on this issue, that were not present in the first section.

So, their foraging and gathering of disparate facts, opinions and other pieces of information which are collected and added to the shared pool of knowledge may not seem very useful in and of themselves (which may also be why they really do not feel they have found anything of interest, when they gather for the second brainstorm). But when they start to pull the resources together through the dialogue it seems they start to see some relations, causes and patterns. This is how can initially understand the process of patchworking and the creation of small patchworks. This consists in combining, comparing, relating and stitching together disparate pieces or patches into a more coherent shape; a patchwork or a cluster of ideas. For the moment the process is especially formed around conceptual issues which are not very tangible (apart from reified in the two posters). The process of patchworking also has more tangible and visible dimensions, as can be seen from their final presentation. These dimensions will be unfolded in the chapters, where they start to work more concretely with their presentation.

However, as a provisional patchwork start to form and different threads are discussed and brought into play, this also results in an acknowledgement that there are still many things they do not know enough about and which need to be addressed. Trying to address this and work with the essentially unknown involves two processes which are in different ways oriented towards colonising and settling the future: planning work and anticipative work which are two processes I will describe in the following.

Working with uncertainty and the unknown

When they start to stitch the patches and pieces together, this brings up new problems, doubts and realisations of what they do not yet know, and what they need to find out. As mentioned a problem is rarely stable or immutable, but rather develops and mutate throughout the process. This becomes more visible as we return to discuss, whether Costa Rica is a poor country according to the different information they have found. This, they find to be a more complex and contentious issue, as compared to other Latin American

countries Costa Rica is doing very well (which is also the general result of their web searches as they mention). They especially relate the progress to the investments in education, but Laura also starts wondering why some people are still very poor; they need to identify why this is so. But also how they have managed to develop emerges as an important issue. Here I suggest two perspectives or ways of approaching the problem, which is also taken up in their provisional problem formulations. It is not taken up uncritically or as two separate paths, because as they mention the two problems are really interrelated.

The problem formulations as can seen from (Figure 8) represent their doubts in this session, but it also becomes an ongoing tension of their problem, which can be seen almost throughout the entire work process and the final presentation. Should they work with Costa Rica as a poor country, or as the second problem formulation seems to suggest; is the model of Costa Rica something which could inspire other countries? (These different foci are also expressed through the use of present tense versus past tense; why *are* the poor poor vs. why *were* they poor). However, in relation to their understanding of Costa Rica as a possible model for other countries they raise a concern of 'transferability', which I think is both very interesting and very intelligent of them. This also opens the window to a process which is prevalent throughout their work, namely that of anticipative work.

Anticipative work

Through their discussion of the problem formulations, hypotheses of solution and causes, they are trying to anticipate and imagine what their final product will look like and what it will contain. They are trying to colonise the future through imagining how they can work with the problems and how different ways of working will give them answers to their questions (what would it mean to take one perspective over the other, and what would be the easiest or most interesting to work with, whom should they interview?). But they are also, already now, trying to build up counter arguments to the solutions they have not yet come up with, by testing and simulating their future claims. Even though, they are working with the thought that Costa Rica can be a model for others, they simultaneously seem to assume that there might be special conditions that apply to Costa Rica; conditions which cannot easily be transferred to other countries or cultures. They argue that the two problems are interrelated, and therefore they need to know why they were poor, as a part of understanding how they could develop. For one thing, this is to understand if the poverty was caused by or related to conditions which

are comparable to other countries (e.g. Nicaragua) and secondly to be able to identify what has suddenly caused their rapid development. They argue that they need to address both issues, as to be able to conclude if the model would work for others as well (maybe they were all poor, but then struck oil and realised they had huge gold reserves, which might not be a realistic solution for other countries). It shows a profoundly scientific line of thought, as they are trying to anticipate to what extent their claims might be generalisable and what possible counter arguments could question their claims or render them naïve?

It seems they are very cautious about what they have found so far. Though, their *foraging* of information give them some ideas or seeds to work with, they also identify areas that they need to work with in more detail. These are especially addressed as the "why's" in their problem formulations: "why were they poor?" and "why are the poor poor?". To really address these questions, they argue that they need to interview some people and obtain information apart from just searching the web. They are trying to identify how they might obtain more reliable information that could corroborate their ideas and hypotheses. Through these discussions they are trying to imagine, simulate and anticipate what objections, problems and counter-claims they might meet, and how they can best obtain information that will be helpful in corroborating of falsifying their provisional ideas and hypotheses.

This process of anticipative work is closely related to that of planning their work, which is also reflected in their discussions of how to work with the tasks e.g. through interviewing different persons. Planning work, however, is more related to how to carry out the work in practice, but also about navigating and orienting to the requirements or conditions of the setting. The planning work especially becomes visible when they start to discuss possibilities for their presentation, but is also prevalent very early in the meeting.

Planning work

To see the infancy of this planning work we actually need to go back to the beginning of the meeting. Here their planning work is initially concerned with uncovering conditions for the task. It is about orienting to and figuring out the visible, overt requirements; but equally it is about identifying and figuring out, the less visible and tangible agendas, that might be embedded in the setting. The latter is reflected in Laura's early question about what is meant by 'technologies', which is about figuring out the agenda or ethos of the whole event: 'would a tractor be a meaningful technology to mention?'

Clearly, a tractor is an important technology, but is it a technology that falls within the scope of the Power Users Initiative?

This is a way of orienting and navigating within the wider task, by checking interpretations with us and trying to figure out if they are on the right track, or whether they are heading in a wrong direction. It is about identifying what the requirements are and knowing whether they meet these. However, this aspect of the planning work is not very prevalent throughout the material, which is quite interesting because the boundaries and expectations are actually quite blurry and unarticulated. They are not offered strong, clear and delineating interpretations from us (researchers and facilitators) in relation to what the expectations are or what we imagine their final product will be; and especially not from me during this meeting.

This has also to do with the PBL-process envisioned, in which an important part is figuring out the problem and delineating the scope of research. They are offered the wider frame of addressing 'poverty', but in this endeavour they will have to choose their own perspective, ways of working and so forth. This is a challenge they seem to accept, and they also seem to realise that they will have to fill in many of the blanks. This is essentially visible, through its invisibility, by which I mean that there are few cases where they check, query or ask for confirmation from us during the process. They take charge and run the process, through acting like professional project managers, which is another aspect of the planning work.

This is equally visible during through the first part of the meeting, through the questions they ask about the length of the presentation and what should be the content and form of the presentation. The requirements and conditions regarding the presentation are somewhat overt (but also very ambigious) in the sense that they are free to do what they like, but they will probably have a time limit of 20 minutes. It is quite striking that they start to pose questions about the presentation so early. They are not sure what their problem is and how they will be working, but it can be read as a way of orienting to the more or less formal requirements and constraints of the setting. Knowing these constraints is quite important in relation to actually planning the presentation.

Before planning to create a monstrous presentation involving dancing, singing, 100 slides plus film clips it is quite convenient knowing how much time will actually be available for the presentation, and how much time they will have to prepare the whole thing. Therefore, they start during this meeting to plan ahead and colonise the possible, potential future, through acting as pro-

fessional project managers: what are we supposed to do? What are the resources we have available and how much time do we have? They probably draw on their previous experiences of doing such projects and the necessity of not only finding facts, information, arguments and so on, but also of planning, coordinating and maintaining a shared focus and representation of the problem between the participants.

Also they start to discuss different possibilities for their final presentation; Jack mentions he would prefer a PowerPoint to a movie, as movies are difficult to make. Jack is not thinking in terms of technology here, which is something he expands on later during their first working day in Costa Rica. Making a movie might not be technically difficult, but to make a *good* movie that tells a *good* story can be very time consuming and often one will be better off doing a PowerPoint, as Jack says during this meeting and later on (DVD3 – title 2: (00.11.28)).

In relation to understanding such open ended learning processes it is quite important to understand the ability to plan, negotiate, coordinate and manage a project. The planning work encompass ways of orienting to the more or less formal requirements and constraints of the setting, but also it is a constant negotiation of and estimation of how much can be incorporated, what the overall focus is and what can be realistically accomplished. This especially is raised in relation to the creation of the possible PowerPoint presentation or the notion of making a movie. In this sense there are also starting to anticipate and plan the incorporation of ICT in relation to their product. Though this is still very sketchy and intangible it is interesting how their anticipative work and planning work reflect their knowledge of the affordances of different media and technologies, which is visible through their reflections on whether to create a PowerPoint or a movie.

The role of technology

As stated the most prevalent use of technology during this meeting is centred on the process of *foraging* information, where the technology enhances their tentacles and give them access to the wider world of 'information'. It is basically through the foraging processes enacted during their 'individual search' that they build a shared, collective pool of knowledge. However, it should be noted that this is heavily dependent on their verbal communication and eagerness to share different factoids, observations, jokes and interpretations, which also becomes a supporting infrastructure of their information search, apart from the information technologies. The conversations

spawn, as either directly or indirectly related to the process of foraging information. Sometimes they utter something, which can be directly related to something they have found on the web, but at other times the connections seem less obvious and may be more general statements or observations; and sometimes they are just engaged in the creation of a sociable atmosphere (e.g. Jack often hums, sings or just make funny noises and sometimes the others join in). The material they find on the web also becomes a part of this, as it happens when Laura finds some pictures and videos she invites the others to have a look at.

They use the computers to store different material, and I continuously encourage them to do so, from the premise that they will later find a use for it. However, at the end of the session they have not created a large repository of shared files (as I had hoped), but have stored a few bookmarks and some documents and webpages; also Laura has written some notes on paper which she brings to the table (and she also really wanted to print some material as well). That they did not store and pile a lot of information surprised me a bit, as I had imagined or anticipated that they would stash a lot of information during this session. I believe, however, there are different reasons for why they do not; first off they are in a process of brainstorming, identifying the problem, grasping the requirements and so on, which means that much may still change (and it will), as they start interviewing people and gain more knowledge on the subject.

But a second observation that can be made from this session is the pragmatic use of the mediational means; Laura wants to print, writes notes in hand and so on, though she can store the documents on the computer (and I can upload it to the learningtimes environment). It might, however, work much better for her to do the notes by hand, as she can bring them to the table or later bring them home, without having to access the learningtimes environment, downloading them and possibly printing them. Furthermore, their needs right now, as hinted at above, may be more of a scouting and scanning process, as to furnish some ideas for perspectives and ways of addressing the problem, rather than engaging deeply in reading elaborate reports. As they express it, they might be able to search and find something more effectively, when they know more.

Thirdly, they do not seem overly reliant on the information they find and neither do they uncritically adopt the ideas which they have come across during this information search. This is partially evident from their own reservation towards what they have gained from the session, as they state that

they have not really been able to find something of high value in relation to shedding light on the problem of Costa Rica, poverty and poverty reduction. But it is also evident from their discussions on what they still need to find out, what problems are still unanswered and what new problems have emerged (e.g. that of transferability of their results). In relation to that they might be more engaged in scanning and scouting it might be a waste of time building up a large repository of more or less dubious resources that will later show to be useless.

In understanding their work with technologies we should keep in mind the how processes of 'stitching a moral blueprint', their 'foraging process' and the construction of a 'shared pool of knowledge' are tightly interwoven. What stands out from this meeting is how they collectively make sense of the resources, ideas, materials that they come across, and how these are collectively spun into a patchwork. By focusing on the meaning-making processes in this section, I do not mean to understate the role of technology or how important the web is in relation to enabling and supporting their foraging of information. Rather, I want to point to the inherent dynamics and the relational nature between 'information on the web' and then how this 'information' is foraged, appropriated and made sense of. This, as we shall later see, is not only related to how they work with online materials, but in a broader sense how they work with the different resources, they come across during the entire process.

Summing up the chapter

In retrospect, and for me as an analyst, it is interesting to see the knot they tie here and is represented partly by the reifications of the posters, but even more in their recorded participation and dialogue. Though, they do not think they have come up with much, some of the ideas and threads that have spawned in this session live on through their entire process. As we shall see, they will change, develop and become more complex through their discussions and increasing knowledge on the subjects, but this is exactly the point of looking at 'threads'; to follow how they change and what make them change.

During this meeting we do see the emergence of some very durable backbone threads which guide their work throughout the entire process: the problem formulation, hypotheses for causes and solutions, the presentation and also their methodology. Further, some different topical threads or subthreads have crystallised from this; doing interviews and also the provisional

patchworks and clusters that have formed around education, abolishing the army, establishing an independent economy and be careful about reliance on trade agreements and large corporations. I have argued that these threads emerge from a process of remixing and patchworking, where the 'patches and pieces' they have found through foraging and gathering information are stitched together, connected, related and discussed. It is through this process that a provisional patchwork or clusters of ideas start to emerge.

I have argued that the foraging and gathering processes are very collective processes where they continuously add the 'patches and pieces' to their shared pool of knowledge; but also that this is heavily interwoven with a process of stitching a moral fabric or mutual identity, which is part rendering information, solutions and causes more or less possible and attractive. The moral blueprint is negotiated as part of creating a funny and sociable atmosphere, and it is through this playful brainstorming that they align and attune to each other; as well as they add to the pool of share knowledge. Through these processes we see the emergence of the more durable threads, but also different topical and unstable ideas start to emerge. However, as provisional patchworks and clusters start to form they also begin to realise and identify what is yet unknown to them, what they might need to take into account and possible counterarguments and barriers in relation to their work are discussed. The latter processes I have couched as anticipative work and planning work, which are both about trying to work with the yet unknown, either through imaging, simulating and foreseeing the before mentioned barriers and possibilities; but also how to navigate in the setting through identifying the overt or less visible requirements of the setting, and how to manage and control the work process and estimating what they will realistically will be able to do.

The whole process of patchworking that takes place during the second brainstorm session is heavily dependent on what materials, patches and ideas they have gained from their searches through primarily Google and Yahoo. Thus, the information technology widely extends the reach of their tentacles in the foraging process, as they scan through different pages and types of information (governmental pages, encyclopaedias, UN-reports, articles and so on). However, what also becomes very clear from this meeting is that, in understanding youth, learning and technology it is important that we do not focus exclusively on the technologies. As I have initially explored and laid out in this chapter the framing devices of their enquiry processes and how they engage in the processes of patchworking are not only dependent on the technologies themselves.

We have now identified some initial threads we can follow the development of throughout the work process before they end up as reifications in their final presentation; but also the processes through which these threads are worked with have been somewhat more fleshed out, though we have only taken an initial look at these processes in this chapter.

Chapter 6: Evening Work the 7th of August – Creating questions for the interviews

In this chapter we follow the young people's work on creating an interview guide, as to prepare for the interviews they will undertake the next day. This is a cycle of work which I call stabilisation work and production. These terms might suggest that this is routine work, but as I shall show through the analysis, it is equally a lively process of negotiating, adding ideas, brainstorming and processes of anticipatory work. Therefore, I will also begin to explore the differences between the two types of cycles as a part of this chapter. In the analysis of their work I will highlight how they draw on their shared pool of knowledge as part of creating the interview guide and I will look at how different patches and pieces that come from their versatile foraging and gathering processes are used in the creation of the interview guides.

In this chapter three overarching topical threads on taxes, education and jobs emerge and we shall see how a young guide's information on the political situation in Costa Rica comes to shape their enquires and construction of the interview guides. The guide provides them with some valuable information, but also he drops a disruptive piece that disturbs their thread on taxes, but also their negotiated moral blueprint. The creation of the interviews is not only a matter of coming up with a range of questions, because the questions they want to pose represent their current hypotheses of causes and solutions; thus their entire problem space. In relation to this we shall see how they engage in processes of planning and anticipative work, as to identify, how different questions and strategies will yield different answers and knowledge.

The next day they will discuss the interview guides again, and I will therefore look at how the interview guides can be seen as small unstable patchworks and clusters of ideas which are ready to enter into collective cycle of remixing and patchworking. Here they will eventually be unravelled and reweaved, but this is a process that will be described in the subsequent chapter. For now let us return to the work of this evening.

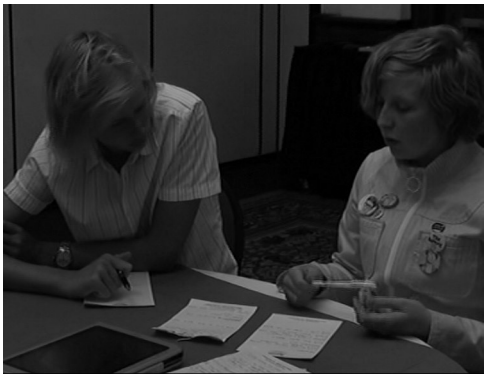
Vignette: Creation of the interview guides

DVD3, Title 1 (00.00.00 – 00.10.55)

We are located at the Marriot Hotel the evening before the 'opening' of the Power Users event. I am not there myself, as I am having dinner meeting with other researcher and then attending a coordination meeting among the facilitators. Jack and Sophia are being interviewed during this session, which is why we don't see them after the very first sequence. During the first sequence the facilitators brief them about how to act for the upcoming opening the next morning; then they initiate their work. They are working on coming up with questions for the people they are to interview.

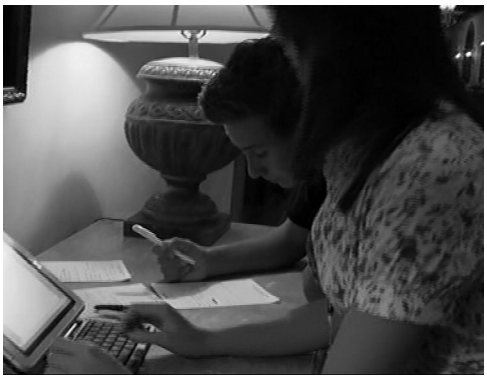
Astrid is explaining about the next day. They have been instructed that when Ellen raises her hands, they have to stand up, and sit down when she lowers them. Astrid is going through this and they are all laughing about the very overt instructions. Astrid is delivering the instructions in a very enjoyable manner and also seems to find them a bit funny.

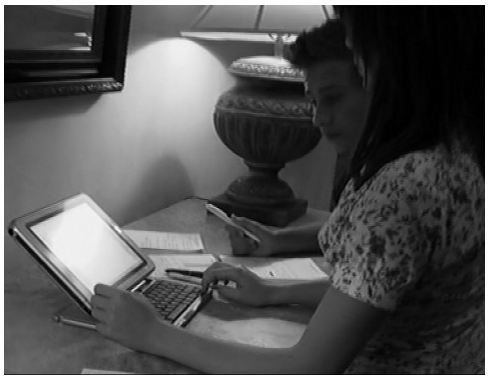
After this, there is a cut and we shift to some of their preparatory work. Diana and Neil are sitting together working on questions for the upcoming interviews – they have several pieces of paper scattered in front of them that they point to and write on. Diana refers to something 'that man said' about 90% being able to read and write; that must mean something she says. But then again there is a problem about unemployment and people not being able to get a job. Neil says that they need to cover both perspectives. Diana follows up and asks "but how can we see the problem in that".



The camera moves over to Samuel and Angie. Angie is working on the com-

puter and seems to be writing something. There's a cut, but the camera is on Angie and Samuel again – a drawing can be seen on Angie's screen. Jonas states "that they seem to be a bit stuck" and comments that it probably does not help that he is filming them. Samuel says that he should have filmed them while they were effective and full of ideas". Angie starts a song on the computer, "now we are just being unproductive and listening to bad music", Samuel says. Angie wants to show Jonas what they have made – she scrolls through the document "here we have written about tax, here about education, here's something about jobs and there's also something about the presentation…and then we have written about Hakuna Matata" says Angie and laughs. Okaaay, says Jonas, "maybe you need a short break?" – "either that, or some inspiration from some of the others", Samuel replies. The camera moves again and Jasper asks Jonas if they will convene and coordinate later on. Jonas replies that there probably won't be any time for that – it is quite late already 9.30 PM.





There is a cut to Laura and Jasper standing outside the room they were in before. They are discussing their questions and Jasper realise they are being filmed. They are working with the computer and Laura is also taking some notes on paper. Jasper asks for the questions he wrote and Laura hands him the paper with the questions. It seems that he will read them aloud for Laura to type into a document. They discuss where it should be located in the document and Jasper asks Jonas for a mouse – they are apparently having some trouble using the pen as a navigational device. Jonas will take a look after a mouse, but he is not sure he has a mouse with USB. While Jasper complains about the pen to Jonas, Laura suggests that they group the questions later and just start to type them in – Jasper agrees. Jonas asks if they are doing okay apart from the pen; they are all right –

they are working with the questions, Jasper says and sort of wave Jonas off.

There's a cut and the camera is now focusing on Diana, Samuel and Neil who are standing around one of the computers and the song "Hotel California" is playing. Angie is showing them something and they are laughing. They are looking at some pictures on Angie's computer and some of them have not realised they are being filmed – Diana turns around, sees the camera and shhss the others and laugh – the camera is turned away.

Now we cut to the four of them working together – they sit around the computer and 'like a virgin' is playing. Angie says that they have three overarching groups of questions – taxes, jobs and education. She starts to explain that they have some more detailed questions under each heading, as for taxes she mentions: What is the rate of taxation, what are taxes used for, are the taxes spent right, what else could it be used for, should one demand more money from the citizens if it should be used otherwise. Neil does not understand the question and ask them to explain that; Samuel and Angie starts explaining simultaneously that they mean – if they wanted to spend taxes in other ways as well, should they then demand more money. Neil gets the idea, but asks whether they know what taxes are being spent for; they don't, but that is one of the things they need to find out.

Angie continues with their questions: What do people think about paying taxes, would they be willing to pay more, compared to other Latin American countries are the Costa Ricans paying a lot in taxes? Angie concludes by saying that all the questions are both why and why not and they laugh. Okaaay says Diana and follows up telling that they have also come up with a lot of questions. Neil supplements that many of them are the same, but that they have also come up with some more broad questions, as he thinks they can find an answer themselves to many of the questions they have just gone through. He suggests that they should try to research some of the questions themselves, rather than asking an expert about them. Samuel says that if they can ask the interviewee about the questions then why not? They discuss what questions to ask and whether it makes sense asking the questions to the interviewee.

Angie continues with some of the questions they have about education. She laughs as they get to a joke about Costa Ricans becoming Candidatus Bananus and adds they were just joking a bit. She continues with questions of the average salary, how many gets jobs in other countries and move away. She cracks up about a formulation they have made and accidentally spits on the screen causing her to comment that they are of course being filmed when that happens.

They have come to the presentation, but Neil suggest that they wait a bit with that and they start going through their questions instead. They have not grouped their questions in the same way and Neil starts to read from some of the pieces of paper he has; do people have confidence in the way taxes are spent, are they spent well and also if the country in general are happy about the government. He mentions also something about trade agreements, which the others think is a very good question. Angie is drawing while listening and says that she thinks they have come up with some more open

questions that also express opinions. This brings up a question from Diana where she once again questions what they should ask about and what they should research for themselves on the web or otherwise. Angie says there are a lot of things they will not be able to find on the web. Samuel agrees and refers to their work meeting where they had difficulties about finding things about Costa Rica – but a lot came up about Nicaragua. Diana suggests they move on to talking about the presentation – the others agree – the camera cuts.

Entrance – notes on roles

Initially, I would like to draw out a small observation about 'roles', as the former section started off with a description of my own active participation in the work process. This section is exactly the opposite of that. First of all, I am not there in any of the available clips, secondly it is also quite clear that the roles of the facilitators are that of observers, rather than participants. Apart from some small comments and questions about whether people are doing okay or stating that there won't be time to reconvene, the facilitators in these clips have become (somewhat obnoxious) observers and are almost reduced to being the eye of the camera (e.g. I am not sure if it is actually the same person filming the whole sequence). The facilitators are not drawn into the activities apart from being commented on; and they are actually being commented on as cameras; "Oh now we are being filmed", "I'm spitting on the screen and that was being filmed". Further, during their non-work related looking at pictures they realise that the camera is there, giggle and call for silence "shhhh" (the camera is then pulled away, as to avoid intrusion in what is interpreted as private, non-task related business by the person filming when he or she realises they are looking at some pictures). I just want to mention this as an example of a sequence where most of the time they are working completely on their own. The idea was for them to work in dyads and come up with questions for the interviews, which is what they are working on throughout this session. This eventually crystallises into final interview guides that they use during the interviews. However, they are also working on these during the next day, so what we are following here is the initial work on coming up with some good questions for the people they are to interview.

The organisation of work

During this session they work in smaller groups, where they discuss and work together on a smaller, more delineated task, namely coming up with

interview questions (or as we shall later see working with specific parts of the overall presentation). This type of cycle, is what I characterise as stabilisation work and production. These cycles are characterised by that the backbone threads are somewhat backgrounded. This does not mean they are not there, but only that they are not the centre of discussion. Whereas, in the previous chapter the backbone threads were centres of their discussion and work (coming up with problem formulations, addressing how to work with poverty and so), the more conceptual issues are not as prevalent during this session. When the more conceptual issues are backgrounded and not under thorough scrutiny, they engage in more stable and productive cycles of work which are most often organised in smaller subgroups.

By calling these productive cycles, I do not mean to suggest that discussions of the backbone threads are not productive. Certainly, the discussions of the more conceptual threads are very important and productive in bringing them forward, as we could see from previous chapter. But these cycles are concerned with realising, carrying out and reifying the outcomes of the more conceptual discussions. The stabilisation work also results in more tangible outcomes, such as the lists of questions the different groups compile during this session. But equally, as we shall later see, this encompasses production of animations, edited clips, cue-cards and many other things. This session is somewhat special, as they are all working on the same task, whereas in the future sessions they will divide into subgroups that work on different tasks.

In relation to organisation of their work in these subgroups it is interesting to follow the porous and unstable configurations and constellations of people in the groups. Often they form new ad-hoc constellations through physically rearranging and reorganising people. In this session it happens when the dyad of Samuel and Angie start to work with Diana and Neil, because the former have run out of inspiration. This might have been something which was suggested by the facilitators or initially arranged (though Jonas telling them that there will not be time to reconvene suggests otherwise). But it is a pattern that will become even clearer throughout the analysis. It is as if there's an organic, pulsating oscillation in how they organise their work and seamlessly shift between different group constellations.

What is also visible is their work on creating a funny and sociable atmosphere; they are listening to music, looking at personal pictures Angie have stored and also they have incorporated small jokes and funny drawings as part of the work, as I will return to when discussing the role of technology.

In this session there are some visible developments of the problem space,

while at the same time the thread of the problem itself lingers in the background, rather than being a foregrounded issue. The main activity in this session is focused on 'how to work with their problem' (their methods), whereas 'what the problems are and how to frame the problems' act more in the background as framing or orientation devices. The only time the actual problem formulation is brought up, is in the beginning of the session, where Neil and Diana seem to be discussing the nature of the problem. Here they have found some different information that resonates with the tension in the problem, as it was sketched out during the work meeting, and Diana explicitly mentions 'the problem'.

Apart from this small example they engage with the sort of methodological and practical issues of creating an interview guide, which for one thing involves relating it to the wider problem, but equally it involves discussions of how to best use the resources they are provided with (the interviewees). They are trying to negotiate and identify what they might possibly get to know from the interviews by simulating and imagining different strategies. Creating an interview guide also involves discussing, thickening and enforcing the threads, but also new threads have emerged and we will see what happens when disruptive patches and pieces enter the scene. During this evening's session they are also working with ideas for their presentations, although this is not very visible from the video data. But they hint at it during their conversations, and the notes I have available from Angie's computer show some of their initial thoughts on the presentation (appendix D1); this, however, becomes a very central discussion the next day (chapter 7).

Anticiplanning an interview guide

Creating an interview guide and discussing what kinds of questions to ask are highly interrelated with the problem formulation, and as such their questions are good entry points into their current hypotheses for causes and solution in relation to poverty. If they had no notion or representation of the problem space, they would not be able to formulate any questions. However, the thread of the problem is temporarily or provisionally stabilised, agreed upon, placed in the background and it is not the centre of attention. This does not mean it has been settled once and for all, because already the next day quite an effort is put into discussing exactly what constitutes the problem.

The overarching activity in this session is the task of 'creating an interview guide', which is a multilayered process. It consist not only in working out

some questions, it also involves discussions of what kind of questions should be asked to the people they are interviewing. Furthermore, it reflects and feed into their current hypotheses, so the work on creating the guide is intermingled with that of other threads, which will become visible through the excerpt:

Excerpt 3 – DVD3 – Title 1: (00:04:21 – 00:05:52)

Angie: We had taken sort of three overarching topics to it -for questions, that was taxes, jobs and education

Samuel: Yeah

Angie: ehm and tax, here we talked about what it is used for, how many percent and how much money that goes to taxes and is it spend in the right way, what else could it be used for – that is would you demand more money from the citizens if you would demand something else, right

Neil: Yeah

Angie: Ehm
[What do you

Neil: [What did you say? Then it would demand more money from the citizens if you should raise taxes

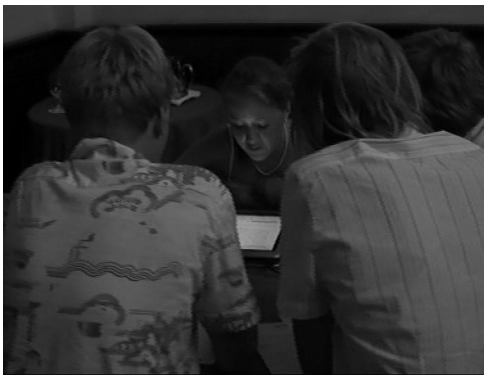
Samuel: Well
[if it was something else you would do

Angie: [Well if you if you wanted to do something different
[with taxes

Samuel: [if you wanted to use taxes should
[you then ffhh

Angie: [should you then have mo
[re money

Neil: [Ahh yeah okay do we



know anything about what they use it for now?

Samuel: No that
[(inaud)

Angie: [what do people think about taxes, do you think they would be willing to pay more (0.5) compared to other Central American countries do the Costa Ricans pay a lot in taxes? Why, Why not to all of it

Samuel: Yeah

All: (Laughing)

Diana: Ooookay

Angie: [Should we also just

Diana: [we have also made that many questions, but I mean

Angie: We should also those
[(inaud)

Neil: [But some of them are the same

Diana: Yeah
[but

Neil: [But I was just thinking that before we go on, I mean, a lot of the things we can easily investigate and not ask
[him about

Diana: [Yes exactly – what we have sort of, we have more done it like and then

Neil: So I don't know if we should do some research

Angie: Research

Diana: What
[re-

Samuel: [I just think if we can ask him, then why not just do it

Diana: We should – but it also
[just so many things

Neil: [I don't know it is just quite lengthy

Diana: Try to imagine if we were asked about that in Denmark I mean if they don't know it I
[think it

Samuel: [Ye- yeah he he it is just that it is his job to know it

Neil: It is – we didn't know that

Diana: Ohh okay

Samuel: Isn't it?

Diana: Well
[if we know (inaudible) do we

Angie: [(inaudible)

Samuel: No, I would also imagine that many of those questions we'll get an answer to just by him telling about it

Neil: Yeah, that's true - they – he also has to tell, so one should probably also ask perhaps more openly

Samuel: mhhmm (2.0)

From this excerpt it is evident that their initial 'methodological thread' has developed from the rather broad notion 'of interviewing some locals or UN people', which was represented in their problem formulations (Figure 8), into a more concrete design of questions for some experts. Although, they

do not seem to be entirely clear about who the interviewees are and what exactly they do: ("that is his job – isn't it?"). Nevertheless, the excerpt gives us good insights into some of their reasoning about the interviews, as a discussion starts to unfold around 'what kinds of questions' they should ask. Among the questions Samuel and Angie have come up with there are some factual questions (such as the tax rate). After Angie has read aloud all of the tax questions, they start to discuss. Diana mentions that they have also created quite a number of questions, though many are the same; but more importantly Neil and Diana question the strategy of asking an 'expert' some of the questions, rather than doing some research on their own. Diana thinks that they have too many questions, and that many of them might actually be difficult to give an answer to, as they are too general. Samuel and Angie on the other hand think that they should siege the opportunity of getting any kind of information, now that they have a person that might be able to give them some information. Also, Samuel argues that they might not actually have to pose the questions, since the interviewee will probably answer many of them just through the course of the interview.

The discussion seems to settle here for a moment (right after Samuel's says mhmm, Angie continues reading aloud the other questions they have about education). But the critique is brought up again during their work in this session, as Neil and Diana raise the issue again twice. Essentially, it is a discussion of how open-ended or structured questions they should ask. This is reflected in Samuel's statement about 'that many of those questions we'll get an answer to just by him telling about it'; thus assuming they might not be necessary to ask during the course of the interview. Neil, however, seems to take the stand that the narrative unfolded in the interview and the openness of the story will depend on the questions they ask. This is elaborated as Neil touches upon their own role in the interview and suggests that it might be a good idea for them to do some research before the interview (as to be able to even understand what the 'expert' will be talking about) (DVD3 - Title 1: 00.09.34). This suggests Neil assumes it requires some insight to do open-ended interviews with e.g. follow-up question on issues that might come up during an interview. So, clearly the work being done here concerns not only a process of compiling a large number of questions and then selecting the best, it is also part of their anticipative work. It is a scientific/methodological discussion of how different interview strategies might yield different kinds of 'knowledge' or 'information'. Their discussion revolves around, whether to incorporate 'what' questions (facts, information) or focus mostly on 'why' questions (causes, solutions). Diana and Neil seem

to assume that they will be able to find a lot of the answers elsewhere (e.g. on the web), whereas Samuel and Angie explicitly discuss that this might not be possible, as can be read from the last part of the vignette. Here Samuel also refers to the work meeting they had, where he mentions they had difficulties finding information about Costa Rica. This discussion reflects the process of anticipative work, as they are trying to imagine how the two strategies will yield different information and knowledge, through imagining and simulating, whether the interviewee will be able to answer their questions (in a meaningful way); or if they would be better off by pursuing the factual questions by themselves, rather than posing them to the expert.

However, this also relates to what I earlier mentioned about them acting as project managers and continuously being engaged in planning work. Apart, from being a methodological discussion about what kind of 'knowledge' or 'information' different strategies would yield, it is also a discussion of how to use the resources they have available optimally: "we might as well use the opportunity to get some information that might take us time to find otherwise" vs. "we should spend the time with the expert in the best possible way and not waste our time asking questions, we should ourselves be able to find the answers to". They are aware that they have (very) limited time available and that there are practical limitations, which will affect the work (unlike the world of research *cough*). This causes them to strategise about their knowledge foraging and discuss different ways of approaching the interviews.

Development of the problem space and thickening of the threads

As one of the first things we are introduced to the three categories Angie mentions, which seems to be a further development of their hypotheses. She mentions taxes, education and jobs as the overarching concepts they wish to query into. This is apparently a way of grouping the questions, which she and Samuel have come up with. From Diana and Neil's conversations it seems they have not grouped them in the same way. But also from the final document crystallising the work of Laura and Jasper it is clear they have grouped them differently (appendix D1 & D2).

When looking at the questions they are formulating it is evident that they are not just questions, they are also embodiments of their current hypotheses and thinking about possible causes and solutions. Apart from some factual questions of e.g. taxation rate there are also some questions about people's

feeling about taxes: if people think their money is being spent correctly and if they would be willing to pay higher taxes. This makes visible that they are hypothesising taxes as a possible cause of and solution to poverty (which is also connected to e.g. access to education as can be seen from Angie and Samuel's questions. "Do people have to pay for their education?").

Compared to the former chapter and the hypotheses they discussed throughout that meeting, there are some overlaps (education), but also some new topical threads have emerged.

Emergence of new threads

Taxes seem to have suddenly become a very prominent thread and part of the hypotheses which it was not directly in their initial mind map. Though, Jack did mention taxes during their discussions it was not a central part, as it seems to have become through the questions they are formulating in this session. Equally the notion of jobs seems to be new and not touched upon before.

In a sense young Danes, who are centre-left in their political views, coming up with taxes as a hypothesis having a relationship with poverty, might not be surprising. After all they are from a country with high taxes, strong welfare programs and as in the other Scandinavian countries the public support for the 'welfare state' with high taxes and economic equality is strong. Therefore, it hardly seems surprising that they consider taxes as a core issue. It is not something that has suddenly sprung up during the day; rather it is an inherent part of their overall perspective or moral blueprint, which will become evident from their later discussions (and also it is an important part of the presentation). However, what is a bit striking is the focus on "trust" that is reflected in some of their questions. This becomes more evident when Diana and Neil bring in their questions as well:

Excerpt 4 – DVD 3 – Title 1: (00:08:00 – 00:08:39)

Neil: It is just asking the different persons about, I mean, who is satisfied with the way money is being spent with taxes

Samuel: Yes

Neil: and if they have confidence in the way it is spent

Samuel: Yeah

Neil: If he, I mean, yeah if he trusts- if he feels it is well spent when he pays taxes or if he just thinks it is completely ridiculous

Samuel: Yeah

Diana: Yeah and if he knows like, I mean you know somewhat if the country is sort of satisfied with the government in general, I mean that can differ but still there is probably some

Neil: Mhhmmm

Diana: I mean if it is popular or unpopular (1.0) Ehm yeah and it just continues

Neil: And then also ask him about his- I mean if he has some suggestions to solutions to different problems

Samuel: Yeah

The reason why this is somewhat strange is partly because the notions of taxes have not been a prominent issue, but secondly because taxes or politicians are rarely questioned in Denmark. Of course people can disagree, but

there is fundamentally a very high level of trust that money is being spent properly and very few people would suspect politicians to be corrupt. To understand this we actually need to pick up a little, tiny thing Diana says about "what that man said".

I was quite puzzled when first encountering this statement in the video-data, as they had not done any interviews with people yet (at first I was suspicious that we had messed up the order of the video data). However, what we need do is to travel through a wormhole to the bus drive the same afternoon where they we were talking with young guide and political science student about Costa Rica. He told them a lot of different things about his view on politics in Costa Rica (which some of the young people recorded).

I sense a disturbance in the thread

Among the things the guide mentioned was a general distrust of the politicians due to some corruption scandals, which have also caused a general lack of interest in politics in the population. This is actually an important little piece of information, as it does seem to shape their orientation to the problem, as it is articulated through the questions they formulate during this session (this is important because this is before they meet the 'real' experts). They encounter, through this informal conversation with the guide, a challenge to one of their hypotheses of taxes as 'a solution to all problems'. The perspectives of distrust, corruption and indifference with politics are as mentioned not very prevalent in a Danish context (people arguing against high taxation do it from a (neo)liberal or economical perspective, but it does not reflect a distrust to politicians or fear of corruption as such. Here they encounter an argument against taxes that they are not very familiar with. It is a tension (or sand in the machinery) that argues against one of their "obvious" solutions to some of the problems of poverty, and it is a tension that they will work on resolving. This is actually interesting, as we can see that patches and pieces of information, such as opinions, information, interpretations and all the other 'patches' can have different functions. While patches and pieces can be confirmative or corroborative, they can also be disruptive to an ongoing thread (in this case their hypotheses); or maybe even destructive, by cutting, dissolving or making the thread completely frayed.

That they (or anybody else) encounter information that argues against their hypothesis is hardly a novel idea. It is at the heart of good scientific practice to actually identify something which contradicts your claims. However, what I think *is* interesting, is to look at analytically, what happens when a disruptive (or destructive piece) hits a thread. When confronted with a

thread-disrupting piece one can do different things, such as ignoring it, fight against and expel it; or one can start to reweave and re-orient as to accommodate to the disruptive information. Therefore, looking at what kind of work is done when disruptive pieces impact on the thread is interesting. In the example given here, they are starting to weave in and accommodate to the disruptive information, which will be a continuous effort of the entire group (and also prevalent in their final presentation).

Confirmative pieces

As well as pieces can disruptive they can also be confirmative or corroborative, by which I mean they are worked in to strengthen an existing thread. This can be seen in another small example from this session where Neil "worm-holes" as he mentions something about the US, agriculture and the migration of highly skilled labour (brain-drain), which the guide mentioned:

Excerpt 5 – DVD3 Title 1 00:08:53 – 00:09:08

Neil: And what he thinks about that unfair thing he tells about that thing about what is it called

Samuel: Yeah with USA

Neil: He saai

Samuel: Yes
[we don't have that one

Angie: [I think that is a good question

Neil: About support to those agricultural establishments and things like that (2.0)

Samuel: Yeah

Neil: And hand-picking of good labour

Samuel: Yeah

This shows again their ways of putting and storing little pieces of information and interpretations into their shared pool of knowledge, through their foraging and gathering processes, which can then later be consulted and re-opened as part of their negotiations. They grab patches and pieces from the pool which in this case a confirmative piece that are then weaved into the

patchwork. Here I would like to highlight the concept of worm-holing, as I think this is what Neil does. He is not only referring to an idea or piece of information. In a sense he opens a window to a past, shared experience, which is immediately recognised and acknowledged by the others; Angie even thinks it is a good question, though Neil does not formulate it as a question and Samuel continues/finishes the sentence of Neil ('Yeah, with USA'). This also surfaces a topic which Samuel and Angie have not touched upon in their questions. We see for a brief moment the re-emergence of one of the threads that was strong during their first work meeting, namely the topical thread on 'trade and trade agreements'. It is only briefly mentioned in their conversation here, but they agree it is an important issue and also they add a bit to it, by pulling in the problem of 'brain-drain' (which was not mentioned during their first session). In this sense the thread gets just a little bit stronger and thicker incorporating not only 'trade agreements', but also wider problems regarding the "mutual relations" between rich and poorer countries; who benefits the most from the relation? In this way the past moment is sucked through the wormhole and used as a confirmative or corroborative piece.

The versatility of the foraging and gathering processes

Some of these new perspectives seem to have come about during the afternoon, through their discussion with the guide in the bus. As part of their foraging and gathering processes, they have adopted some of the things he said and made that part of their questions. Though, the thread of taxes has not emerged over night, they have started to work into their questions the disruptive information about distrust between people and government due to corruption scandals which the guide mentioned. Equally, we see how the notion of brain-drain have entered through questions about how many Costa Ricans get a job in other countries and if there is a shortage of skilled labour in certain sectors; the relation between the two is indicated by an arrow and a question in different colour asking 'relation?' (in Danish: Sammenhæng) (appendix D1). These patches and pieces are not just taken at face value, as we shall see later, but they enter into their work as hypotheses which can then later be corroborated or questioned. Whereas, in the former chapter the web was their primary source of information the young guide now also enters as a resource in their work, and what he says is weaved into their unstable patchwork or cluster of ideas represented by their interview guide. In the following chapters other important resources will be the interviews they conduct with the different interviewees, but also the web is spun in as a re-

source in the process. During this session they have no internet access, but their computers still play an important role.

The role of technology

As I have previously mentioned, they are somewhat pragmatic in their use of ICT, by which I mean that they don't force the use of technology, or cling to the computers as such. Rather, they use the technologies in combination with other mediational means, such as pens and paper if they feel like it. But what also emanates from this session, is that they work very differently with the technologies, as one can see from the pictures in the session:

Diana and Neil seem to be using only paper during this session, whereas Jasper and Laura are working with a combination of paper and computer; they have put some questions on paper which they are then typing in afterwards. Samuel and Angie seem to be working mostly on the computer, though they also have pieces of paper scattered between them (however, it is difficult to say whether some of them choose not to use the computer, or if they did not have access to power).

In this session it also surfaces that they use the unique affordances of the tablet pc's very differently. Whereas Angie seems to really favour the pen and its affordance of handwriting; Jasper utters a deep distress with the 'ridiculous' pen and finds it impossible to use. This pattern of relying either on the keyboard or the pen is also very clear from some of their initial interviews with each other and it is quite obvious from the digital products of this session (see appendix D1 & D2).

Their pragmatic use of technology can also be seen as connected to a critical, reflexive stance in relation to the role of ICT. From Angie and Samuel's discussions with Diana and Neil, it seems clear that they do not hold the view that they will be able to find answers to all of their problems on the internet. That was also a topic during their first work meeting where they even utter some distress with what information is available about Costa Rica on the web. This does not mean that they do not find the web to be a valuable resource, as we shall see during their work; rather it suggests a certain level of critical reflexivity about information and communication technologies. Such critical reflexivity is not only connected to the realm of searching for information, it also surfaced in their initial work meeting where Jack discusses the use of movies as a medium for their presentation versus creating a PowerPoint. This, however, is a discussion that will be elaborated and continued during the next workdays, wherefore I shall return to them in more depth. Though, from Angie's notes we do see some different proposal for the presentation, which are both topical and concerns the media for presentation. Here the outline is to present different groups' perspectives on society through different "personal life stories" (narratives or trajectories), which could be done through animation/ matchstick men, pictures or "How about video?!", as she writes (taking the little stick man to symbolise an animation, might be a wrong interpretation on basis of the notes, but she replicates the two drawings on the whiteboard the next day as to represent these two possibilities).

Personal Computer (PC) indeed means Personal

As this is actually the first session where they work with their "own" computers, we also start to get a glimpse of how they use technology as part of their life. They have been using the computers over the past days and they got hold of them some days before coming to Costa Rica (the computers were a loan from The Danish University of Education (DPU – Danmarks Pædagogiske Universitet)). Their use of technology seems to intersect with and reflect their identities. When we look at how they use the computers as

part of their work, but also what they have stored on them and how they have used them for other purposes, it becomes evident that the computers reflect all of the different aspects of their work and the processes that are part of this; especially the social processes and their identities.

First of all for this session we can note the role of music, as part of the background during their work. While Samuel, Angie, Diana and Neil are working music is playing, which is really a background thing. They do not seem to notice that it stops during their conversation; but neither does it disturb any of them. Often somebody will have music playing in the background on his or her computer during work (or they will use their Ipods with earplugs or with Jack's speakers). Secondly, in this session we see a glimpse of the semi-private sphere of the computers, when they are looking at pictures on Angie's computer. Diana says shh and laughs and the person handling the camera interprets what they are doing as part of their private space and quickly turns away and shut off the camera, as the pictures can be seen (this is probably because of Diana's shhh and hint at secrecy, though I do think she says it because they are engaged in a non-task related activity and the 'teacher' is glimpsing over their shoulder). The pictures are not private, as Angie happily shows them to everybody, and also she uses the pictures as desktop wallpaper. But looking through the files of especially Angie's and Sophia's computers is like opening the door to a teen's room (and even some of the drawers that might be private), there are diary notes (from the trip), love-letters, pictures of friends, music, drawings and so on. Even though they got the computers a few days before we left for Costa Rica (1st of August), especially Angie has furnished and populated "her" computer, and the others start to do the same.

Therefore, as much as the technologies are an important part of the topical and problem oriented work, they are also supporting and reflecting the social processes. The computers act actually as repository for their jokes and narratives. They have an ongoing joke on one of the young people's name, as it is also the name of a funny character in a TV-show, and in one of the notes they have created a 'handwritten' narrative spinning sweet puns on the name. This was also part of their ongoing conversations where they used the name in funny and creative wordplays. Some of the boys created drawings echoing another tv-show (Mandril-aftalen) when they got bored and all their computers and notes are full of little artistic drawings, references to songs (Imagine), movies (Lion King) and jokes. In the notes Angie has made for the questions she has even reified the jokes that later crack her up when she reads aloud the questions to the others. There are some formulations of the

questions she and Samuel have apparently joked with when writing them in the first place (they are quite hard to translate, but the formulations are sort of old-fashioned 50's style language, and instead of using the term 'Costa Rican' they write it as 'Costa Ricanese' (Danish: Costa Ricaner – Costa Ricaneser)). Some jokes also display their sort of playful, composite identities. While they are concerned young citizens engaging in the Costa Rica Event and also furiously point to global inequalities in their conversations (poverty, unfair trade agreements, racism), they are also playful teens who do not mind putting in a joke about Costa Rican people being educated as Candidatum Bananus. They are fully aware of the derogatory and somewhat demeaning nature of this joke (and write explicitly: *'for fun': Cand.ban – Candidatium Bananus*), but they just cannot help laughing anyway. They *are* concerned, intelligent young citizens, but they *are* also playful, funny, post-modern teens that are lovingly aware of the inappropriate nature of the joke (it is also hard not to mention that shortly after the 20 minutes of recordings of what the young guide said, and them posing intelligent questions, there is a clip where they try to zoom in on a cow's ass – that cracked me up; but I will not mention it…). However, these playful comments, as I also mentioned in the previous chapters are also ways of negotiating a moral blueprint. The joke *is* politically incorrect and demeaning, but it equally reflects that they know *this* and that they agree on *this*, which is also why they 'allow' themselves to find it funny in the first place. It is a part of them creating a sociable and funny atmosphere, which is an important part of whole enterprise. They essentially had a lot of fun during the trip and the jokes and ongoing narratives were also reified in the documents and files on their computers.

With that said, the computers are of course very important in relation to their entire work process for storing documents, pictures, links and so on, which is a part of their foraging processes and are instrumental in crystallising the outcome of their stabilisation and productive work. They act as intermediaries for the exchange and storage of files. In this particular session as storage for the interview guides they are working on and for taking notes. Equally, during the process they will use them for task lists reifying the distribution of work, for note taking, for the interview guides when they go to the interview, for creating the PowerPoints, the animated show and so on.

Summing up the chapter

In this chapter they engage in a cycle of work which I call cycles of stabilisation work and production. This does not mean that it is routine work or does not require negotiating, adding ideas, brainstorming or processes of anticipatory work. As should be visible from the analysis they engage in discussions and draw on resources from their shared pool of knowledge. When differing between cycles of stabilisation work and production and cycles of remixing and patchworking the difference is that they are working on more discrete, bounded tasks and not re-negotiation of the entire problem space. This I shall also go more into in the beginning of the next chapter.

In relation to their use of technology I stressed that even though the computers are very important in relation to their work process they are not only 'tools' for 'communication', 'information search', 'production of homepages' or whatever category we would like to use. Technologies are part of their lives and ongoing activities; a part of their lived experience of being in the world to echo the terms of Wenger (1998). As well as they are important for the work; they are equally arenas for music, entertainment, jokes, fun, displaying social relations and so forth.

In this chapter we have seen how their meeting with a young guide shapes their enquiry and how it becomes part of their foraging and gathering processes. Some new threads seem to have emerged around especially jobs and taxes. The latter thread, as I mentioned is not new, but they have also encountered some disruptive 'patches and pieces' that have disturbed their notion of taxes as a possible solution. This disruptive information they are in this session trying to weave into the interview guides, through questions focusing on trust and people's feelings about taxes. The notion of jobs seems to have emerged from, or gained strength, through the conversation with the young guide who also tells them about brain-drain and other topics that find their way into the questions.

The interview guide then, is not only a range of questions, but acts as a provisional representation of their problem space and their current hypothesising about causes and solutions of poverty. But coming up with these questions and which questions to actually incorporate, involves also some anticipatory work in trying to imagine and simulate how the different designs of questions might yield different answers and knowledge; but it also involves some pragmatic decisions on that it is a good opportunity to have some questions answered, even though they might also be able to find the answers

themselves; at least some of them argue they might as well ask, rather than ending up without being able to find the information in other ways.

As the interview guides and their ideas on the presentation are representations of their problem space and hypotheses, they are unstable patchworks and clusters of ideas which are ready to enter the collective processes of patchworking and remixing. They are still open to further negotiation, which is exactly what we shall see in the next chapter.

Chapter 7: First work day at CINPE the 8th of August – A new problem formulation emerges

Throughout this chapter I will illustrate how the small patchworks that were created the night before now enter into a cycle of remixing and patchworking. We shall also see how this cycle is characterised by constant contractions and oscillations between reaching stabilisation and then phases of destabilisation. This I will explore through discussions of their presentation, as during this chapter they are trying to stabilise on a blueprint for the next day's presentation. However, as we shall see their discussion of the backbone thread of the presentation quickly become entangled with the problem and their hypotheses for causes and solutions; but also with the backbone thread of their methodology or ways of working with the interviews. Hereafter I will follow their winding path on stabilising and negotiating a new problem formulation.

Through analysing their work with the unstable patchworks that were created the evening before, I will explore further the cycles of remixing and patchworking, and I will illustrate how different disruptions spawn little whirlwinds and streams of ideas that carry forward their work. During these whirlwinds and streams of ideas multiple ideas and topical threads emerge, but also the disruptions cause them to reweave and re-align the blueprint for their enquiries. Therefore in this chapter we see the emergence of many new topical threads, but also thickening of some of the existing threads; for instance those on taxes, education and jobs as were crystallised in some of their interview guides from yesterday.

As I explore in more depth the cycle of remixing and patchworking, I will also analyse how the various technologies are related to the different cycles and processes. I shall argue that the relations between the cycles and technologies change during the process, but this is something to be explored in the subsequent chapter. For now, let us feast our eyes on this tasty vignette.

Vignette I: Negotiation of the presentation and the problem formulation

(DVD3 – Title 2 (00.00.00 – 00.54.01) and DVD3 – Title 3 (00.00.00 – 00.02.10)

Here we are located in the room that was kindly provided by CINPE during the young people's work. I am there from the beginning, whereas Lone is attending some sessions back at Marriot. We arrive there rather late (around lunchtime), as there were panels and presentations in the morning (see appendix C). During this session they discuss their presentation, the problem, the interviews and they are informed about the Intel Clubhouses, which prompts them to come up with some entirely new questions. Apart, from that they try to establish connection to the internet through the wireless network, but never succeed due to some errors on the network.

After arrival they try to connect to the wireless. They mess around with the computers, buttons and help pages. Sophia asks for a network key. As Jonas and I start to interfere the camera cuts. Now follows some work, which has not been videotaped, but reconstructed from my field notes.

Louise starts to facilitate and she writes on the whiteboard what they suggest. She uses the categories of Angie and Samuel, who are commenting. Jack and Neil are drawing characters and names from Mandril-aftalen (Danish tv-show), while Jasper sits with the English questions he and Laura came up with the following evening. Diana checks off questions they also have when others suggest similar questions. Angie is checking some pictures on her laptop, but switches back to the questions, when Louise asks her a question. Louise urges them to speak one at a time and Diana suggest a question about if 'education has had an impact on lowering poverty'. Laura sits with her hand raised to mark she has a question and others budge in with questions as well – unfair trade agreements with the US are mentioned. Sophia and Angie are noting and drawing. Angie plays with the dictionary she has installed on the computer. I have the feeling that we are losing their engagement – Jack and Neil are drawing and it worried me a bit that Laura raised her hand, as this suggests a teacher-pupil interaction. I quietly suggest to Louise that she should ask one of them to take over the role of the facilitator. Shortly hereafter, the camera is turned on again. Louise suggests that they wipe clean the whiteboard, now that they have noted everything, and one of them takes over the role of the facilitator.

Angie takes up the offer and goes to the whiteboard, as to facilitate a brainstorm on the presentation. During the discussions she takes notes. Neil talks about a suggestion they have discussed about doing a role-play involving the participants at the conference. The participants are to play different societal groups, having different conditions and then being confronted with some decisions to make. Thereafter, the young people will summarise. They think it is a great idea, but some mention it might be difficult to do with the time available and also they think it will be very difficult to summarise. They discuss how it might be done and how to facilitate it; Angie thinks it would be nice to do something different from the others. Laura asks what message they want to convey through doing the role-play, and Angie says it is about showing how taxes affect groups differently. Neil says, that this was their idea, but he would like to hear what the others have come up with.

Angie starts to explain, what they came up with: doing a movie with real people or animated people. If a poor person breaks a leg, and there are taxes, then that person will get access to medical help. Diana mentions they also talked about doing a history about Denmark and Costa Rica, but expresses some doubt about that as a viable path; others take it up and Sophia suggest they could do something with a rich and a poor person in Costa Rica. Jack thinks that it is a universal issue and they need not mention countries. Laura asks if it should be a PowerPoint or what they had in mind; Jack argues that it should be a PowerPoint – one can easily invest a lot of time in doing a movie, with little results. Angie mentions the program Mediator and they discuss if they can create animations with the PowerPoint application – Jack gives some ideas on how it can be done. Angie sums up and asks if those are the two main ideas and what the facilitators have to say? The facilitators answer that it is entirely up to them to decide.

Sophia mentions that they also need to incorporate the topic of education –

the animation is a great idea, but they should not forget education. Angie suggests that they can represent the persons they interview with some pictures and then a matchstick-man animation. Jack states that since they do the interviews they might as well use movie format and Sophia suggests they can combine animation and film. Diana kicks in and says that in all these discussions they need to be aware of the story they want to tell and the connecting thread. Jack agrees on the focus on the problem and the connecting threads, but says that what they are discussing are just the means as to make the concepts easier to understand.

Laura is not quite satisfied with that, and now that Jack mentions the problem and problem formulation, then concretely, what is their problem, she asks? We need a problem formulation she continues, so we have a plan and some suggestions for addressing poverty. Diana criticises their current suggestion and she is not sure if showing that a poor man cannot go to the hospital directly addresses how to solve the problem of poverty. Sophia thinks that taxes can improve the lives of poor people e.g. by giving them access to medical care, and Laura continues by stating that taxes are important also in relation to education, libraries and so on. Samuel adds that many people cannot afford an education and that taxes could be an answer to that. Sophia says that taxes are Denmark's solution to problems, but something else might work better in Costa Rica, she says, and raises the issue that the Costa Ricans do not trust the politicians. Angie replies that they don't know that for sure.

Laura says that tax income needs to come from somewhere and since some of the best educated and highest incomes might be leaving the country – that poses a problem. Samuel adds to that by stating that the reason why companies like Intel come to Costa Rica might be due to low taxation and a highly educated work force; if taxes are raised they might move somewhere else,

thus creating a vicious circle. They discuss different ways this could be avoided and also discuss that the richest should also pay more to the common good – Laura thinks property tax could be a way to ensure a more equal distribution. I interfere and ask if they are actually sure there is a gap between rich and poor people; they think so, but they need to look more into it. Louise says that the guide yesterday told her that there was almost no middle class anymore and Laura talks about social polarisation. I hint at an index Lone mentioned (the GINI index) and says that might give them some ideas.

Now, they want to find some information and ask for an internet connection, they start to mess around with their computers and have a small break. Laura asks if there is anymore for the presentation, Diana thinks that they now know a little more and have the suggestions, so they need not take the decision right now. They move around, some need power, others mess with their computers.

I ask about their current focus and refer to our earlier conversations, as I ask whether they are looking at Costa Rica as a success or as Costa Rica as having some problems with poverty. Some say that they are not so much looking at Costa Rica as a model anymore. But Laura suggests that they could use some of the things about military and education and then also talk about the things that still need to be addressed. Samuel adds that they need not to focus on Costa Rica, but can make suggestions that apply to different countries. Sophia and Laura comment that they would then need to transform some of their questions. They argue the questions they have now are especially about Costa Rica, as Laura says, and even though the Costa Ricans might be positive towards paying higher taxes, this would not necessarily be the case in other countries.

Now Astrid enters with news about the wireless network, the technical supporters are on their way. Jack says he thinks that before they plan too much, they should also see what their interviews will yield. Others think that they need to know what they are looking for; else there might be inconsistencies between what they want to say, and what the interviews have given. Angie sums up – so do we take our departure in one or the other perspective. Jack presents his view – what have they done well, can it be used in other countries, are there things they could do better and could that also be done in other places. Neil says that they would then need to come up with some other questions for the interviews. They discuss whether they should focus on Costa Rica and what they have done and if the questions about e.g. military and education are connected to poverty at all. Diana thinks that it is about prioritising the money and that it has helped Costa Rica spending money on education, though she recognises, as others say, that there still is poverty. Laura thinks that they should stick with Costa Rica, a lot of the things they have done are worth doing in other places, even though there still may be things to address in Costa Rica.

Sophia expresses some frustration and thinks they have so many different ideas – it might be worthwhile to create a reaction scheme or relation scheme, she suggests, as she is a bit confused at the moment. Laura agrees, but thinks that they are trying to resolve and address the issues now; Sophia thinks they should write it down then. They all agree it is a very complex problem they are working with, but that also makes it exciting. Angie tries to summarise and suggests that they are talking about, what Costa Rica has achieved, how this could be used in other places and what could be done from here. The others agree and Jasper ask Angie to write it down; Sophia mentions that they need some facts as well and says something about a president, but then she asks how many of those important people they are to interview? I give them a piece of paper with the plan and Astrid starts to tell

them about the club house and that they might be able to interview on of the leaders of the place and perhaps some of the children using the Intel Clubhouse.

Laura starts to talk about their bus conversation which Sophia also seemed to be hinting at. They asked him what Costa Rica had done, and he mentioned something about the military and tourism, Laura says. Sophia adds that he also mentioned something about a president being a role model. Laura agrees that there were four things he said; Angie asks what they should end with. Laura says that they will end up concluding something in one or another way. Hamid, the network guy, enters the room and some of them cheer. Sophia thinks that they should come up with something catchy at the end of the presentation and Laura suggests that they should end up with something like in general we think it is a good idea to do so and so. Angie asks what she should write, but then goes on to ask how to access the network as we have been writing the network code on the whiteboard.

Here follows a lengthier sequence where they try to connect to the network; they read the code to each other and we try to figure out if the code is correct. They are helping each other and trying to explain how to access the network. Though the code seems to work, they still cannot access the network; some give up and they start to talk about people in their classes, while I try to solve the network problems together with Jonas. We end up suggesting that they can use a computer room, but we will go find Hamid again – something is not quite right.

When Hamid comes back we try to resolve the problems, while they talk – Jonas encourages them to identify what they need to know and then use the computer room. Samuel has found something about Costa Rica's debt on a piece of paper and they start to discuss debt and economy; Jack wonders why they have not consulted some of the material they got before leaving,

referring to the documents Samuel sits with. Angie tries to sum up and move on; what should we do now? Laura insists that they should work with a problem formulation. Angie suggests something about how Costa Rica has managed so well and Costa Rica as a good example, Laura, however, thinks that they need not incorporate Costa Rica in their actual problem formulation because that is just their entrance path into addressing a wider problem. They try to come up with different formulation and starts sentences which they leave hanging in the air. Some mention taxes and debts, but others think that should not be an integral part of the problem formulation; they stutter, mumble and create half sentences. Laura suggests 'how can we improve a poor society', Sophia says they can then look at a society and see what they have done and then present possible solutions. Laura agrees, how to improve a poor society is the overall problem, we have looked at Costa Rica, but we think that what they have done could also work in other places, as to enhance education and improve production and export. Sophia, thinks that they should focus on Costa Rica, and the others break in and say that is what they are doing; Sophia then asks if they should also include something about how Costa Rica used to be and that they have already done a lot. Laura adds that if they just find a heading that is broad enough, they can do whatever they want. Diana supports the formulation Laura has come up with. Jack asks if anybody disagrees, and if not, then it is accepted. Sophia gets up and writes the problem formulation on the whiteboard. Now there's a certain feeling of relief among them and they chit-chat a bit. So what should they do now?

Entrance – notes on roles

First off, and to worm-hole to the other chapters, I think it is worthwhile to speak a bit about roles and the transformation of roles during this sequence. Initially, the facilitators and researchers are in charge, which I believe was suggested by me. Louise goes to the whiteboard, as to facilitate their discussion and reify their questions. This, however, generated an unwanted interactional effect. What happened was that they regressed to a school-type way of interaction. Louise became the "teacher" who distributed the right to speak (which in turn was adopted by Laura as she started to raise her hand). Louise asked them questions, asked for elaboration and asks them to speak one at a time. I had a feeling, that we were actually creating a sphere of teacher-pupil interaction, rather than peer-to-peer interaction, and I sensed that some of them lost their momentum (Angie is looking at some pictures, but shifts to a document, as she is called upon by 'the teacher' – later she

starts to draw and look at her installed dictionary; Jack and Neil are drawing their funny drawing during this particular segment (appendix D3). This type of interaction conjures up image of school-practice and the production and re-production of a school-type pattern of interaction. The teacher is in front of the blackboard and acts as a hub[15]. The teacher points out a speaker, listen, add what he or she thinks is important to the whiteboard, asks follow up questions, rejects or accepts the comment or statement; only two are active at a time:

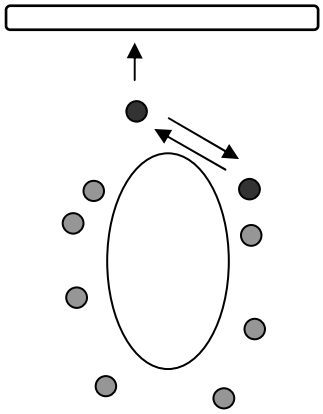


Figure 9: Teacher-pupil interaction

This is just a layout of a very, very typical classroom-type of interaction where the teacher act as the gatekeeper or even firewall between, what is said by the individual student and what is then "translated" to the whiteboard. The right to interact is then passed on by the teacher, selecting among the hands of the students or just pointing out somebody to say something (often not to the pleasure of the student, as the reason for picking the student out in the first place might sometimes be to expose that they were not paying attention).

They immediately adjust to this interactional pattern and accept it (though they are also acting somewhat subversive by drawing or looking in dictionaries). I remember having a feeling that this was not the optimal pattern and when Laura started to raise her hand, I felt we had changed the 'accountability structures' from mutual, peer-dialogue and discussion towards a more hierarchical 'right/wrong, acceptance/rejection from the teacher'. I do not mean to say that this pattern of interaction is inefficient, bad or wrong. It has it advantages in governing large classroom interactions; but when doing

problem oriented group work between peers, it is quite uncommon that anyone in the group would choose themselves – or be allowed by the others – to play out this role. Neither, do I mean to say that Louise embodied this or consciously acted it out. It happened largely unconscious and was collaboratively constructed by all participants; they slipped into their roles as pupils, and we as the older and more experienced people, slipped into a tutor/teacher role.

Whatever happened, I got a gnawing feeling, that this would not work; and so I quietly got up and told Louise to leave 'the stage' to one of them. This also created a different pattern of interaction, as we shall see in the examples. Basically, Angie has a very different role at the whiteboard where she monitors the ongoing conversation between the other participants, write suggestions on the whiteboard and engage in the discussions:

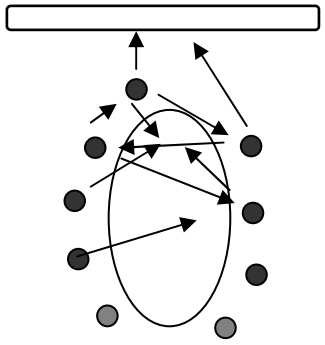


Figure 10: Peer-interaction

This pattern might seem a bit exaggerated for some of the initial discussions, as the interactional pace during this sequence is not as fast and vivid, as the arrows might suggest (but we shall come to see some pieces where this pattern unfolds within few seconds). However, the difference is that Angie does not control or select the speaker and neither does she encourage people to speak one at a time; this is a task distributed among the participants themselves.

It is noteworthy that these roles are not static. The night before, the facilitators play a very small role throughout the sequence, whereas initially, in this sequence, we are allowed to be very active and in control of the activities. However this pattern completely changes during this session. Had the roles been static one would expect that every time a facilitator or researchers opened their mouth, they would be granted the word, solemn silence would

fill the room, and they would hang by our lips, while we would share our words of wisdom; However personally gratifying this might be, this was *not* what happened. Actually, most of the time, we had to enter the battle of voices and claim the word – either by raising our voices considerably (which happens a few times during this session), or even kindly being granted the word.

Cycles and organisations of work

This session is a good example of continuous contractions and oscillations between stabilisation and destabilisation; they agree on something, but then re-open the debate, or they background something e.g. the problem, formulation which then pops up again and again until they manage to resolve it. Furthermore, we can see in this chapter the interplay between cycles of stabilisation work and production and cycles of remixing and patchworking; the results from the the night before enters onto their working table, ready to enter a cycle of remixing and patchworking. Through these discussions they come to agreement on some key issues and they are then ready to split up in smaller groups to engage in stabilisation work (which is reported in the second part of the vignette).

The opening of the session is an attempt to coordinate and bring together the different threads and subtasks they have been working on the night before, because they did not have the time to meet and coordinate. The night before two of the groups (Angie and Samuel, Neil and Diana) teamed up to coordinate and negotiate their questions. Now this is done once again, but this time involving all of them. Furthermore, the questions Laura and Jasper worked on also enter the scene, so we have two main groups that have come up with questions. The 'two interview guides' are thus the products of their cycle of stabilisation work or production, which in this session enters a cycle of remixing and patchworking.

This might sound like the cycles of stabilisation work and production are then somewhat more routinised work that does not involve re-thinking, negotiating, brainstorming, adding new ideas and so forth. But as is visible from the previous chapter, this is an inherent part of this type of cycle where they do create a patchwork and cluster of ideas.

The cycles of stabilisation work and production are organised as small-group work where they share, collaborate, brainstorm, select, add new ideas, align them to the existing idea and skip some ideas. The result is a negotiated, reified 'patchwork' (notes, interview guides etc.) which embodies dif-

ferent ideas, inspirations, references, negotiations and so on. The reason why I refer to this as stabilisation work, rather than as a cycle of remixing and patchworking is because it is focused on more discrete, bounded tasks. These are visibly connected to and refer to the backbone threads, but the difference is that during their stabilisation work they do not directly negotiate, redefine, question or work intensively with the backbone threads themselves, as they do for instance during their first work meeting (and also during this session). In this sense there is a hierarchical difference in the gravity of the changes involved in these two different cycles. During the cycles of remixing and patchworking they are working with the foundational structures of their work where changing something will have a stronger impact. Deciding not to do interviews or redefine the problem have more far-reaching consequences for the collective enterprise than reformulating a question in the interview guide, or changing the drawing of a rich man in the presentation.

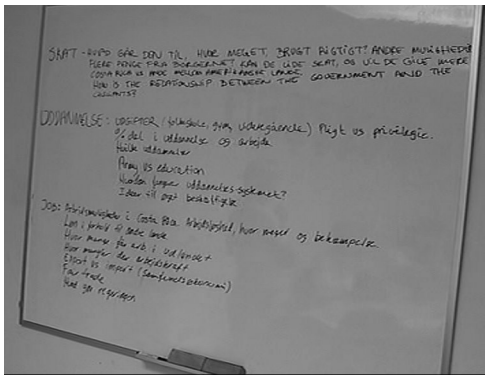
The outcome of the stabilisation work, to stay metaphorically with patches or threads, is a bit like each group create a little patchwork which then enter into the larger patchwork in combination with the patchworks created by the others. The interesting part then becomes how they combine them. They could just quickly attach one patchwork to the other "you have ten question, we have ten questions – now we have twenty questions". Another way to approach it is by re-weaving and reorganising the patches in the patchwork, thereby creating a new patchwork. As I mentioned in relation to disruptive pieces of information hitting the thread, we need to look at what happens when different objects or patchworks meet; are they quickly joined and stitched together or is it a process of opening the seams, inspecting the relations between the patches and then reorganising them?

This type of work is initially carried out in the work with the interview guide. However, since the camera was not recording during this negotiation, it is difficult to reconstruct, what happened in detail; but from some of the reifications of their work we can see hints of this process.

Negotiating the interview guide

The interview guides go trough the funnel a second time. The products of the two main groups are tossed onto the worktable between all the participants and the results are reified on the whiteboard and in Sophia's notes. Unfortunately this process is difficult for me to reconstruct in a satisfactory way from the field notes, when it comes to the more detailed aspects of adding the questions to the whiteboard and Sophia's notes. However, we can

see how the work of yesterday evening, and then their negotiations during the beginning of this session are reified on the whiteboard:



Here the categories that were prevalent in the work of Angie and Samuel are replicated and all the young people's questions seem to be summed up, either on the whiteboard or in their own notes (appendix D1). This is negotiated as a group where they add questions, remove them, structure them and discuss the overall design of the interview guide. This process is not visible from the video material, but we learn this when Astrid asks about their knowledge of each other's questions, and she assumes they have not coordinated their questions. They correct her assumption and point out that they have already negotiated the questions, and Sophia has even written all of them down in one document (appendix D7). Now they seem to have stabilised around three overarching topical threads; namely taxes, jobs and education. As I mentioned in the previous chapter, these are not only classification devices structuring their questions, they also reflect their hypotheses of causes and solutions.

This does not conclude their work with the questions. For one thing they still need to choose some questions, as they agree they have way too many; but then what questions to ask are still open to negotiation. Furthermore, later in this session they realise that the questions they have created might not work for the interviews at the Intel Clubhouse. So, for one thing they need to stabilise and sharpen the number of questions they have already arrived at, but at the same time they need to create some new questions for the Club House interviews. They are, however, not perfectly sure what the Club House is all about, and how the interviews with the clubhouse representatives will feed into the topic of poverty. But for now they agree that the groups interviewing should resolve this on basis of the collectively negotiated list.

After the questions seem to stabilise, they enter a debate of the final presentation on basis of the ideas they came up with the night before. They have created two rather different proposals or outlines for how to do the presentation: a role-play and a movie-like presentation. The discussions of the presentations open to many different ideas and the backbone threads are continuously taken up for inspection.

Thickening of the threads and opening new grounds

Whereas in the former chapter the backbone thread of the problem was not very prevalent, it becomes one of the focal activities during this session. The problem formulation is not their initial focus, but the necessity of working with this emerges through their negotiations of the different ideas for the presentation.

Thus, the problem is dealt with over a lengthier period of time, and sometimes it is temporarily abandoned, but rears its head as they move on. It pops up regularly, but is not really resolved until they come up with a formulation they can all agree to. During their negotiations of the different ideas for the presentation many of the backbone threads are in play at the same time, and it becomes visible how entangled they are. As it can be read from the vignette, the presentation, the problem and how to work with their 'empirical data' become heavily interwoven: does the presentation they imagine actually reflect their problem, and would it lead to viable solutions for Costa Rica? Should they record the persons they interview on video, both to recollect the conversation, but also to possibly use the footage as part of the presentation, as it is suggested?

These discussions are quite long and their path through these discussions is twisted and full of small detours and shortcuts. Initially, their discussions form around inspecting and unravelling the two different ideas or small patchworks that are brought onto the working table; this trigger some discussions about the form of the presentation and the media to include, but also it becomes evident that discussing the problem is necessary. Therefore, the backbone thread of the presentation increasingly slides into the background and the thread of the problem becomes the focus of their discussions. The excerpts have their own interesting rhythm and we shall see how disruptive pieces and attempts at reaching stabilisation or closure spawn

whirlwinds or streams of ideas where all the different patches and pieces are thrown into the air; but also how they land and find their place again.

Unravelling and inspecting the first idea for the presentation

In these excerpts Neil presents the idea of doing the presentation as a role-play. This is an entirely new idea that has not been present so far in the other chapters (whereas the second idea they discuss has some similarity to the presentation they imagined during their first work meeting). The new idea is only somewhat hinted at in Angie's notes, but from their reactions to Angie, who initially ask if they have heard about it, we can assume that they have not shared this idea of the presentation with everybody (and I believe it is something which is suggested by Neil and Diana, but it might be a combination of their ideas). Neil explains the idea, and it is a very different from the original idea that sprung up during their work meeting. This gives us the chance of seeing how a small patchwork, that was made the evening before is approached and worked with. Neil tosses the patchwork onto the working table and lays it open to inspection, querying and unravelling. Metaphorically they now sit with scissors, threads and patches, ready to reweave and remix the idea.

The discussion in the excerpts below I have split into two segments. In the first segment Neil initially present and lay out the idea in collaboration with Angie and Diana, and ending with him opening to critique. In the second segment they all discuss the idea where after Neil sums it up as a possibility. Thereafter Angie presents another idea.

Excerpt 6 - DVD3 – Title 2 (00.03.08 – 00.18.50)

Neil: Yeah, but we talked about ehm what do you call it, involve the audience in that roleplay, maybe in groups do roleplay (7.0)

Jack: A roleplay? (1.0)

Others: Yes, Yeah (2.0)

Jack: That's nice

Neil: That's fun

Angie: Do everybody know what it was that we talked about?

Laura: No

Angie: Alright- fine

Neil: It is-

Angie: Then you better explain it (2.0)

Neil: It is just a suggestion for a roleplay, but I don't know if it will be too complicated, now that we don't have much time to do it all (1.0) but it was something like dividing people into some groups that ehm (1.0) that each should represent parts of society where they could themselves be confronted, in their groups- they could be confronted with some of the problems there are when they are in that situation they have been put in- then we would first have to write- explain to them their situation in advance (1.0) and then from those information they have about their (1.0) role life that ehm then choose some things and then we should summarise afterwards which consequences their choices would have for those social groups ehm

Laura: Which social groups might that be for an example?

Neil: But ehm it could be for example an- I dont know, what do you call it, a peas-

ant or what do you call it a plantation owner with his family with kids that need an education and all, and then a big businessman that might be importing bananas from the US, and I don't know

Diana: Now I come to think about because that prob- the problem was that we then would have to predict what they would arrive at, but couldn't we give them some options to choose from?

??: Yeah

Diana: Because it could be everything in the world they arrive at and things like that, so if we in one or the other way could give them some options that would then like have some consequences for others like something, then find out- but I don't know- but I mean that is at least ten times easier than have to sit and

Neil: Yeah that
[was at least what- what was the big problem with this way of doing it

Diana: [in relation to the future

Neil: which we had thought about I mean when we talked about it with the others and we arrived at that it

would probably be pretty difficult to predict it, and also to summarise it

Angie: but- but

Neil: It is also what has been the most (inaud) with it as well, I mean doing a good summary because we wouldn't be able to use for anything if we are not able to sum up all the threads in the end – like it will just end up with nothing- that would be a shame

Angie: I also had a good idea for summarising- I think at least it was very good

Diana: Was it the one with the video?

Angie: The one with video

Diana: Yeah, if the people we talk to today and tomorrow, if we like use some of their, I mean if they have some stories or some of their comments to like sum it up, I mean those are real people that you can see, it is not just something we are saying – it is
[like

Angie: [but give their solution

Diana: Yeah exactly, I mean in some or the other way get them to like ((gestures)) Yeah I mean

Neil: Else, I don't think it means that much if people think

it's fictive or not or if we have proof it is correct

Diana: No, that is true but, it is just a little bonus then [if they then

Neil: [Yeah that's true

(4.0)

Neil: I don't know what people think about that idea?

Before going into the process, I think it is actually worth mentioning the interconnection between the different threads represented in this idea and how it reflects, embodies and incorporates many of the issues they have discussed. The idea is to have people act out a certain role from a pre-given perspective (e.g. a poor or a rich person). From that perspective they need to resolve a dilemma or problem they are confronted with (by the young people), and then face the consequences of their choices. This is an interesting idea, as it shows that they do recognise poverty as a contentious, multifaceted problem that might involve many different causes and solutions. They recognise that it is a problem space that might appear and be perceived very differently according to the perspective chosen. This presentation would be a 'solution' that would be very aware, that there might not be any final uncontested solutions. Though, they are discussing how to embed the morale of the role-play (in that they would sum up, choose the dilemmas and their consequences) they would not situate the audience as completely passive receivers, but as active participants (and responsible citizens). The central dilemmas, solutions, causes and problems would then be experienced and enacted by the participants. In that sense they would not deliver a solution; rather they would present the audience with the complexity, contradictions and tensions of the topic of poverty, as they have themselves encountered this complexity. This idea indicates that they really do understand it is a very complex problem, and that e.g. that the value of trade agreements might look different from the perspective of the rich importer and from the perspective of the poor farmer; but let us return to the actual process.

As soon as the idea is introduced, Laura starts asking clarifying questions, as to grasp the idea. Following this Diana raises a reservation she and Neil (and possibly others) discussed the night before, thereby worm-holing and reviving last night's discussion, as a resource for the current discussion. Their 'old' discussion acts not only as a reservation, but also becomes a re-

source for suggesting a solution to the reservation that is raised (giving them some fixed options to choose between). The most active participants in the debate at this stage are the people who were working with this idea the night before (Angie, Diana, Neil). It is not only a matter of presenting the idea, but equally to mention, revive and scrutinise the reservations they had, which spawned from their collective discussion.

Rather, than presenting a final idea, they quickly start to interact and work critically with the idea right from the beginning. They present the complex of their thoughts and discussions, as they were played out the night before. In this way they revive and make visible to the others, some of their own reservations and possible shortcomings of the idea. Their discussions of reservations and shortcomings are examples of their anticipative work. They are starting (or reviving) some simulations, through which they test the strength of their claims and ideas and they are trying to imagine, whether it is a realistic enterprise by coming up with counter arguments and foreseeing potential practical or conceptual problems.

This is reflected both by Diana's concern of the openness and Neil's comment about the risk of not being able to sum up the inputs they receive. In this way they are running a shared simulation of what will happen two days from now by 'acting out' or imagining the future within the present. They test their ideas by trying to foresee how people might react, what they might do and what could lead to success or failure. The work is done by presenting and bringing their previous ideas, reservations, arguments and suggestions onto the work table to make them part of planning and anticipating the future. While Neil present the idea, they make visible also the possible flaws and simultaneously present possible solutions. Diana raises a concern, but also propose a solution and Angie also tries to mend the problem, through her suggestion of the videos.

The latter idea seems to have been discussed the night before, as Diana recognises the idea (was it the one with video?), whereas it is not immediately visible, whether the solution Diana proposes has been previously discussed, or if this is an idea that just sprung up. Diana further expands on the video idea, and thinks that would add some validity to their ideas 'it is not just something we have come up with – it has some grounding'. This is once again an interesting example of scientific thinking. They are concerned with and try to foresee counterclaims and conceptual faults, but also they are reflexive about providing some 'evidence' for their conclusions (even though they do not quite agree to which degree this is necessary). In a later example

it also becomes evident that they are concerned with staying true to their empirical data and not misrepresent or manipulate what they have been told by the interviewees.

The ideas, reservations and suggestions are multifaceted and reflect aspects of both anticipative and planning processes. Some of the reservations are primarily related to very practical concerns (is it possible to do within time, as Neil himself asks), but also they are exploring possible conceptual flaws.

Diana's initial comment reflects both a practical concern and an acknowledgment of the complexity of the issue they are dealing with. It is not a reservation in relation to the idea as such, but a reservation relating to the openness and complexity of the proposed format. The complexity of the problem presented to the 'audience' might result in multiple suggestions and reactions which will be very difficult to plan for and foresee. Secondly, she also thinks that coming up with a more structured role-play will actually be easier for them to manage in the end. Even though they need to put some more work into it from the beginning, it will pay off in the end. This intermix of different reservations are tossed out in the open, and they have now started the process of unravelling the unstable patchwork, reorganising pieces and adding new ideas. This becomes more visible, as the others start to join the patchworking and remixing, as well:

Excerpt 6 - DVD3 – Title 2 (00.03.08 – 00.18.50) – Continued

(5.0)

Jack: I think it will be really difficult

Samuel: It sounds really great, but I think it will extremely difficult

Diana, Neil: Yeah, Yeah

Jack: It is also like, then there has to be a moderator and (inaud)

Sophia: No, it is a question if we show it only to the power users? Isn't it for all? I mean, I think it can be difficult if we have to do it between the power users,

should we do it first then or during or?

Neil: What did you say?

Sophia: If we are going to do something where we split them into groups

Diana: Of course it is just the power users who should participate like that

Sophia: Yeah – but we have to show it to everybody

Others: Yes (3.0)

Laura: But that that
[whi

Diana: [But then those that

Sophia: (inaud) so not very long after the others

Angie: I
[think

Diana: [but they also just have to like observe us right

Angie: I think it would be cool doing something different from everybody else

Diana: Yeah exactly

Angie: Because I don't really think the others have come up with the same

Others: No

Laura: But then they arrive at a way they will react to the story or what?

Angie: And yeah

Diana: Else - Yeah

Laura: And what, should we then use that for, something else in the presentation or should it just be

Neil: Yes, I would say or else

Jasper: We have to calculate with [that it will become

Laura: [Yeah, but that is also the thing, but then what should we use their answers for

Neil: To- To show that

Diana: Show

Neil: Ehm (1.5)

Diana: That maybe it isn't that easy and

Neil: Use

Sophia: Something with [(inaud)

Angie: [Showing the different solutions for the different population groups

Jasper: [What if everybody just do what is best for themselves then you can then see how the money they use, if they did something completely different

Neil: And-

Angie: But then also show that [like taxes are good for certain groups maybe

Jasper: [Or trying to do it

Angie: Or, how can you say it – it is like- it gives different possibilities to different groups

Sophia: What we have on poverty should be now, then (3.0) we need to have poverty included in it as well (3.0)

Laura: That, well taxes are a good thing (2.0)

Neil: I don't know, it was just a suggestion, I don't know how- there are other- we have all tried to talk about and I don't know what all of you have come up with (4.0)

Jack and Samuel both think it is an interesting idea but also raise some concerns. Jack has a practical concern and thinks they will need a moderator; Sophia raises a question if it should only encompass the power users or the entire crowd, and suggests at the same time that the exclusive focus might be problematic, as it could be boring to the other participants.

So, looking at these suggestions, adding of ideas, dissection and critique it is visible that it works at different levels in both segments. It is simultaneously about validity of their claims, practical concerns, potential problems, but also which media to use enters the reweaving of the patchwork. They don't seem to be working with only one thing at a time, rather they open several different sub-threads or pick a patch to query into and reorganise. The thread gets frayed and split into multiple threads that are inspected and sometimes connected (as e.g. Angie suggests the video-narratives as a possible way of wrapping up and concluding, as to solve the problem of summing up). It is a pattern where ideas sparkle and many smaller threads are opened, as they start to unravel the threads and the patchwork. They raise concerns of a very different nature, from practical concerns to exploring and mending more conceptual flaws.

Simultaneously with the process of unravelling where divergent threads and patches are emerging, there are also visible signs of trying to re-weave a shared patchwork. Laura initiates this by asking some clarifying questions "But then they arrive at a way they will react to the story or what?" She follows up by asking how they will then use these possible follow-ups, and what they want to say on basis of that. These questions cause Neil, Diana,

Sophia, Angie, Jasper (and also Laura herself) to construct the premise of the performance. Here, initially Diana and Neil are continuing each other sentences where after Angie and Jasper elaborate at the same time.

The premise is, as I mentioned, interesting in that it reflects they are aware it is a complex problem they are addressing. They are aware that one of their main topical threads of taxes is a contentious and debatable issue. Equally, they are aware, what constitutes 'the best strategy' in solving poverty is inherently related to the perspective chosen and various groups of people may benefit differently from the solutions.

They do tie a very unstable knot and reach a provisional closure on the premise of the presentation, but there are quite a few things that are left hanging in the air (e.g. the practical concerns of how to carry it out, if they will actually have the time to do it and so on). So some of the threads are still sticking out of the frayed ends of the knot, and we are left with a somewhat unravelled, reconstructed patchwork that is not entirely complete. They leave the work unfinished and take up the discussion of another idea. The temporary closure is suggested by Neil who says 'it is just an idea and he does not know what the others have been working with'. For now the idea is temporarily parked and left open for possible later retrieval and discussion. Instead, they now start to discuss the second idea.

The second idea for the presentation is unravelled and inspected

Unlike the first idea presented, this second idea makes it through as part of their final presentation. What we see here is a development of some of the ideas that were expressed very vaguely during the first work meeting (using some PowerPoint animation), but now gains some more flesh and will eventually become a part of the final product.

The discussion of the second idea can also be split into different smaller segments. Initially, the idea is tossed out into the open, and they start to discuss and add to especially the conceptual dimensions of it. Thereafter, they switch towards a discussion more concerned with the form and media of the presentation only to return to the backbone thread of the problem which becomes the focus of their discussion. The first excerpt shows very nicely how an idea gains a certain momentum, is built upon, but also transforms when a disruption is brought into the process:

Excerpt 6 - DVD3 – Title 2 (00.03.08 – 00.18.50) – Continued

Angie: We had ehm me and Samuel we talked about we would do what we have all talked about, such a, yeah movie – either with matchstick men or with real persons ehm to you know- to show, to give some examples if they break their leg then it is good that we pay taxes for the poor, because then they don't have to pay- with taxes they can manage- and if we didn't pay taxes then it would be somewhat difficult because they would not have the money to pay the bill and things like that ehm I think that would work out very well (1.0) I don't know (3.0)

Diana: I know we also [talked about

Jasper: [(inaudible)

Diana: We talked about at some point in time to compare it to Denmark, but wouldn't that become a little toooo

Jack: I just think we should

Sophia: Well, it could be in [relation to yeah

Neil: [if we are talking about exactly that example then you could easily compare Denmark and Costa Rica and show, this is how we do it in Denmark (inaud)

Several: (simultaneously and inaudible)

Diana: So we could do a matchstick man story about Denmark and then a matchstick man story with

Samuel: Costa Rica

Sophia: Yeah, like show something, okay there is a man he is walking and then he breaks his leg and is that with the hospital then or what? Money and? Use rich man from Denmark, rich man from poor- rich man from Costa Rica
[rich man from- and a poor man from Costa Rica

Samuel: [Yeah but just show how you

Sophia: And then show the difference

Jack: Well if it's the thing about taxes we want to illustrate then we don't necessarily have to use countries because it is almost like we put somebody in a bad light

Neil: That is true

Laura: Yeah (inaudible)

Jack: If it is taxes we want to highlight we don't need to mention countries (2.0)

Sophia: But then just show like a poor man, where there aren't- where you don't get, you know where taxes don't give you free access to hospitals or something

Laura: Mhmm

Sophia: And then and- and the poor man, where you show where there is free access to hospitals and then with rich man as well (3.0) So you can see the difference (7.0)

Like in the other segments the idea is presented, elaborated by others and also reservations come up. Diana initially suggests comparing Denmark to Costa Rica but also expresses a concern with her own elaboration by following up with a 'but wouldn't that become a little tooo…' Here Diana is actually echoing some concerns that have come up earlier (and will also surface again). Her reservation concerns cultural hegemony, ethnocentrism and a notion of being 'diplomatic', though these are not the terms they use. As much, as they are clearly in favour of the Danish welfare state and political model, they are also somewhat cautious about using or preaching this as an

'ideal model' which should just be exported anywhere in the world. Initially, the concern is backgrounded, even by Diana herself as they quickly start to work with this idea. Both Sophia and Neil join in and start to elaborate and develop the idea of comparing Denmark to Costa Rica by using matchstick men drawings. This idea, however, is transformed by Jack who voices the same concern as Diana. He clearly articulates that they should avoid "exposing anybody or make others look bad". This at least for the moment seems to be accepted, and they agree they need not mention countries or make comparisons between them to tell a story about taxes.

This cultural concern or sensitivity is quite interesting. For one thing because I find this concern very sympathetic and intelligent, but more importantly because it shows a 'scaling of identity'. For a moment here, Jack scales his identity from being a 14-year-old boy doing a school-like task to being 'a Dane acting in an international context'; as almost 'an ambassador' not wanting to enforce or embody an ethnocentric, Eurocentric (or Scandicentric) agenda. The rise of concerns like this happens several times throughout the material. For instance, Sophia mentions at a later point in this session that taxes are Denmark's response to social problems, but there might be other ways of resolving problems, which would work better for others. Equally, Jasper later argues that they should not take Denmark to be the entire world (DVD4 – Title 3: 00.59.44), meaning that others might have equally legitimate ways of organising their societies.

Also, as I shall later return to, their indignation with and critical stance concerning trade agreements is almost silenced and rendered invisible by themselves in the final presentation. These concerns represent an interesting tension, as on the one hand they do indeed hold strong opinions on issues of social equality, taxes and welfare that resonates a Scandinavian perspective, on the other hand they don't want to claim moral high-grounds or take on the identities of a 'cultural hegemony'.

In relation to the patchworking processes, it is interesting from two different perspectives. For one thing it is an acknowledgement of the complexity of the issue, as I also mentioned in relation with their idea of the role-play. It displays a reflexive awareness that the solutions, hypotheses and ways of tackling the issues are heavily interwoven with the perspective chosen. This was present in their thoughts even at the first work meeting where they anticipated that there might be different conditions, obstacles and cultural issues that would inhibit or render the solutions they suggest naïve (this is discussed during the first work meeting where they talk about that it might

not be easy to transfer the successes of Costa Rica to other countries).

Secondly, this is connected to their negotiation of a moral blueprint which acts as a backgrounded blueprint for their patchworking processes, but also as a part of their work they are engaged in negotiating this moral blueprint. I initially described this in relation to the work process of Samuel, Jack and Laura during their first work meeting, but this moral blueprint seems to hold when they are confronted with the other young people who share their view. This, of course, may not be true in detail, but none of them disagree with the fundamental assumptions about taxes, education, social equality, trade agreements and so on. There are no internal debates between them, whether taxes are important, if one should have free access to education or if trade agreements can be unfair. This seems to be taken for granted. However, they render their blueprint problematic in relation to the problem of transfer or cultural hegemony, which disturbs or displaces the blueprint. We see hints of it here when Jack's objection cause them to revisit the ideas and assumptions and to re-align and re-imagine the moral blueprint.

This exemplifies the idea that disruptive pieces of 'information' can hit and disturb the thread and how this is dealt with. In this case the damage or disruption is actually self-inflicted from Jack's concern with cultural hegemony. It is a concern which is not entirely new, but when tossed into the patchworking process it causes a temporary disturbance and re-alignment of the idea. These disruptive pieces seem to be good vehicles for development of their ideas, and also their appreciation of the complexity of the issues. This becomes particularly visible in the upcoming sequence where Sophia tosses in the disruptive piece that was also raised by Diana and Neil (where Neil wormholed back to the bus conversation with the guide). I shall return to what happens when this problem posing a challenge to their conceptual blueprint, is raised once again by Sophia. For the moment being, I will follow their path towards this. Right after Jack lands his objection they seem to shift track, and shortly after Sophia starts to re-imagine the presentation in the light of the objection, there is a long pause of nearly seven seconds, after which Laura instead starts to talk about the form and media of presentation. It seems almost as if they need to digest the disruption before they can return to it.

Switching tracks – from content to form and media

They now bury or background the discussions about taxes and countries for a moment, and instead turn their focus towards how to do or perform the

presentation:

Excerpt 6 - DVD3 – Title 2 (00.03.08 – 00.18.50) – Continued

Angie: Yeah

Laura: Should it be a PowerPoint presentation or something?

Jack: Yeah definitely

Laura: Animate some kind of people running around

Jack: As PowerPoint there you can make it – it is
[quite good for that

Angie: [Animated PowerPoint

(3.0)

Jack: I have a couple of idea on how one can make it- I think if we make one of those you quickly- that if you do it in that way with real life, if you can imagine yourself inside the room with all those people standing looking at you and then have to make a play about that, then I think it could quickly become stale

Laura: Yeah, it shouldn't
[be like a play

Angie: [yeah but I mean, I mean a – I don't know – a movie

Jack: Oh, it's a movie you want to make

Angie: With real life

Jack: Okay

Neil: That I think
[will also be pressed

Angie: [it is just a movie with real pictures

Laura: Yeah – I think it was

Neil: That'll be very (inaud) and then we will have to do a lot with editing and with sound and whatnot

Laura: I just think it was a good example you gave Jack – when you sit and watch the news you don't wake up until you see those small-small where they have done something animated (inaud) with plenty of colour and sound
[and something like that which

Jack: [features

Angie: Yeah and a little extra
[about (inaud)

Sophia: [In my opinion

Laura: Yeah exactly

Diana: I
[think we should just

Jack: [what one could do with Costa Rica

(messy overlapping talk - inaudible)

Jack: Okay listen so a movie what do you say- but it just

that with movies, I just think it will be very difficult because the thing about film is that you can quickly end up spending a lot of time [doing it

Angie: [Yeah it takes a lot of time

Jack: and then end up without very much in the end- so you know

Sophia: But you could do some animation-thing with some other program than powerpoint because it should be something where it like (gestures)

Angie: Mediator [is also a possibility

Jack: [yeah yes still picture and then you have a figure you can transfer and as you can make go back and forth both there and there (gestures) for example

Neil: [That is not very hard to do

Jack: [(Inaudible) (2.0)

This excerpt comes to deal only with the presentational means and how to do it. This is just a temporary shift of tracks, as the problem, hypotheses and solutions soon after become a pressing issue again. This happens after Angie tries to reach a closure and decision on which of the ideas to work with, as we shall see.

The small exchange above is interesting, as it reflects what I have mentioned about their ability to simulate, plan and manage their work and the entire process (anticipative and planning processes). In relation to the latter, Jack early on expressed a concern in relation to doing movies, which is the

suggestion Angie comes up with in the beginning of the former excerpt. He is backed up by Neil who echoes the initial concern of Jack, as it was expressed during the first work meeting (where Neil was not present). Their reservation towards doing a movie is not that it is a bad way of telling a story, inferior communication, pop-culture or whatever. They simply have the reservation that it is time-consuming and might yield poor results unless planned and carried out well. We see once again how they are continuously predicting and planning, as part of their negotiations. Neil talks about the time pressure, as do Jack and Angie, which indicate that this is something they have tried before. They are weighing the different opportunities, possibilities and constraints in relation to each other and trying to judge, whether the effort needed, will match the result. Are there other and more efficient ways of communicating their message? These considerations are woven into the discussions of the presentational means and suggest they probably have some experiences with working with digital video or movie-making. They are using their previous experiences and general knowledge of different technologies to estimate and plan, whether they can actually manage to engage in different types of presentations.

But it is also a process of anticipative work where they are using these experiences to run simulations of how the technologies might be used in different ways, and how these would work in practice. For one thing the reservations about movies are connected to the time-consuming nature of producing them, but also it is about different ways of communicating effectively the message. In this sense their experiences and knowledge of constraints and affordances of technologies are drawn in as imaginative or anticipative resources which are used to structure the discussions of the imagined presentation. They run and test different scenarios through imaging how the different presentational means might play out in practice. Jack does this very explicit, as he starts to explain how they can do the PowerPoint animation and shows with his hands, through gestures, how the different animation effects can be used to convey the sense of animation. This is because Sophia questions, whether it can be done (PowerPoint is not an animation program, and as such they need to use it creatively to produce animations). Neil has understood the idea and supports Jack's claim that it should not be too hard to do.

Spray it – don't say it

The excerpt also gives us an entrance into their awareness and reflections on media and technologies, as well as it is a window into their very visual and

multimodal oriented ways of expressing themselves and their narratives.

What emerges from this (but also the previous excerpt, from their notes and their general ways of approaching the computer) is that there is a certain feeling of 'show it don't tell it'. Sophia uses the word 'show' several times in the former excerpt and they seem to be very visually and multimodally oriented. By multimodal, I mean to highlight that they are not only concerned with pictures or text. Rather they seem to focus on actions, movements, constructing a storyline and creating a narrative which is not only oral/written, but spatial, temporal and consisting of many different elements. They are thinking in terms of stories that are shown and acted out as an animation or a role-play where the audience become participants.

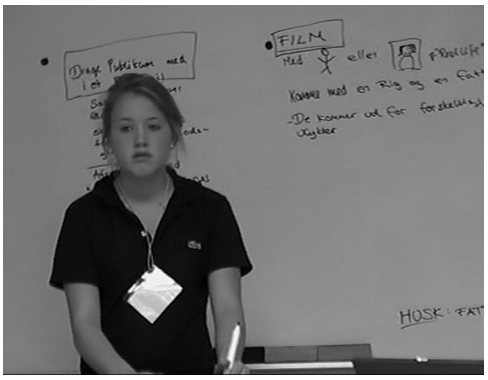
This fascination or preference for more visual and active modes of communication is also expressed by Laura, as she refers to the news 'where you always wake up when there are some animations', and Jack later comments that they can use the interviews to 'show' something, rather than 'them reading aloud the point'. The underlying premise in both cases seems to be that somebody just talking or communicating through written text is boring; there has to be some movement, sound etc. to stir and lure the eye.

This could easily give the impression that they are more concerned with 'bells and whistles', than content and problems, but this is not so; the multimodal modes of communications are made an intrinsic part of the message they want to convey, as is also evident from their reflections on, whether or not to produce a film. This essentially becomes visible, as they gradually background the presentational means and begin to discuss the problem, the causes and the solutions. The discussions about the problems, causes and solutions emerge, as Angie tries to reach a stabilisation and force a choice between the two main ideas for the presentation; this causes an eruption of other ideas.

Switching tracks again – closure brings an opening

The initial driving force of this conversation seems to be a 'battle' between reaching closure and having a sufficient shared model to work from; but also it reflects a struggle between, what they are orienting to.

Excerpt 6 - DVD3 – Title 2 (00.03.08 – 00.18.50) - Continued



Angie: Are those the two ideas we have?

Jack: I think so
[are there other suggestions?

Angie: [should we choose one?
(2.0)

Angie: Other suggestions? Chaperones any comments?

Louise: No that is you-
[you decide that

Angie: [That is us

Sophia: Could we do (inaud)

Angie: What? (3.0)

Sophia: Eh we also need to integrate something about education

Angie: You could also

Sophia: I think it is cool the one with the matchstick men with taxes and all, but if we also need to do something about education, therefore we also have to

Angie: There you can make such a [(gestures) law-school

Jasper: [a school (3.0)

Angie: Ehm

Sophia: What should we- then I guess we should find some facts and then see some people's (inaud) education

Angie: You could also, we could also do it like we do some kind of movie right, then it starts with a normal picture of one of those persons we meet today and then their name and job are there, and things like that- here comes his story or something like that, right- and then we create a story- then we create some story about him breaking his leg or something like that- "Woah" something right- and we do that with matchstick men, but there will just be some picture of him from the start

Jack: You could also do that with a movie, that is to- I mean, instead of doing these, I mean, narratives with movies, then you can create- we are going to have some interviews from all of this?

Sophia: Yeah, we have to use it for visualisation-hey

Jack: Yeah yeah so if we are going to do some interviews it is a damn good idea doing those with a movie because it doesn't take as much time either, and then people can better understand it

Angie: Yeah

Jack: Instead of us standing there reading something aloud

for example

Angie: So we could do something (gestures) a combination of it all?

Jack: Yeah, where we incorporate many different things

Angie: Should we vote?

Angie seems to be working towards reaching an agreement on which of the two overarching models they should choose, and she seems satisfied with having a looser representation of the exact content and underlying premise of the presentation. Sophia, on the other hand, counters these attempts and seems to be worried about, whether the animation model, as it has been suggested, reflect or fully represent the problem and the hypotheses they have worked with so far. This she does through raising her question about education which has been one of the overarching topical threads throughout the process (as it is reflected in the posters and discussions from the first work meeting; in the questions and structure of Angie and Samuel's notes; and as reified on the whiteboard along with 'taxes' and 'jobs'. This structure also carries over to their final formulations of the questions, as reflected in their interview guide).

Angie seems to be thinking more along the lines of the presentational means and media, as she suggests they can picture the school as a house (she makes some drawing gestures in the air), whereas Sophia instead queries into, how they should investigate and find facts that relate to the topic of education. As a response Angie quickly outlines a loose scenario of what she imagines they could do, which Jack then suggest they can expand by not only doing animation, but by using the interviews as part of the presentation. Sophia connects to the discussion of the presentational means and agrees with Jack that they should use the interviews for visualisation purposes. They then seem to land on a model of 'using a combination of many different things', which seems to be a satisfying model for Angie who once again tries to reach closure by suggesting that they vote.

This attempt at closing causes another cycle of discussion and unravelling of the newly created and unstable layout or patchwork, which was proposed by Angie and co-constructed by the others. This is now unravelled and re-inspected and the problem formulation rears its head for a short while.

Excerpt 6 - DVD3 – Title 2 (00.03.08 – 00.18.50) – Continued

Neil: I mean

Sophia: Aahh but can we just- ok, so we want to do something with that one with the matchstick men (2.0) OK, I have to admit I see it like- I mean the matchstick men for tax and education and then drag in some pictures with persons and then make it into a real story, and then interviews where we take and put on what they are looking at

Diana: Yeah, but also because one of the things we wrote yesterday Neil and me was that we must keep in mind the connecting thread, because else you won't be able to follow then it will just be all kinds of different things like ok
[and then

Jack: [No no no we of course have to maintain the connecting thread and that is also why at all times we have to look at our problem definition, these are just the means to make it look easi- I mean to, I'll just try again- they are the means so it becomes easier to see

Laura: Yeah

Sophia: To understand

Laura: But now you say problem definition, what is our concrete problem definition, because we don't have one at the moment

Neil: (inaud)

Samuel: No

Laura: We have all these overarching- or sub questions and like an idea of what it should be, but if at all times we should maintain a connecting thread then I think it is really important to have a problem formulation- that is a sentence we keep getting back to- can the things be connected and is it coherent

Sophia: Yes, yeah it must
[be coherent

Diana: [and we have to think about that we have poverty wouldn't
[then be like

Samuel: [Yeah, we better

Diana: How can you fight poverty – I mean

Sophia: And then to fight- then say some facts about like

Diana: But then I can see - then try - that thing I mean with hospitals- it is not really very much with poverty

Samuel: No

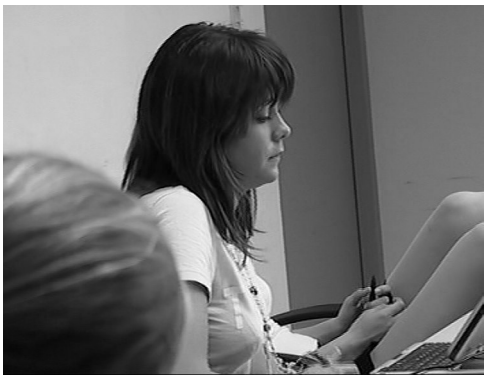
Diana: Because I mean it shows that a poor man can't afford to go to the hospital and things like that ehm I mean- very- I mean

Sophia: But then if you showed different viewpoints with a poor man- I mean that has not paid a lot of taxes and then a man that uses

??: You mean a (inaudible)

Sophia: From I mean Denmark, what would happen for a man who hasn't got much money there and what would happen for a man in Costa Rica who hasn't got much money there? In Denmark where you pay high taxes the person would go to the hospital anyway and get a decent treatment but in Costa Rica one would maybe get a really bad treatment- and then give that as an answer to what one could do to fight poverty and make sure that people get a good result that ehm people can live well even though ehm they don't have much money

Laura: Mhm yeah, but the thing with hospitals- I mean that is just one out of many examples of why it is, why taxes are an important part to



Diana: Education as well

Samuel: Yeah

Laura: Yeah education
[and libraries I mean a lot of different stuff right like

Jack: [public (inaud)

Laura: Like creating places at

Jack: Public (inaudible)

Laura: Yeah exactly and things like that

Samuel: Then during studies you almost can't afford to if you don't have time to
[make some money if you can't get educational support

Laura: [Yeah exactly then you can never build a welfare society

Diana: Then couldn't taxes also
[it could also be part of fighting poverty

Jack: [(Inaud)

Diana: Definitely to- like introduce

Laura: I think that often you- yeah return to that when you talk about that there has to be more money so they can get free education then we need to deal with taxes

Others: Mhm yeah

Laura: I definitely think so

Jack: So taxes I guess is really one of the big
[topics

Diana: [high happiness there

Sophia again counters the attempted closure, and does not seem to think that they have a sufficient model of the ideas to engage in a 'vote'. She then tries to summarise her perspective of the relations between the presentation and the problem. On basis of this, and the idea that 'they can just combine a lot of different things' Diana raises a concern with this strategy, and argues that they need to keep in mind the connecting thread, and thus moves the focus from the presentational means onto the problem and solutions. Jack agrees that they should not loose track of the problem definition, but makes a distinction between discussions of the problem, the connecting thread and then the presentational means. Here we should note, that these are not just 'bells and whistles', but as Jack frames it means to 'explain and communicate the message'. However, Laura breaks in and comments that she does not think they have a sufficient description of their problem. This opens to a process of inspecting the seams and unravelling their patchwork. In a sense the closure attempts open to re-negotiations. It foregrounds a discussion of, whether they do have a stable representation of the problem and a connecting thread that can stitch together the different patches they have. The discussion of whether they have a stable and shared representation now becomes their entry into querying and critically assessing the unstable and provisional patchwork.

Initially, Diana engages in a critical enquiry and questions of whether their idea with hospitals is really related to the wider problem of poverty. Though, she mentions that a poor man might not be able to get medical treatment, she expresses doubts if this relates to their wider ideas of poverty. Sophia, tries to create this link and engage in the lengthier argument, where she position taxes as the important issue and a possible solution to poverty (that would give equal access to medical treatment). Laura agrees and adds that this is but one example why taxes are important.

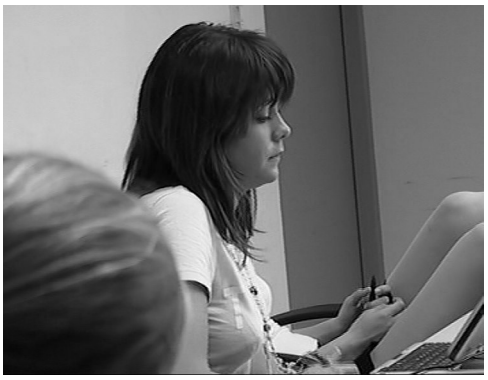
Streams and Whirlwinds keep arising

This initiates another stream of ideas and different patches are drawn from their shared pool of knowledge: Education, libraries, cultural institutions and Samuel adds public financial support for students (SU), as to give students time to focus on their studies, rather than working. This quick stream of ideas is like a small whirlwind which tosses a lot of patches into the air. They then fall down and settle around taxes as a solution which Diana proposes and the others agree to.

Laura argues that it often comes down to taxes and Jack initiates a conclusive remark 'So taxes I guess is really one of the big issues'. Now, however,

Sophia drops her disturbing and disruptive piece, which I also mentioned in relation to the discussion of being diplomatic and avoiding cultural hegemony. For now, I will look at how it spawns a second whirlwind of ideas, how they engage in re-organising their moral blueprint and how they engage in working with the disruptive information, as to accommodate to the disruption.

Excerpt 6 - DVD3 – Title 2 (00.03.08 – 00.18.50) – Continued



Sophia: But it is also- it is Denmark's solution to it but it might be that it would work better with other solutions to it over here

Laura: Yeah, then they should also have

Sophia: I mean for example the things with the politicians they don't trust

Laura: Yeah, that's the thing

Angie: We don't really know that

Samuel/Jasper: This we could ask about then

Laura: Yeah, exactly – it is also a question

Angie: How do you pose that question?

Laura: Jasper and me already made that

Neil: If you
[trust the politicians

Jasper: [(inaud)

Angie: Do you trust - hehe

Laura: But then there's also the thing with, I mean
[taxes have to come from somewhere

Angie: [(inaud)

Laura: So it also related to that those who earn a lot of money they leave- so where you could get some money from it is- I mean if they make less than two dollars a day
[or something

Others: [Yeah mhm

Laura: You dont get much tax money from that, I mean that we can't

Samuel: But that is
[also to be expected

Jack: [But then you can operate with the principle that the widest shoulders can also carry the heaviest burdens

Laura: Yeah exactly

Samuel: Yes, but that is a thing- which I think Intel that have come to the country and got lots of money, you could imagine that is be-cause they have a good education system, they are well educated and you- the taxes are not that high, then it is much smarter doing it here than in Denmark where you have to pay three times more in taxes

Laura: Yeah

Samuel: And then

Sophia: Problem is then if taxes are raised a lot
[but initiative (inaud)

Samuel: [Yeah then
[then they move to another country

Laura: [Yes exactly

Sophia: So
[show something about a vicious circle

Samuel: [that's the thing, nobody should be scared away

Laura: Yeah

Jack: I mean one cannot change from just one day to another

Samuel: No no

Laura: Yeah but- yeah yeah

Jack: I mean right now it is like those who have a lot of money they live damn good- and those who haven't got money they almost haven't got (inaud)

Laura: Yeah, that is how it is (2.0) that is also why you want to say that those who have a lot of money they should maybe pay much higher taxes than the poor but- but it will be damn difficult

Sophia: It is like
[something with

Diana: [it is really difficult to solve because it comes like-

you almost have to go in and affect people to like really not be egoistic and not- I mean- I mean it is things like- it is in that way like

Laura: Then there is also- how about something like property tax
[I mean but

Jack: [That you will also have to- or else it cant really- ai sorry

Laura: No but if like the rich, they have the expensive areas and houses, so- so they will have to pay I mean if you just say for example 40% off a pay check then all have to pay the same right?

Jack: Mhmm

Laura: but if now for example the expensive houses that are bigger- there is a higher percentage or something like that

Thomas: I'll just ask about a thing, you talk about that there are big social inequalities in Costa Rica

Others: Yeah mhmh

Thomas: That there is social inequality in Costa Rica – are you sure about that?

Sophia questions and renders problematic their idea of taxes and argues that, while it works well in Denmark, it might not work very well in Costa Rica, since they do not trust the politicians. This spawns initially a response from Angie who counters and question the validity of that piece of information,

which they have obtained from the conversation with the guide in the bus. The others jump in and suggest they should have that information corroborated or falsified through the interviews with the experts. This revives shortly their methodological discussions and Angie queries, how they can actually pose such questions and corroborate their hypothesis of this.

Using the interviews to confirm the hypothesis settles the matter, but not the discussions, as Laura also begin to questions and explore the problem of taxes, by referring to the problem of 'brain drain'. Those who earn well (and have a good education) leave the country. Diana and Neil raised this on the night before and judging from the questions on the whiteboard, it was also part of their discussions, during the collective work with the questions in this session. Now Laura draws it out of the pool of shared knowledge and they engage in discussing the pros and cons of taxes, thereby dissecting and unravelling their own assumptions and patchwork. As they are unravelling and inspecting they are also creating little new patchworks and clusters of ideas. For instance as they start to connect the brain-drain issue with a lower tax-income because the resourceful people might be leaving; or through the coupling of low taxation, high education and the willingness of corporations to come to the country.

This takes place as an intersection between what they know and believe, but also through imaging and simulating. Jack echoes their own moral fabric by suggesting that 'the strongest shoulders must carry a heavier burden', whereas Samuel simulates the perspective of a large corporation like Intel and argues that their reasons for being in Costa Rica might be conditioned by low taxation, and accompanied by Sophia, he argues that raising the taxes might cause them to leave. This pattern continues and Diana and Laura recognise that it might be difficult to instil the idea that the 'the widest shoulder should carry the heavier burden'. Diana is talking about how a one might have to change people's opinions and mindset in relation to taxes, whereas Laura suggests that property taxes might be a solution.

This is a discussion where their moral blueprint is continuously stretched, jerked and disturbed. Their discussion reflects the tensions and contradictions between; on the one hand their beliefs of what constitute good solutions to a lot of problems (taxes and having a welfare society with high level of equality). On the other hand they acknowledge the disturbances and know that the model they hold is not unproblematic. The transferability may not be easy, and it is a contested, contentious model which is not a 'universally agreed upon' model for how to construct a society.

The complexity of patchworking – reweaving and managing disruptions

These excerpts I have chosen to end, where I ask them, whether they are sure that there is actually a high level of social inequality in Costa Rica. This causes a disturbance and they want to find some information on the web. The wireless net is not accessible at the time, so there is a period of unrest, where they chat and try to access the net, without any luck.

For the moment, I would like to return to the contractions between stabilisation and destabilisation and the complexity of the process, by which their patchwork is constantly unravelled and re-weaved. As evident from the excerpts the topical threads and their focus shifts quickly and they are very dynamically bringing in the different backbone threads which are constantly mixed together in their discussions. The different backbone threads: their problem, the hypotheses, the presentation and their methods are dynamically foregrounded and backgrounded, while at the same time they are constantly aware that they are highly dependent.

The attempts of stabilisation and closure often spawn a rupture and whirlwind from which new ideas, suggestion and interpretations come up. This is because the attempts bring to the fore that there are conflicting ideas and perspectives among them, but also that there are different needs for keeping things open or settling more concretely on e.g. a problem formulation, as I shall return to.

When new ideas start to emerge, also some reservations come up or disruptive pieces are brought into the discussion. These partly spawn and emerge from the conversation, but also earlier reservations and disruptive pieces are drawn from their shared pool of knowledge; whether one or the other, these patches and pieces often initiate new streams of ideas and eruptions. The disruptive pieces cause them to unravel and reweave their patchwork in more or less profound ways. Some suggestions and disturbances are easily mended, whereas e.g. their reservations around taxes (both due to the reservations around cultural hegemony and the distrust of politicians) cause them to revisit and realign their moral blueprint.

The new ideas and suggestions that continuously show up reflect both their general level of knowledge, but also the stickiness of the foraging processes. They remember very well pieces and ideas from the discussions with the guide and also some of the things they were discussing and came up with

during their first work meeting which now seem to have become parts of their shared pool of knowledge.

Sometimes certain threads are laid to rest and temporarily parked, such as the presentation and the problem, but they often awake or are drawn onto the working table again, as we see with the problem and problem formulation which rear their heads multiple times until finally settled. The discussions about the presentation, however, are temporarily suspended, though they actually later do take some decisions on it. This happens as Jack and Neil start to work with some aspects of it later (the animation).

"Planticipation" work

These processes of patchworking and reweaving the patchwork are also intermingled with the planning and anticipative work; apart from referring and relating their work to the backbone threads, they are also deeply engaged in managing their workload and trying to plan and foresee if their ideas can be realised in practice.

Neil raises this already when presenting his own idea, where he mentions instantly that it might be too much work, and when they are discussing the presentation, they are constantly orienting to the manageability of their proposals. Something can be 'fast', 'time consuming', 'require a lot of effort and yield little results'. Equally, their concerns around stabilising or keeping things open revolve around management. Angie is very eager to move on and settle the different issues, so they can get on with their work. Sophia and others also want to move forward, but hold the concern that they might end up asking the wrong questions which would waste their efforts and profoundly endanger the whole project. Though they do not quite agree, both 'groups' are trying to move the work forward in the most efficient way. This also surfaces later, when Neil opens a reservation that they might need to throw away or modify a lot of their work, if they cannot use the questions they have already spent considerable time on. Equally, Sophia is arguing for specific tools or methods to control and manage their enquiries, as she later suggests her reaction or relation schemes. Even though it is not entirely clear what she means, it seems to be a 'planning tool'. She wants to 'draw' and make visible their main problem, what they need to work with, what they still need to find out and what they lack.

But also their anticipative work is visible throughout their negotiations and discussions. When discussing the presentational means they are trying to imagine, how people will react, how they might engage with their ideas, if

they will understand their points and how the different presentational means would convey their message. As Jack frames it, they are means to convey the message in the most engaging and understandable way (not only reading aloud texts). In that way their experiences and knowledge of the different constraints and affordances of different technologies are drawn in as imaginative or anticipative resources which are part of imaging, structuring and simulating the presentation.

The anticipative work is also clear from their reweaving and unravelling processes in relation to the problem and hypotheses. For instance where Samuel simulates or imagine how Intel might react if taxes were raised, when they try to imagine how they might affect people's stance towards taxes, or if property taxes might affect the societal distribution of money. As well as ideas, arguments and reservations are drawn from their shared pool of knowledge (and possibly their general knowledge), these processes also rely on their capacity to imagine and simulate, what might happen and take the perspective of various stakeholders (the poor peasant and the rich importer).

Scientific thinking

Finally, before moving on to the actual problem formulation, which is a result or crystallisation of their work in this session, I would like to point to some of the examples of their scientific reasoning (which I believe are also visible through their anticipative and planning work, though we may not always think of this as 'scientific work'). They have a general concern with the truthfulness of their findings and claims. This becomes visible for an example when Diana raises the issue of grounding their claims through the use of the video interviews, as they would render it visible to the audience that it 'is not just something they have made up'. Likewise, we see this as Angie questions the validity of the conversation with the guide. He might be right, but he may also just be presenting something he believes, without having any grounding, so at any rate they should be cautious about treating it as a reliable source. At least, as the others suggest, they would need to look critically at what he has said in light of the interviews. The interviews with the experts could render the information from the guide problematic and questionable, but the interviews could also corroborate the information, and make it even more likely that it is indeed a matter of interest.

The winding path towards stabilising the problem

The previous excerpts are quite representative for what happens throughout much of this session. There is a constant oscillation between attempts at reaching stability and then opening for discussions again, where new ideas are raised and drawn in from their shared pool of knowledge. As the discussions continue Laura re-opens the worm-hole to their conversation with the young guide in the bus and brings back threads on the military, something about tourism and she mentions a President, which is a perspective also Sophia continuously brings back into their conversations. In this way there is an ongoing struggle between attempts at closure, making a decision, stabilising, finding a perspective, and then these eruptions and whirlwinds where multiple topical threads and new perspectives start to emerge. However, they do not return much to the presentation, as they agree they now have a better idea of what they want to do. Therefore, the discussions of the presentations are temporarily stored and left somewhat unfinished for later retrieval. These movements between stabilisation and destabilisation are occasionally interrupted, whenever they try to access the internet or solve the technical problems of the network, as is the case after the excerpts above.

These movements between stabilisation and destabilisation also express different ideas about the need for closure/stabilisation or a need for openness. This is expressed by Jack who thinks that they need to keep an open mind and see what they will gain from their interviews. Diana and Sophia disagree and think they will need to know what they are looking for; else they might end up with interviews and knowledge which will not fit the presentation. Angie and Jack then negotiates a temporary solution to their ways of engaging with the problem by suggesting that they take the stance that Costa Rica has done something well; looking at what they have done; what they might do better and how this in general could be used on a more global scale. This would be a satisfactory solution for the moment to some of them, but e.g. Sophia feels differently about this and several times expresses some frustration with the instability, and Neil thinks that this would mean that they would have to recreate the questions they have already made. Sophia argues that they need to create some reaction schemes or relation schemes[16] and be more concrete. The others agree, but they think this is exactly, what they are trying to achieve through their discussions.

They agree that it is indeed a very complex problem, but it is also what makes it interesting. They then re-iterate the perspective presented by Jack, and Jasper asks Angie to write it down. This, however, does not constitute a

final stabilisation, as the problem comes up again when Laura later insists that they create a problem-formulation. Coming up with this problem formulation is not a trivial task and they go through several possibilities: 'how can it be that', 'we are wondering why'; Angie presents a long one "How can it be that there are still so many poor societies, when there actually countries that have managed to fight poverty in ways that worked". Sophia also tries with the formulation 'What do you mean that, how do we mean that' and Jack says something inaudible, which Laura grabs and turns into 'how can we improve a poor society' (DVD3 – Title 2: (00.49.34 – 00.52.35)). This stabilises the discussion. Sophia gets up and writes it on the whiteboard, while Diana explains why she thinks it is a good way of expressing it. In the next section I will go more in detail with the formulation and Diana's reflections on it, which are quite to the point.

Development of the problem space – The problem formulation emerges

One of the most important accomplishments in this session is that of their problem formulation, because they reach a stabilisation that seems important to them. Right after they reify the problem formulation on the whiteboard there is a relief amongst them, and they have a short mental and physical break. Secondly this is important, as the problem formulation is an important reification or boundary object. As Laura says, this should be the main question that shapes and frames their whole work process and that which all the information and findings should relate to. As mentioned, it is quite an interesting verbal negotiation, where they propose many different variations before arriving at the final result which they then discuss:

Excerpt 7 - DVD3 – Title 2: (00.52.47 – 00.53.57)

Laura: we could say that, so now for example if we take 'how to improve a poor society' then (inaud) then we could start by saying that we have looked at Costa Rica, because that is what we have a lot of questions about

Sophia: Yeah

Laura: but we think that (1.0) that those- those (1.0) means could also be used in other poor societies- I mean with taxes and education and all that stuff with import and export and production and

Sophia: I think it easier with Costa Rica because then we can ask people I mean

Laura: [Inaudible

Diana: [Yes Yes it also what it is

Laura: Then we say that this is our way of approaching it- I mean really use that we are in place where

Sophia: okay, should we then also use something about how Costa Rica already was

Laura: Yeah, that you could also look at- you could also do that

Sophia: I mean what they have already done- I mean if we think that they have already done a good job

Laura: Mhmmm (1.0) if we just find a heading that is big enough then we can do whatever we want

Diana: Yeah but I think precisely it is good if it gets to be that with how to improve a poor society because it is somewhat open and there is not something which is wrong right? Here we can give our solutions to it and (Sophia

gets up) in that way we can ourselves

Laura: should we vote about it

Diana: Yes Yes (laughing)

Jack: what say- are anyone against it (Sophia is writing it on the whiteboard) (3.0)

Samuel: It doesn't bother me

Jack: Okay, then it is approved

The formulation "How can we improve a poor society" is quite broad, but actually it encompasses resolves and embodies many of their discussions. During a break in their work I pose a question on how they are looking at Costa Rica, and I mention the two perspectives or tensions we discussed during the work meeting, which are also reflected in their discussions throughout this entire session.

They are not quite sure and initially they mention they don't seem to be working very much with Costa Rica as a role model for others. This, however, is transformed when Jack and Angie try to stabilise their work and they come to a provisional agreement that Costa Rica has accomplished a lot, which could be used in other countries (DVD3 – Title 2: (00.28.00 – 00.30.00)).

The final problem formulation, however, completely avoids the sort of dichotomous thinking of the original definitions of the problem, as it does not in its formulation mention Costa Rica. This satisfies for one thing the concern expressed by Jack and later Sophia about 'cultural hegemony' and presenting some countries in a bad light. From the problem formulation follows that they need not position Costa Rica or others as either poor or successful, and they can choose how to incorporate Costa Rica in a way they find reasonable. Secondly, it opens for many different pathways, as is exemplified as Sophia queries into the model, and if it can incorporate them talking about how Costa Rica used to be (as a condition for understanding how Costa Rica has improved, and if this can also be transferred to other). Both Laura and Diana agree that incorporating the 'history of Costa Rica as to understand the present and future' can be made part of the enquiries, if this is what they find interesting when moving on in their work. The notion of 'transferability' was initially discussed during their first work meeting; but taken up again in this session, when Laura and Sophia argue that even

though the Costa Ricans might be willing to pay higher taxes, this might not apply to other countries.

The problem formulation, as both Diana and Laura mention, is quite open, but at the same time it incorporates and resolves many of the tensions or conflicting perspectives that have come up during their work. Also, Neil's reservations of having to remake the questions seems to be exactly what Laura is addressing as she mentions 'they already have questions about that'. Having an open problem formulation, which still circumferences their problem space, seems to be of utmost importance to them at the moment. This is also because both the background and topical threads have been widely expanded during this session. Through their negotiations and suggestions many new threads in relation to causes and solutions have emerged. This is for one thing reified in their long list of questions, but also during their small eruptions they constantly draw from their shared pool of knowledge and add new pieces which are too numerous to mention. From the previous excerpts we can see how new threads are added, and how old ideas are brought into play again through these eruptions: abolishment of the military reappears, tourism is suddenly mentioned, governmental support for individual students is taken up, Samuel takes the perspective of a large corporation which he warned against during the work meeting; debt to other countries come up, as Jack finds some information on Costa Rica's debt Samuel brought on paper. Furthermore, they start to break their overarching threads into more detailed concepts e.g. if property taxes could be a way of addressing a more equal distribution of wealth.

A lot of different topical threads like ideas and hypotheses for solutions, causes and so on are thrown into the air and become part of their shared pool of knowledge. Some of which will live on, but also new ones will emerge to be incorporated as part of their problem space after the interviews. More work will also go into constructing the conceptual blueprint where some of these many ideas will become part of the fabric and tied to the thread of the problem, while other threads will be left on the working table.

The role of technology in this cycle of remixing and patchworking

In these excerpts the most prevalent roles of the computers seem to be as notepads. They sit with their computers open in front of them and use them to reify their discussions. They continuously seem to be taking notes, asking

each other to write down problem formulations and other important information that pops up.

This is also the role of one of the other important mediational means; namely the whiteboard on which Angie reifies the different ideas they have for the presentation. Here she meticulously notes the ideas that come up during their discussions. The whiteboard acts as a shared workspace to them – "what I see is what you see" and this is also what reifies their discussions. The whiteboard and the computers, however, are also used as doodle pads. On the whiteboard Angie writes Imagine and starts decorating the letters during their discussions. Equally, the computers are used as doodle-pads which can be seen from the drawings that Jack and Neil are producing and from the screen of Angie, who is doing notes, but also just doodling a bit.

As I noted during their negotiations, they do not actually need to use the computers to be able to imagine, what they will be able to do. Without using the actual programs they are able to imagine, how they can do the animation, as it was visible from Jack's gestures and explanations of how to do the animation. But also Angie and others are imagining how they might use other programs (Mediator) and they are talking about how to edit the interviews.

The technologies thus play in important role in relation to their anticipative and planning work, in which they are trying to imagine and simulate different ways of doing their presentations. In this way their experiences with technologies are used as imaginative resources to structure their discussions. For one thing this happens in relation to discussing the manageability of the different ways of creating the presentation, where they try to estimate and plan their workload (movies or PowerPoint animation). Secondly, the experiences are used to imagine and simulate how the use of different technologies can convey the message in the most engaging and understandable way. However, in both cases they are imagining how the technologies can be used, but they are not using them concretely or physically as part of this process.

This might seem to be a dubious claim, as they are using the technologies to do notes both on their computers and on the whiteboard. But there is a subtle difference which will become more visible when we delve into the next cycle of remixing and patchworking. In relation to the processes of patchworking they are used to document, reify and mirror the ideas that are part of their patchwork, but the mediational means are, to a lesser degree, used actively in structuring these processes. The structuring and reweaving re-

volve around using the technologies as *imaginative* and anticipative resources and not as concrete, 'physical' tools for structuring and orienting their discussions. However, this distinction between mirroring/reifying and structuring will be unfolded in more detail during chapter 8. The technologies, however, play a very prevalent and active role in their productive cycles and stabilisation work, as we shall see.

Vignette II: Entering a cycle of stabilisation work and production

DVD3, Title 3 (00.02.10 – 00.45.24)

Astrid explains that it is now 1.45 PM and they will be leaving in 45 minutes. Astrid initiates a distribution of the tasks – one group should go to Intel and one group should prepare for the interview with Richardo Monge. They discuss how many should go to each place and actually prefer if some can stay where they are, as to work with the tasks. That, however, is not an option, as busses will pick them up, and there are some logistic problems with that. We tell them, that they can work at the Intel Clubhouse, where there will be some computers available. They finally agree that two persons will go and interview Ricardo Monge and the six others will head for the Intel Clubhouse. Sophia wants to move on with the questions and Astrid concludes that the groups have now been distributed to everybody's preference. They start discussing the questions they have, Laura stresses that they need to ask the same questions to all the interviewees and Sophia questions, whether they should try to find the answer to some of them on the internet rather than asking them.

I question whether they should pose the same questions to everybody, since it might be different questions they want to ask the people at the Intel Clubhouse. Laura thinks somebody said it should be the same questions and Angie and Sophia talks about that one can regulate the questions or come up with new questions during the interview. Astrid is trying to say something, but is drowned by their discussions; Diana asks Astrid what it is she wants to say and Astrid says they might want to coordinate, as they don't know each other's questions. They, however, tell that they have already coordinated and put down 28 questions which Sophia has on her laptop, but they think it might be too many questions. I explain what the Intel Clubhouse is about and after the explanation Diana suggests that they come up with some other questions for the people at Intel Clubhouse. Laura and I start to dis-

cuss what they might ask them about at the club house, whereas the others start to wonder how much time they have, and if they will be able to use some of the time in the bus as well.

Laura wonders whether the Intel Clubhouse or technology more generally has been an agent in development. The others are discussing, whether they should put the questions on paper or computer and if they should take notes or rely on the camera; some suggest that the video might not even be necessary, others that taking notes might not be necessary if they film it. They also try to coordinate who should bring which computers and we tell them there will be computers available at Intel Clubhouse, but it is also a matter of ensuring that the questions are on the right computers – they have an USB key, but also Angie and Sophia have figured out that they can use the infrared connection to transfer files. Meanwhile Laura and I are discussing questions to ask them. I suggest that they do not ask the socio-economic oriented questions to the Intel Clubhouse people – they might not know very much about general developmental work or economical issues, but I suggest they could ask how they think they contribute to reducing poverty. Laura thinks they might then be able to find some new perspective from the clubhouse. There are multiple discussions and activities going on (I am discussing with Laura, others are exchanging files, others again have started to discuss questions) and Astrid calls for some order. I suggest that those who are going for the interviews coordinate their questions. Jasper calls together some of the others to look at their questions. Diana and Laura have started to think about their questions and Diana think they should prepare some questions for the children using the Club House if there are any when they come. Laura says that they should not ask the clubhouse representative about taxes, but more about the Club House project itself, and Samuel suggest they should add if they think it has helped in relation to poverty. They now have half an hour and they have divided into smaller groups working with their different subtasks, so they move around and switch seats – Diana, Laura and Samuel groups with Jasper, while Angie and Sophia stay where they are. Neil and Jack have started to work on the PowerPoint and are discussing who should draw the rich and who should draw the poor man.

They work for some time in their groups. The clubhouse group are trying to find out what the clubhouses are all about through questions and discussion with the facilitators and with each other. Sophia and Angie are working on an English version of their questions and Neil and Jack are engaged with their PowerPoint. Hamid returns again to mess with the network and their computers. Lone arrives and ask how we are all doing, and she talks with

the different groups. She blends into the work and help with some translations. They now work in their small groups with their different tasks until they have to leave for interviews and clubhouse.

Exeunt backbone threads, enter stabilisation

With the problem formulation settled they enter into a period of stabilisation work and production. First, I will just quickly mention some of the things that are going on. As can be read from the vignette they now enter some negotiations regarding the distribution of tasks and who should go where – a discussion which Astrid is struggling to control, as the facilitators have to report back to others and arrange for the logistics. The young people contest the model we propose (splitting them into two groups), as they find it inefficient. They really want to get on with their work and suggest that some of them stay at CINPE and continue working with their subtasks, whereas others go for the interviews. Though, they are perfectly right, this is not possible, and they will have to split up into two groups and spend time on transport. They mutter a bit, but then engage in distribution of computers and files. Secondly, they realise (or rather I suggest (DVD3 – Title 3: 00.11.23)) that they need to come up with some completely different questions for the people at the Intel Clubhouse, as they might not know very much about taxation, debts, the job situation or some of the other questions they have imagined to pose.

It turns out that they actually know very little about the idea of the clubhouses which I try to explain to them (though I did not know very much either, as I also admit). Laura queries me about it and ask for suggestions on questions they could ask. She starts to ponder about the relation between their problem, and what they might get to know from visiting the Intel Clubhouse.

Planning the work and sharing the resources

While all of this is going on they are also starting to move around, computers are handed over to others and files are exchanged; either on the USB-disk or through the use of the Infrared channel on the tablets. Jack and Neil are already deeply engaged in creating drawings for the animation:


Jack has asked for confirmation from the others that taxes are a core issue and then he and Neil start to do the animation that has been suggested. Angie and Sophia start to work with their questions and Laura and Diana move over to Jasper and Samuel, as to work with the questions for the Intel Clubhouse (and they have approximately half an hour to come up with the questions):


Apart from their questions about the Intel Clubhouse and their reflections on how this might relate to their problem they now enter a cycles of stabilisation work and productive, creative work with the computers. The latter is especially visible through the drawings Jack and Neil have started to work on. These are produced in Paint (standard Microsoft Windows program) and will later be transferred into PowerPoint to be “animated”. These drawings are clearly made possible by the unique affordances of the Tablet PC’s, as they would have been extremely difficult to draw with a regular mouse.

What is clear from this session as well, is that they often feel a need to forage for information, as is seen when I drop my question of, whether there are actually social inequalities in Costa Rica; and they often utter distress

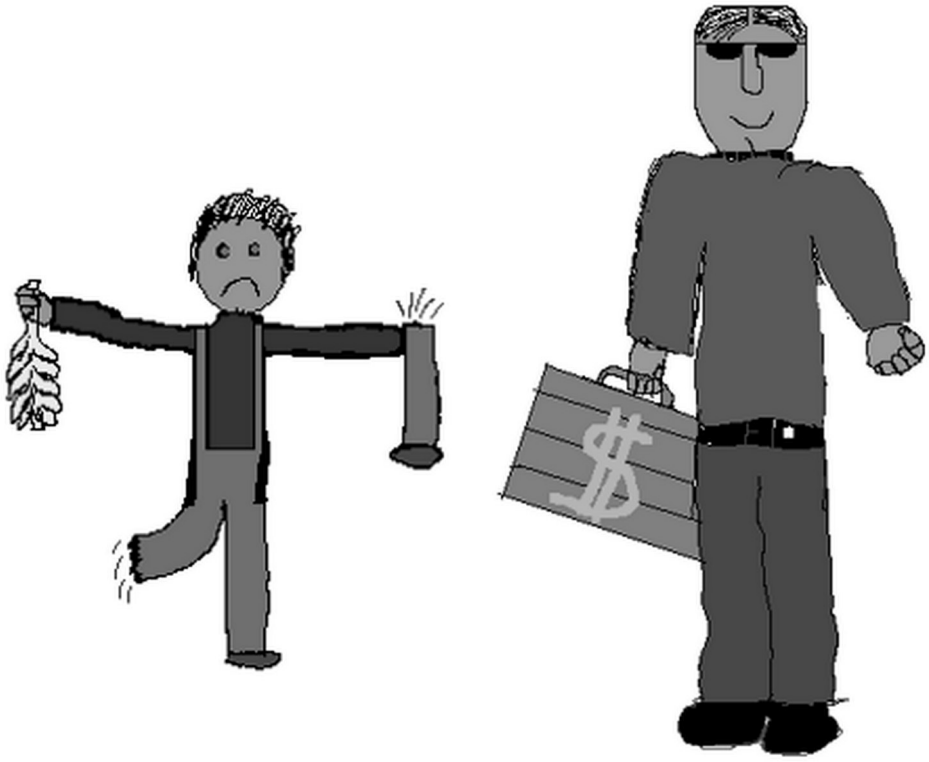
with not being able to access the internet during this session (the very first activity that was recorded this day was their attempts to access the internet, and they eagerly try to access the network every time Hamid drops by). They often express a need to find some facts, corroborate their hypotheses and query further into causes and solutions. However, due to some technical problems they never gain access to the web on this day.

Still, the computers play an active role and quite an effort is put into managing and planning who should bring which computers (which also leads to the sharing and distribution of files). They discuss how they should distribute the cameras between them, who should ask questions and who should take notes on the computers. The storing or reification capabilities of the computers and the affordances for somewhat easy exchange are a central part of the infrastructure of their work. Here we can see how the technologies are used actively as part of their work process, and how the importance of their reifications are unfolded. They use the computers for the interview questions and then also for doing notes during the interviews which are then later reviewed and shared with the others. But also they write on paper as to have an interview guide by hand thus making it possible for the co-interviewer to do notes on the computer meanwhile.

During this session we start to see other productive and creative processes taking place in relation to their computer use. Most noticeably this is reflected by the work of Jack and Neil who are discussing and creating the drawings for the animation. When I am talking about more creative use in relation to the drawings, I do not mean that producing questions or translating, selecting and modifying existing questions is not creative work, and should be understood as routine or 'the same old'. Indeed this is creative and conceptually challenging work, and they are continuously discussing, arguing, adding or dropping ideas and trying to grasp the overall idea of e.g. the clubhouses. This is very similar to what I illustrated in the former chapter, where we looked at their stabilisation work in relation to coming up with the interview guides. What I mean to say in using the term more creative is that we are seeing patterns of computer use that might be less common than using Word. Even though paint is by no means a complicated program, and they all agree it is not really the optimal solution compared to other programs, it is still remarkable how they just sit down and start to use it very pragmatically. It is there, it can be used to solve the task, and they have little time, ergo: Paint it is.

The emergence of the tax-animation and reifuncation

Their work on the animation is as a collaborative effort, where they sometimes shift roles between being the one who draws, and the one who comments (though most of the time Jack is drawing on the computer, while Neil creates sketches and designs on paper which are then later translated into paint). He is designing the rich guy, while Jack is drawing the poor man. The others are also included in the design process, as Jack ask them what they think characterise a poor man, and they give him some suggestions (DVD3 – Title 3: 00.29.50). Neil comments that he cannot be smiling. Poor people do not smile, they cry 'I saw that on tv' he says, and they laugh. The little drawings they create to be part of the animation are quite funny and also well done (Paint is really not a very good drawing program):



Something worth noting is how they make references in so many ways to their own 'popular cultural' frame of reference during their work with the animation. Apart from their awareness of the cartoon genre, where a broken leg is often really broken and rich people (or thieves) have dollar sign on their briefcases; there are some less visible references. They name initially

these characters after some fictive characters (Brother Salsa and Chris). Brother Salsa comes from the Danish program Mandril aftalen (a low-budget Monty Python inspired tv-show featuring crazy, absurd humour[17]; for instance Brother Salsa is well known for his ability to portray different presidents' faces by folding carpets). The other one is probably a character from a radio show (Chris og Chokolade fabrikken – Chris and the Chocolate Factory). These characters are not visible in the drawings, but they dub them Chris and Brother Salsa, while they are drawing them. What is also invisible from the drawing is that they name some of the files with little rhymes,which seem also to be inspired by the particular absurd humour in those programs '*hænder* der ligner *ænder'* (hands that look like ducks) 'fat-tig *mand* med dyr *tand'* (poor man with expensive tooth) (see appendix D4). The characters and the humour inspired by this show are also reified in some of their other drawings that are produced during this session (appendix D3).

I will risk my neck and call them typical post-modern productions which are very playful, full of references and approached with some mild, playful irony (but of course a Costa Rican peasant must hold bananas in his hand). This also reflects their composite playful identities; one the one hand being concerned citizens of the world, on the other hand being playful teens that don't mind playing with cultural stereotypes.

As I earlier mentioned the computers become entangled in the process of creating a sociable and funny atmosphere, and they use them as part of reifying and playing with these different jokes and references. Although, it is a very serious issue they are dealing with, and though they are busy, they just cannot help coming up with these little jokes, drawings, puns, references. We saw it earlier in Angie notes, where she put in colourful drawings with references to 'Hakuna Matata' from the Lion King right after the 'serious notes'. Equally, in some notes she produces the next day, there are serious notes from the lecture and the interview, but then just below the notes there is a small poem/absurd sentence "*One day a canary came jumping down the road, it was a little fat, but not chubby! It jumped so high that all people looked at it*". They are just very lively and happy, and these processes are continuously reified in their computer notes, paper notes and on the white-board. But also during their conversations there is a cacophony of noises, songs and funny sounds all the time. Their mood, their life, their cultural references are reified in the material they leave behind. In this sense there is a continuous process of participation and rei*fun*cation[18]. Their creation of a sociable and funny atmosphere happens through their dialogues, through

which they build a shared repository of jokes, histories and references which are then reified in the digital resources. But also the computers are used to create such jokes and references which then become sociable resources in their dialogues.

Thus, in this session we start to see a more creative and productive use of the computers which in a sense has been there all the time as part of their social processes (through their drawings, writing letters, rhymes and so on); but now this mode of creative production carries over and becomes part of their work process and the final presentation. We also start to see the use of other tools, such as the dictionary Angie has installed which they use to translate their long list of questions. But, this is also used in conjunction with just asking out loud for a translation which is then suggested by one of the others or the grown-ups.

Summing up the chapter

Throughout this session we can see how they increasingly take control of their own project. In the beginning of the session we as researchers and facilitators are quite active in controlling and facilitating the activities. However, they increasingly take over after I suggest they head the process themselves, and during the rest of the session (and the entire process) we have to struggle for the word. This, however, is not a problem, as we also encourage them to take control.

Throughout the chapter I have tried to illustrate how the small patchworks that they created the night before now enter into a cycle of remixing and patchworking. This cycle is characterised by continuous contractions and oscillations between stabilisation and destabilisation, which I have illustrated through looking at their winding path of negotiating the ideas they have for their presentation; and then finally their stabilisation on the problem formulation ‘How to improve a poor society’. The aim of the analysis has been to show how the processes of negotiating the presentation can be characterised as patchworking. When presenting their ideas they bring forth an unstable patchwork to the working table which is then queried into, criticised and different reservations are presented as part of the idea. In this sense the fragile patchwork is unravelled and the seams are inspected, which leads to a reorganisation of the patchwork through adding ideas, criticising and posing alternative solutions. The patchworking processes are multilayered and concern not only the form and presentational media, rather the discussions dynamically foregrounds and backgrounds the different back-

ground threads: hypotheses, the overarching problem and their methods for gaining knowledge (the interviews, web searches).

Their discussions concern not only how to present their findings, but equally how the different imagined presentations actually reflect the complexity of the problem, how their interviews can be incorporated as part of the presentation and how the imagined audience might interact with, or react to their presentation. The different background threads become highly intertwined and even though they at times seem to stabilise around discussing primarily the form and presentational means, the problem, solutions and causes rear their heads and become the focal centre of attention.

I have argued that some of the central dynamic factors in their negotiations are "premature" stabilisation attempts (by calling for votes or deciding on a model which others do not think is sufficiently mature to decide on). Other dynamic factors are disruptive pieces that are brought up, such as distrust between people and the government; or when querying critically into their own moral blueprint by discussing and questioning the transferability of their own 'ideal model' for a society. These disruptions and attempts at stabilisation spawn little whirlwinds or eruptions where a lot of different patches and pieces reflecting different threads, ideas, hypotheses or alternative suggestion are tossed into the air. These patches and pieces then land and settle until a new disruption is brought into play, where after a new stream or whirlwind of ideas arises.

These whirlwinds, and their discussions in general, reflect their continuous processes of planning and anticipating. The practicalities and whether they can actually realise their plans with the time and resources they have available are an important part of the planning work. Equally, in discussing the possible ways of presenting their findings, they are constantly engaged in imaging and simulating how the audience might react, or which counterclaims and conceptual flaws might render their suggestions and ideas naïve. The anticipative processes concern both the presentational means and how they could carry out their presentation; but equally it is a way of exploring the strength of their provisional patchworks which are composed of various claims, solutions, ideas, identification of causes and so on. However, they do not arrive at some reified solutions or clear patchworks in this session. The topical threads are discussed and added to through the whirlwinds, but they are not final arguments, solutions or causes. They are scattered hypotheses and patches and pieces that have been drawn or added to their shared pool of knowledge. They raise issues such as property taxes, access

to medical treatment, financial aid for students, more education and trust between government and people. All these threads and patches and pieces are not yet joined, rather they lie around on the working table as more or less elaborated patchworks and clusters of ideas. The three overarching topical threads of taxes, jobs and education have been strengthened through the discussions and many new sub-threads and more detailed distinctions have come up. They are also starting to draw different connections between them. For instance as reflected in their reasoning around brain-drain which leaves only the poor people to pay taxes, while those who could contribute more substantially might be leaving the country to pursue their career elsewhere – or in their reasoning about the connection between low taxes and large corporations willingness to be in the country. While the patchworks are unravelled and inspected, they start to join new patches and create other new patchworks, where the relations between the patches are differently organised.

Through these streams and whirlwind the patchworks are unravelled and reorganised, but in relation to the backbone thread of the presentation, they do not arrive at a final decision. They agree that they have a sufficient model to work from which they can then later elaborate on. This also reflects their different opinions on the need for closure and stability, or the need to keep an open mind for what might emerge. They do feel differently about this, and some of them clearly ask for a more elaborate and settled plan in relation to the presentation and the organisation of their work.

Neither does it seem that they have a very clear idea of the structure or the conceptual blueprint for their presentation. They do have a moral blueprint, but how all the different threads and patchworks are to be joined in a more coherent argument or narrative is not entirely visible from their work in this session. Though, we can identify many of the elements that are part of the final presentation the structure, argumentation and conceptual blueprint of the presentation is still very blurry, and only some vague contours of these seem to have crystallised. They have, however, agreed on doing the animation illustrating the necessity of taxes, and also they want to record their different interviews. But most importantly they agree that the problem formulation is a sufficiently stable model for further enquiries, as well as a sufficiently open model that will be able to encompass perspectives they might come in contact with through the interviews.

The role of technology in the different cycles

From this chapter it seems that it is during the cycles of stabilisation work

and production that the computers have the most visible and active role. This is where they engage in producing and carrying out what they have agreed on, as to give it more shape and structure. This becomes visible through their refinement and creation of the interview guides, but also they have begun the work of producing and fleshing out in more detail the animated slideshow.

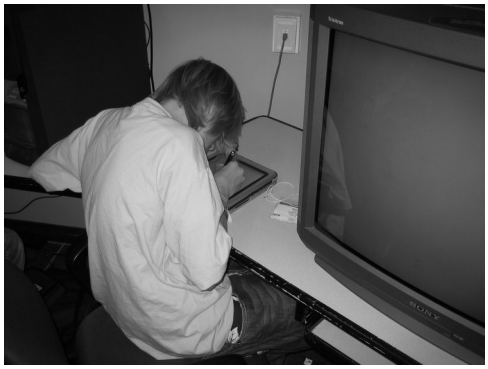
The technologies are an important part of planning and managing their work in that they function as infrastructures for e.g. sharing and distributing files, storing the interview questions, recording the interviews, doing notes during the interviews. The notes and recordings can then later be reviewed and shared with the others. However, the computers are not only used to store, distribute and share the work, they are equally part of a continuous process of participation and rei*fun*cation which is an important part of creating a sociable and funny atmosphere. The sociable and funny atmosphere is for one thing produced through their dialogues and their shared repository of jokes, histories and references. But also the social and funny atmosphere is produced through, and reified in, the digital and physical artefacts, where they continuously put in little jokes, drawings, puns and references, such as the example of the rich and poor man. These drawings reflect their composite identities of being simultaneously concerned, serious citizens of the world and playful teens who cannot help playing with different cultural stereotypes.

In relation to this cycle of remixing and patchworking, I have argued that their experiences and knowledge of various constraints and affordances of different technologies are used as *imaginative* resources in their planning processes and anticipative work. For one thing in estimating and planning their workload, but also in relation to conveying effectively and persuasively their messages to the audience. The technologies are an important part of reifying, mirroring and reflecting their discussions, but they are to a lesser degree used as active resources to structure, shape and orient their discussions. However, such examples of use will be unfolded and fleshed out in more detail in chapter 8.

Chapter 7½: Quick summary

Other activities on the 8th of August

Their work in this session is interrupted as the bus arrives and they split into two groups. Angie and Sophia leave for their interview with Ricardo Monge accompanied by Lone and Jonas, whereas the rest of us take off for the Intel Clubhouse (which showed out to actually have less computers than we initially thought, but they manage to surf a bit and work with their presentation):



The interviews are, however, the most important resources for them, as we shall also see during the next day. Especially, the interviews they do at the Intel Clubhouse with one of the leaders and one of the users come to affect them more than they anticipated. In the evening they don't have time to work, as there is a welcome dinner and party. However, as we go to bed, Jack and Samuel, whom I shared a room with, worked with the animation until 2 AM.

Initiation of the work the 9th of August

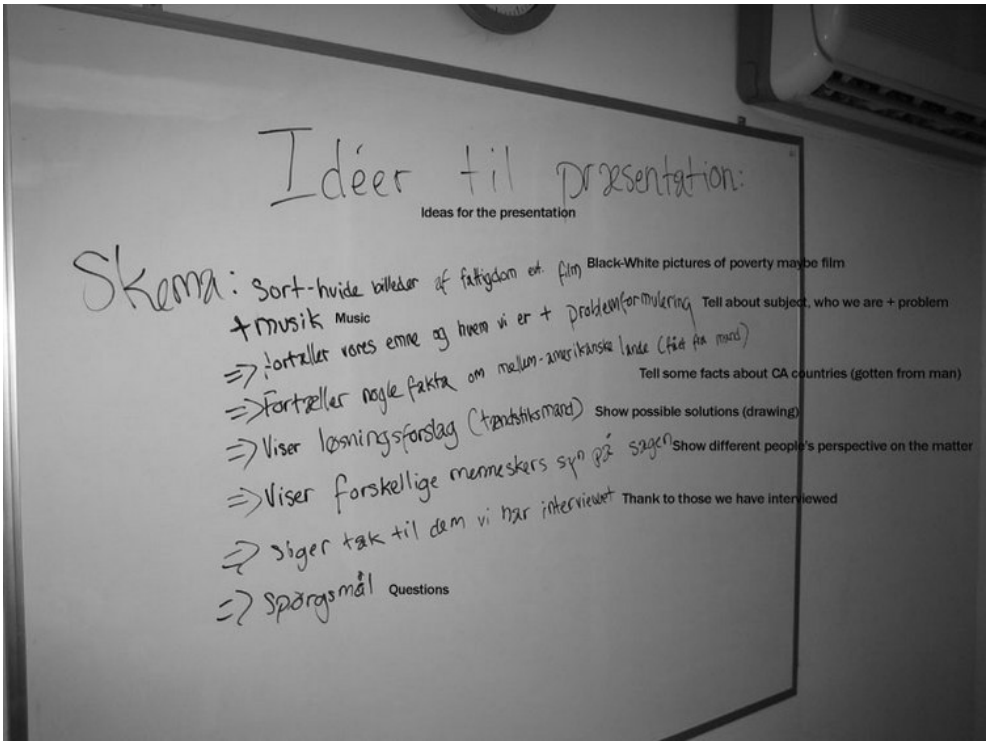
The next day, Lone and I are attending the researchers' conference and presenting our papers, whereas the power users leave for CINPE. During the first part of the day they are given a lecture on the topic of poverty and Central America with the title 'Balance of Millennium Goals in Central American Countries'. It is presented by one of the CINPE researchers Mauricio Dierckxsens with inputs from Keynor Ruiz who is also present. Mauricio presents slides with graphs and introduces them to different topics He presents a lot of different statistics and graphs, while giving his interpretation of the slides e.g. the total population under the poverty line from Central

America, poverty by age groups and correlation between school years and poverty. After his presentation there is time for some questions. Initially, the facilitators start asking questions, but soon after Diana asks what Costa Rica has done, Angie asks about future plans and Laura asks why the taxes are not higher, when they seem to value social investments. Mauricio starts to talk about that people do not really trust the politicians. There is a knock on the door and Diana and Laura has to leave for an interview, but as they get out they all ask for the PowerPoint and if they can have the slides; he can send them, he says, but Angie quickly finds her USB pen and gets the file transferred. Meanwhile the others are distributing task and talking about what they will be working with. Angie comments that many of the things said were also mentioned in the interview they did yesterday, and when she tells that to Mauricio, they talk about corruption and presidents in jail.

Louise suggests they give a big applause and they do. Jasper immediately call over Astrid as he needs her help with subtitling some of the video they have. Sophia and Neil start looking at the presentation they have just received, as to see what they might be able to use for their own presentation. Mauricio and Keynor join them and help them with making sense of the slides, by elaborating and answering the questions they have. Samuel and Jack are working with the animation, while Angie has joined Jasper in subtitling the video. However after a short while, she instead starts to review the notes she has from the interview yesterday.

They work in their small groups or by themselves until Sophia gets up and calls for attention, she wants to plan the presentation and she does get some suggestions, but her planning attempt fails, as the others are very engaged with their tasks. They do not really focus their attention on planning for the presentation, but they do get some notes on the whiteboard as can be seen

from the picture.



The whiteboard says:

Ideas for presentation:

Plan: Black-White pictures of poverty possibly film + music

- *Present our topic and who we are + problem formulation*
- *Present some facts about Central American countries (gotten from man)*
- *Show proposal for solution (matchstick man)*
- *Show different people's view on the subject*
- *Say thanks to those we have interviewed*
- *Questions*

Sophia eventually gives up and sits down with Angie to review their interview and make sense of it.

During their work they raise some technical issues they have difficulties

with, and ask the others for help. They are also struggling to get access to the web, as Neil want to find some pictures of poor people. Hamid comes back and suggests that they can use the computer rooms. Neil leaves for the computer room, whereas the others work with their tasks. Lone and I return and so does Neil; soon after also Diana and Laura comes back. They are quite excited about their interview and thought he was cool; or as Laura says mega, mega cool. They talked about people not being interested in democracy and not trusting the politicians. They also talked about trade agreements with the US, they explain. Meanwhile some of them have managed to access the web, but now they have to leave for lunch:

After lunch they are all gathered and they will also soon start a longer-lasting process of the discussing their problem, the presentation and the causes and solutions they have identified. But initially let us zoom in a bit more on their stabilisation work.

Chapter 8: An afternoon at CINPE

In this chapter I will initially zoom in a bit more on their cycle of stabilisation work and production, as to explore further the differences and similarities the two cycles. Thereafter, I will analyse in more depth their final cycle of remixing and patchworking which I argue is structured around three phases, where the mediational means are used more actively. This I will illustrate through analysing how the whiteboard and the slides gained from the researchers earlier that day, are used as dynamic resources in relation to their patchworking process. Equally, I analyse how different facts are worked into the patchwork, and how these 'facts' are chosen. Initially, they are especially chosen for their rhetorical gravity and communicative impact on the audience, but as we shall see, the facts also strengthen their own sense of the importance of the problem.

The outcome of the cycle of remixing and patchworking in this chapter is the crystallisation and representation of the overall argument, narrative and conceptual blueprint of their presentation. This does not conclude their work with the presentation, as they soon after enter a final cycle of stabilisation work and production in which they produce video clips, narrate their final oral presentations and negotiate how to actually perform the presentation. In this way the chapter represents well the movement and dynamics between the different cycles, as we start the chapter by looking at a cycle of stabilisation work and production.

Vignette I: Cycle of stabilisation work and production

DVD4 Title 2: (00:29:00 to 00:56:00)

After lunch on the second day of work we arrive back at CINPE and the young people start working. They are working in small groups and a lot of different activities are going on simultaneously, the chaperones are discussing whether they need more tapes and Lone and Thomas are talking about finding Hamid who is the technical supporter. Sophia and Jasper are working with subtitling an interview some of the others did with a young girl during their visit at the Intel Clubhouse. Since they do not speak or understand Spanish well Astrid has translated what she says into English/Danish and the two of them are now working on synchronising what she says with the subtitles. Diana and Laura want to work with their interviews, but the cam-

era is spoken for at the moment – and they need that to look through their interview with Manuel Bersone. Therefore, Diana asks out loud if they should find some pictures of poor people. Jasper, who is deeply engaged with the synchronisation, mumbles without looking away from the screen that Neil is working on that. Diana suggests she can do the same, while they are waiting. She coordinates a bit with Neil and suggests they can just find a lot of pictures and save all of them.

Sol and Jasper are working with the subtitling and Astrid comes to ask if they need her for some more translation work. They have not quite finished yet, but while she's there, they check their interpretation of what a young girl said – they don't want to write something which she did not say. Astrid agrees and mentions that they need to be aware of what she actually said and meant; what was the question they asked, Astrid asks. The three of them start to listen to the interview again and try to figure out whether they have interpreted her meaning truthfully.

Laura sits down and asks if they have found some good pictures, where after Angie asks what Laura and Diana are about to do. They say that they want to look at the interviews and select some good pieces, when the camera is available. Angie says that she and Sophia need to do the same, so they need to reserve time. Diana starts to review her notes from the interview, where Manuel talked about being engaged in protection of the kids. She is laughing at her notes as Manuel made some grammatical and linguistic errors which Diana has thoroughly replicated in her own notes, as she 'just wrote what he said', Samuel comments on it as well. Laura, Diana and Angie discuss how to proceed with the interviews – Angie has moved closer to them, but is out of the camera view. Diana suggest that they identify bits that they can use, but they are not quite sure what bits they should choose and she agrees with Laura that they need to look through all of the interview, when a camera becomes available. Diana starts to look for pictures again, while Laura proudly mentions that she got to say the word 'agricultural support' (landbrugsstøtte) – she had been rehearsing that term. The others cheer for her and Jasper gives her thumbs up. Everybody in the room laugh when Laura subsequently reveals that the interviewee did not catch the word. Shortly after another cheer is heard from Samuel and Jack who are laughing and cheering at their own presentation; 'Thumbs up for taxes' Samuel laughs out loud. The two are working very concentrated on their PowerPoint animation – in fact they stayed up till 2 AM working on it, while I was sleeping (I shared a room with these two young gentlemen).

Diana and Laura are searching for pictures. Angie has moved next to them and she is reviewing her notes from the interview they did. Laura asks Diana what else they need to investigate apart from taxes. Diana is finding pictures and commenting on them, Laura mentions they are smiling on the pictures – away she says, that doesn't work – and then turns to Angie to see what she is doing. They talk a bit about the interview, while Diana is looking at pictures and commenting to Astrid about them. Angie suggest that they switch interviews to get another angle on what could be interesting, Laura, however, thinks that it would be too confusing – he says a lot in their interview, as she says; but she wants to get on with the interview so she asks Astrid for the camera so they can review the interview. Astrid finds the camera and Laura asks Angie to help her with it 'you're more of a power user than I am' Laura says and laughs. Meanwhile Angie is struggling with her wireless internet connection which does not work.

Lone comes over to Angie, she wants to show them what she has uploaded into learningtimes, but Angie's computer cannot connect. Lone then suggest they use Neil's computer and he abandons his work with the pictures and place the computer between himself, Angie and Lone. Lone guides them into Learningtimes to show them the resources. They find the resources, but mention that they do look quite complex and heavy – Lone suggest they can have a look at the Human Poverty Index and the formulas behind it.

The others are working with their different projects. Jasper, Sophia, Astrid and I are trying to resolve a very abrupt cut in the movie-clip they are making of the interview; I suggest they can fade the sound to avoid an auditive abrupt cut, and they work on smoothening the cut, as the timing of the subtitles are now in order. I move away after some time to troubleshoot my computer as Hamid has arrived. Meanwhile Diana has found some pictures, which are too shocking, and cries out in disgust; obviously the poor people were not smiling on those pictures. She is collecting names of the persons they have interviewed and is also searching for pictures.

Lone ask Neil what he and Angie are doing and Neil tells Lone he is looking for pictures to use with the slideshow of poor people. Lone asks if they have found some statistical data and Neil says they have got plenty of that – he reorganises the monitor and make ready to show Lone some of the slides they have. Lone asks from where they have obtained them and Neil explains they got them from the lecturer in the morning and shows them to Lone. He has arranged them inside a new slideshow where they have also put their problem formulation and a few other slides. Lone then asks him to go into

learningtimes again and have a look at some of the resources she put there. While Neil is manoeuvring the learningtimes environment, Lone shows him some resources she has uploaded and argue that they contain some material that might be useful to them. She explains and discusses different statistics with Neil. They talk about the number of people living for less than a dollar or two a day and about the national poverty line of Costa Rica. Lone mentions that the numbers match between what they heard during an interview and what is in the slides they got from the lecturer; there has been a reduction of poverty from 40% to 20% over the last twenty years.

Samuel and Jack are texting the PowerPoint animation; they both work on it and use the pen interchangeably. They are correcting the texts and timing the animations. They stop the animation once in a while and correct speed of slides and clear up paths in the animation. They watch it and laugh and comment on their own creation "it is so funny".

While Lone and Neil discuss Angie has crawled up on the table to see the animation Jack and Samuel has been working on – Angie comments and laugh and Laura joins them to watch the presentation as well. She gives some suggestion and mention it has similarities to something from the movie "Bowling for Columbine"; Sophia joins the viewing of the presentation as well. Jack shows the animation while making loud sound effects like an ambulance. Samuel takes over and explains what they are going to say, he closes with the "thumbs up for taxes" and makes funny faces, while the others applaud and laugh. Angie starts talking about they have only one Mac-computer and way too many interviews, Laura who now sits together with Diana, looking at the interview on camera suggests that they start discussing what they should talk about. She moves back to the others. Angie moves back in her seat next to Laura and says to Sophia that they should be looking into what they are going to say during their presentation. Samuel and Jack start discussing what they will say during their presentation as well.

Jasper is working with Astrid who checks that the subtitles and the timings are okay, while I cheer with Hamid for making the wireless network work. Jasper asks Diana about the name of the people in the clip. Sophia and Angie has moved to the floor behind Diana and they are trying to call attention to themselves "hello everybody" – they both stand up and try to get everybody's attention. Angie suggests that they start to distribute tasks and who will say what. Laura asks if anybody actually knows what they are going to say? Then we need to talk about that as well, Angie replies.

Entrance – roll-on notes

In this chapter they are continuing the roles that were established in the former chapter. They are basically in full control of the process, where we as researchers and facilitators are acting as helpers and supporters. Sometimes we are not there, are filming or working on supporting them in other ways (resolving network trouble, listening intensely to interviews, getting drinks and food and so on). Astrid, for instance, plays an important role in helping them with translations for the subtitles and I give some suggestions also how to solve some abrupt cuts in their video material. Jonas is also helping them editing the videos if problems arise, so we are essentially support staff. It becomes increasingly visible that we as facilitators, chaperones and researchers are often not in touch with their coordination work, and that they have a much better overview of the work process. There are several examples of that. For instance when Lone comes back, she seems to be thinking Neil is just passing time looking at pictures, and starts to query into what he is doing. She suggests that they should find some statistical information, as she does not know they have foraged the PowerPoints earlier that day (which Neil then shows as a response to her). Louise queries into who is doing what and initiates a distribution of tasks, but it turns out, they have already done that themselves. On the day before, poor Astrid was trying very hard to figure out who should go to either the Clubhouse or the interview; but she was drowned in their own distribution of files, computer exchanges and discussions of who will be doing what during the actual interviews. She had to satisfy with being able to identify who would go where (which was also the most important to us). Then she suggested that they started to sum up and review each other's questions, but soon realised they had already done that.

Often we are left completely out of the loop in their distributions and negotiations of who will interview, do notes, handle the camera and so on. Our attempts at taking charge, summing up or coming up with suggestions for things they could do sometimes end with us realising that they actually have a much better overview of the process than we do. This certainly does not mean that we are not participating and helping them out, as especially the chaperones are doing a lot of work together with them all the time; but we are the support staff and not the management. The management and the role of planning and controlling the work is a role distributed between them, and it is orchestrated through a silent layer of coordination and exchange, as I shall return to.

Exploring cycles of stabilisation and production

We are currently in a transitional phase where there is a movement from a cycle of stabilisation work and production in smaller groups towards a cycle of remixing and patchworking. However, before we delve into the cycle of remixing and patchworking, I will briefly look into the work they are doing in small groups, as these are good examples of stable, ongoing sub-activities and productive cycles. This is essentially a continuation of the work they did before lunch, which they take up again when they return. Cycles of stabilisation work and production, I have characterised as being cycles that are not dealing directly with the backbone threads. For instance the task of subtitling and negotiating what they interviewees say is not *directly* connected with the overall problem; changing one of the formulations and translations in the video will have less impact on the overarching enterprise than changing for instance the problem formulation.

Though they seem to have stabilised around the second idea for the presentation they are far from having a full overview of it, as we shall see during the analysis of the cycle of remixing and patchworking. This is also clear from Laura question 'if anybody actually knows what they are going to say'. At the moment the subtasks are apparently not connected or related, and they seem to be living their own lives. Diana is finding some pictures of poor people, as is Neil – some are working on subtitling movie clips; others are working with the animated PowerPoint. They are engaged in disparate, but also overlapping tasks which can be summarised as:

- Subtitling
- Finding pictures of poor people
- Reviewing, analysing and selecting from interviews
- Creating the animated PowerPoint
- (Troubleshooting network)
- Reviewing resources in LearningTimes
- Working with their final oral presentations (what to say)

The stabilisation work is carried out in smaller groups, as we have also seen before, but what is interesting is that the members of the small working groups often change. We have seen this pattern of changing group constellations earlier, as for an example Diana and Neil joined Samuel and Angie; but also in the former chapter, where they change seats, exchange computers

and files when they enter their stabilisation work. Furthermore, they are seemingly engaged in more than one task at a time and shifting continuously between the tasks (as for an example Diana and Laura are shifting between 'finding pictures of poor people' and 'reviewing their interview').

Throughout the previous chapters I have pointed to different examples where they are engaged in planning work and discussing how to manage the workload and distribute the work. In the following I would like to point to an example of a more silent layer of coordination and exchange which is an important part of the overall planning work. Secondly, the example is also incorporated to show that the stabilisation work they are doing is not just routine or 'practical work'.

Finding pictures and reviewing notes

The more silent and less visible layer of coordination, which is part of their planning work, can be seen from how Diana works with and construct her task. She initiates the work as an open, public suggestion where she offers to find some pictures of poor people. Obviously, she could just have started doing it, but she chooses to lay it out as a suggestion which is open to negotiation. Jasper responds to it and points out that Neil is already working on it. Diana then suggests they can both work with it. This involves a coordination phase between Diana and Neil, as to avoid finding too many of the same images. They end up with Diana suggesting that they can just save a lot of different pictures. This exemplifies that they constantly touch bases and coordinate through "casual" conversations, as we also saw it during their first work meeting, where they often added little pieces of information to the shared pool of knowledge. By casual, I do not mean to say that they are working in an unorganised manner, rather I am trying to point to that there is an ongoing, public, backgrounded layer of coordination work going on. They constantly feed into this and orient to it by small remarks, open questions and suggestions, thereby pulling for short periods the coordination and planning work into the foreground. This is not only accomplished through talk, but also through their constant spatial re-organisation. Even though their groupings are somewhat stable they are open to negotiation. The day before, Jack and Neil were working on the presentation; today Samuel is working with Jack and initially Neil and Sophia joined forces on the presentation they acquired from Mauricio; but now Sophia is working with Jasper on subtitling movie clips – something which Angie has also been working with. Furthermore, there are frequent shifts in what they work with and what tasks they pick up. Diana, for an example, abandons the work

on finding pictures of poor people, shortly after having suggested that she should undertake this task. She then starts reviewing some notes from an interview, only to return to the task of finding pictures of poor people.

The reason for Diana abandoning the image search is a new phase of coordination and negotiation work. As Laura returns, she sits down and asks if they are finding some good pictures, but Angie immediately ask Laura what she is doing right now. Laura, Diana and Angie now start to negotiate and coordinate their work, as they all need to use the Mac-computer for importing the video. Though, there are examples where they overtly distribute tasks and negotiate who should do what, there is also an ongoing process of aligning, negotiating and coordinating which is performed both through conversations, but equally through moving around, looking at each others screens and so on. In this way they continuously construct a shared workspace awareness, where they know what the others are engaged in and working on. I believe this is actually the reason why we as researchers and facilitators are often completely out of the loop, as we are not part of this ongoing less visible coordination work.

Negotiations and patch-working as part of the stabilisation work

Now, if we initially zoom in on Diana's work during this period we see a good example of their foraging and gathering processes in more detail. For this part I will use a different zoom lens, which goes a bit more into details, as to be better able to see the interactional complexity of this sequence. Because as we zoom in, we quickly see that Diana's search for pictures is actually a very interactional accomplishment.

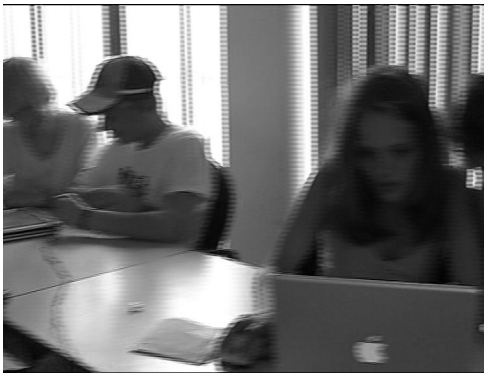
As I have argued, the difference between the remix and patchworking processes and then stabilisation work is related to, whether they are concerned with the more overarching threads, or whether they engage with more discrete task. But as I have also mentioned, this is somewhat misleading, as these more delineated tasks are also examples of patchworking. In the following example Diana (and Neil) are engaged in identifying different resources for use in the final slideshow by browsing through the results from Google Image Search and selecting possible candidates from the results returned. The process of finding 'pictures of poor' people is not only a matter of finding, selecting and saving some pictures, it includes an ongoing interpretation and negotiation of what it means to be poor and how to portray poverty. This is not an arbitrary process, but is accomplished through nego-

tiations with the other participants. So with the following example, I want to exemplify that 'stabilisation work' also is a creative process of patchworking. The difference is that discussing, re-creating and reweaving the patchwork of a backbone thread would have more profound implications for the entire project; also because this might disturb more profoundly their moral blueprint, as we have already seen examples of.

First and foremost, Laura is involved in this task together with Diana, but she connects and disconnect to the task throughout the sequence e.g. Laura tells the story of her great success of managing to say 'agricultural support'; she begins to tinker with a camera to review the interview and also she joins Jack, Samuel, Angie and Sophia when Jack and Samuel present their animated show. Still, she engages from time to time in looking at the pictures, and Diana often calls on her attention by commenting on different pictures, as in the example below (happens between DVD4 Title 2: (00.29.14 – 00.32.20)).

Laura: And he didn't know what it meant (Samuel laughing loudly) Inaudible (0.5)

Diana: Aii, it is so terrible (2.0)



Laura: Good picture – Save it!

Astrid: Is that also pictures of poverty you've got there

Diana: yeah

Laura: but I just think- aai – I mean which things should we highlight apart from taxes (1.5)

Diana: Noooo

Diana: Then it is really (inaud) Aii, have a look at
[that one (Inaud):

Laura: [They are smiling- discard

Diana: (Laughing) (Inaudible) (2.0) (Laura turns away and looks at Angie's screen)

Diana: It is because child foundation have helped them

Diana: Aii that shirt (1.0) have a look at that

Laura: He he yeah (2.0)

Angie: Shouldn't we just- hello- I have an idea

Laura is trying to initiate a conversation about the wider problem of their presentation, as she is wondering what else to include apart from taxes. Diana, however, is occupied with looking at the pictures and invites Laura to do the same, as to identify, whether a picture can be used or not. Laura quickly looks at it and discards it, because they are smiling (and possibly because she is irritated about Diana not following up on her question of taxes). Likewise, Diana discusses with Astrid (who is standing behind Diana) if a particular picture signals poverty. Initially, Diana does not think that the picture has anything to do with poverty, but through her exchange with Astrid, she finally decides to store the picture (which also appears in the final presentation as slide number 15)

Diana: It is a bit weird- I mean it is just garbage

Diana: Is that poverty?

Astrid: It, it- that- I would say it is poverty because I think they are looking for food or things they can use

Diana: Yeah, okay

Astrid: And when you have to do that at a dump-

Diana: Yeah (Diana right-clicks and saves the picture – goes back to the thumbnail page)

In these discussions there are different orientations. For one thing, they are discussing on a general level of societal, cultural knowledge of poverty and how poor people look. But also there is a simultaneous orientation to the narrative or thread of their own slideshow. How is it that they want to portray poverty, and what kinds of mood do they want to convey? In this sense these foraging processes for pictures and information are not only processes of searching and finding, they are equally about negotiating and aligning the 'information' with their own conceptual blueprint and their imaginative representation of what the final presentation will look like. Surely, the information 'is out there', but bringing it in, making sense of it and weaving it into the patchwork is a more complex enterprise.

This is essentially the same for all of the different tasks they are working on, and they often switch between individual work and engaging other persons. Angie is reviewing their interview, as to find interesting pieces that they might use as parts of the presentation and which fits the unstable conceptual blueprint they have. She is trying to single out and identify the most important parts of the interview in relation to their problem formulation. Often this involves Sophia who peeks at the notes and comment. Neil (and also Sophia) have been working on identifying slides from Mauricios presentation that are most interesting in relation to poverty and the perspective they have. He has re-organised the slides in a copy of the presentation and singled out those, he thinks are the most interesting (appendix D5). These are also discussed with Angie who has a look at the slides once in a while. Sophia and Jasper are engaged in meticulously translating and subtitling the small video-sequences they have chosen so far. At this time they are working with the interviews from the clubhouse and are very keen on getting the subtitles correct, as they do not want to translate wrongly or manipulate with what they are saying. They double check the translations and subtitles with Astrid and put quite an effort into synching it correctly. Jack and Samuel are

collaboratively drawing and texting their animation. They shift between keyboard and the pen and they take turns on writing, drawing and refining the animation. In this way they are refining and lining up their different pieces and patchworks. The patches and pieces that are results of their foraging processes are collaboratively compared to their unstable imagined conceptual blueprint, negotiated and then selected for future work or discarded.

However, there is a rising sentiment that the conceptual blueprint may not be sufficiently clear; Laura is concerned with what else they should be talking about apart from the taxes, and she suggests they should soon start to talk about that. Also, Angie, who is reviewing her interview, starts to grow weary and asks Sophia to join her in planning more in detail what they are going to say. As they start this work they seem to realise that they need to plan and sketch out in more detail what they should do.

Exeunt stabilisation work – Enter cycles of remixing and patchworking

Their work and focus shift as Sophia and Angie are trying to call attention to themselves by yelling "hello everybody". Angie suggests that they start to distribute tasks and decide on who will be saying what. Angie's initial aim is to quickly distribute the different tasks and arrange who will say what, so they can continue in smaller groups. She clearly expresses that she thinks they should not discuss too much as a large group, but divide the work between them (DVD4 – Title 2: 00.39.02). However, this is *not* what happens; actually, they all discuss and engage in very complex process of patchworking involving all the different backbone threads and processes in one big melting pot. This goes on for approximately one and a half hour (DVD4 – Title 2: 00.55.36 – 01.00.53; DVD4- Title 3: 00.00.00 – 01.01.20 and on DVD3 – Title 1: 00.10.55 – 00.40.22).

As I mentioned in relation to the previous chapter featuring a cycle of remixing and patchworking, the conceptual blueprint of the final presentation was quite blurry, unstable and provisional. While they did agree on a few things, and we could see the formation of different little patchworks and connections between the different threads, there was no coherent or strong conceptual blueprint for their final presentation. This is essentially what they construct throughout this cycle of remixing and patchworking, where I shall also argue that the relation between the technologies and the process of

patchworking are different from what we saw in the preceding chapter.

Overall this cycle of remixing and patchworking is structured in different phases: The *first phase* is a very complex brainstorm and negotiation of the problem, the possible causes and solutions, and also how to present it. Angie continuously reifies this discussion on the whiteboard in collaboration with the others. This representation of their conceptual blueprint eventually becomes so complex that they initiate a *second* phase of translating this whiteboard into a more concrete work plan. This is something Jasper is heading in collaboration with the others. During this phase Jasper two times runs through the presentation, which finally results in an overview reified in a Word document (Appendix D8). Then follows a *third* phase which is an outcome of one of their decisions of 'stating facts to pictures'. This is headed by Diana who has been simultaneously engaged in finding interesting (shocking) facts about Poverty during the first two phases. This work comes as a surprise to the others, but they are very happy about it, and they spend some time to identify interesting facts to use for their presentation. Upon this follows a brief passage where they talk a bit more about how to actually perform the presentation, before they start to distribute the work and split up in smaller groups. Then they enter a final cycle of stabilisation work and production that goes on for the rest of the day (and evening).

While Angie gets up and wipes clean the whiteboard (with permission from Sophia) the others start to discuss the different topics:

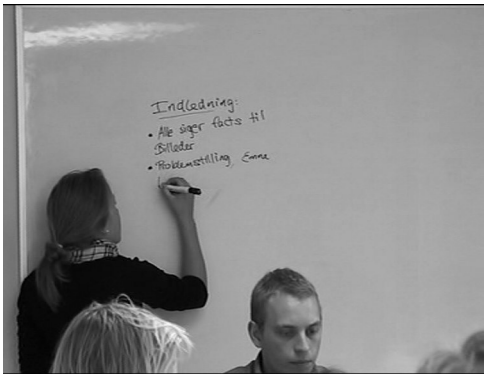
Vignette II: First Phase of remixing and patchworking. The whiteboard explodes

(DVD4 Title 2: 00.56.00 – 01.00.53)

Laura starts by mentioning that tax is one of the really big issues, and explains that the interview they did was very much concerned with taxes, the state and the relations between the people and the state. Sophia says that she thinks they should also talk about the Intel Clubhouse and Jack asks if that is a model for a solution. Though it may not reduce poverty directly it helps people in becoming better educated, so in the long run it is a way of reducing poverty, they agree.

Angie has now wiped clean the whiteboard and states that they have 'an introduction' which she writes on the whiteboard.

Laura thinks it is about 'stating facts' and Sophia adds 'stating facts' to pictures. Samuel suggests that they introduce themselves as the Danish team and what they have been working with, their problem and why they have chosen to work with Poverty. They discuss whether they should start with the pictures or by introducing themselves and the problem, which brings forth a question from Jack. He asks if they will have more than one projector available because then they could have one projector dedicated to creating a mood by looping different pictures and the other projector could then be reserved for their explanations. Sophia thinks they should avoid distracting people, but Jack and Neil thinks it will be okay, as long they don't have music playing all the time. They query us, whether they can have two projectors and Lone promises that we will arrange for that.



Diana says that she does not have a strong urge to say a lot and they start joking about Samuel should say it all – he is their mascot because he was interviewed by CNN. Laura asks who will talk about the success stories of

Costa Rica and Sophia and Angie volunteer. The person they interviewed said something about that, Angie says. Jack asks once again about the two projectors, and then starts to elaborate his idea to Jasper and Neil; simultaneously Lone is encouraging them to write down sub-themes, Angie tells her that they know and that is what they are doing. Meanwhile, Sophia starts talking about incorporating something about a president. Jasper queries about the content of the success stories and Laura says that has something to do with how they have developed; Angie follows up and talks about the models [graphs] that show how well they are doing. Jack supports it and talks about a 'coordination system' they can show and Jasper says it is one of the first slides. Samuel points out that they should not forget the military. Lone is suggesting something for the second slideshow that should be running, but is drowned by Sophia and Neil who have started talking about Intel and Education, which causes Laura to suggest jokingly they could hold weapons, throw them to the floor and then have school uniforms underneath.

Angie asks about where a suggestion belongs in relation to her bullet points and Jack talks about that some of the slides should be grouped under success stories. Simultaneously Astrid is talking about guerrilla wars in Costa Rica, while Angie and Neil are discussing the grouping of topics and at the same time Sophia says they should distribute the work, to which Angie says this is what they are doing. The camera cuts…

Let us just take a small break from the Vignette which captures approximately 5 minutes of their work. As one might sense from the vignette and the pictures of how the whiteboard is filled out during this relatively short period of time, there are multiple overlapping discussions that relate to several different things. They are starting to build up an overview of their pres-

entation, but also they are engaging in discussions about available resources (projectors), solutions, causes, slides they have, presidents, Intel, success stories, looping slideshows, military, school uniforms and how to group all of this, which is basically what Angie is trying to accomplish at the whiteboard. The grouping seems initially to refer to the sequential structure of the presentation, but it increasingly becomes clear that they are not only planning their presentation, they are equally re-constructing and reweaving their whole problem space. They are reviving the patchworking processes that were especially prevalent on the day before, but at that time they had not yet been interviewing anybody. Now they have gained even more inspiration from four interviews and a lecture with accompanying slides. Their problem formulation is settled, but very open, and during this session what they are doing is essentially creating a narrative revolving around the problem formulation and a conceptual blueprint for their presentation. This involves some of the same whirlwind like processes where a lot of ideas and patches and pieces are thrown onto the working table and weaved and mixed into a patchwork which is continuously updated on the whiteboard by Angie. She is trying to pick up as many of the ideas, as she can, with the help from the others who point out where the idea fits, discuss the order, the arguments and how it all fits together. The difference from yesterday is that throughout this session they construct the conceptual blueprint and overall argumentation for their final presentation. The framework or blueprint, which is finally reified in Jasper's document, does not encompass all the elements of the final presentation, but it constitutes the structure and overall argumentation. They then fill out the different 'bullet points' or empty spaces, throughout the cycle of stabilisation work and production that follows upon the cycle of remixing and patchworking.

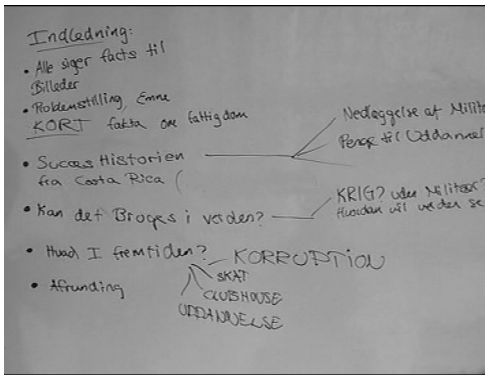
Vignette II: Continued

DVD4 Title 3: (00.00.00 – 00.09.39)

As the camera turns back on they are discussing their experiences at the clubhouse and the young girl who mentioned that before coming to the clubhouse she was hanging out with some people who had a bad influence on her. They all agree this is an important story to tell. Lone mentions that there was a war that was of importance and Jack adds that abolishing the military was an important step. In relation to this Laura wonders how much money would be saved if everybody abolished the military.

Angie opts for a distribution of the tasks, rather than everybody discussing

different solutions they should discuss and work in smaller groups instead. Laura counters and think they need to agree on what should go into the presentation and she begins to tell about the interview they did today. Jasper asks if they can find a statement they can use as a video clip – Diana and Laura think that will be easy. Diana follows up and discusses some of what she thought was very important; they were told that people were not very interested in politics and democracy, because they don't trust the politicians, and Laura adds that this is intrinsically related to people's willingness to pay taxes. Actually, they say, the researcher they met were on his way to a meeting about how the Costa Ricans could be encouraged to pay higher taxes and get them to trust the system. Angie asks where she should put it and suggests herself that it should be themed under corruption. Diana wants to relate it to education as well, because they don't learn enough about politics or engagement in democratic processes in school; only a relatively small percentage actually vote Laura adds. Sophia asks whether this actually undermines their own argumentation about taxes being so important, if people don't want to pay taxes, but Laura answers that they will just have to point to how to solve that problem, and that their interviewee said a lot of good things on that topic. There is a long pause and Sophia comments on the readability of the whiteboard.



Sophia asks who will deal with the issue of the war and Angie says that the two of them will do that. Jasper asks what will go in-between 'can it be used in the world' and 'what about the future' [referring to bullet points on the whiteboard] and suggest it should be the slides they have and they start discussing how many they should incorporate. Certainly not all of them, they agree; that would just be copying then. Neil adds that he has already selected some that could be interesting, but they might still have to choose

only some of those. Sophia says that should be left to the smaller groups, but Neil comments, that they need to be more aware of what will be their conclusion before deciding that. Much the same with the interviews, Angie says, they should also just use small pieces at different times during the presentation, where they fit, rather than showing long excerpts. They discuss whether they can actually create smaller pieces and Jasper confirms. Jack opens a suggestion on what to do for the conclusion, and suggest they state all the different solutions they have come up with. Angie suggests they engage in dialogue with the audience and Jasper remembers they actually had a more elaborate idea for a dialogue [the role-play] and comments it seems they have completely forgotten it; now they don't seem to be involving the audience. Laura returns to the movie issue, and asks if they can manage to do it at all. They still have two more interviews to do and Jasper says that it takes more time than expected. Jack mentions it is "only" 1.45 PM and they still have some time, but Jasper mentions that they still need somebody to do all the PowerPoint slides and Neil adds that they are supposed to be in bed at 10 PM. They however agree that won't be possible, and Angie says that she didn't go to bed until 11.45 anyway (causing the grown-ups to laugh).

They start discussing when the animation should come, but also start to wonder about the different slides, they want to use. They ask Neil to go through the slides. Neil starts to present a slide which is about the percentage of the population in different countries that live below the poverty line or in extreme poverty. He explains that there is a very complex formula behind the numbers. Jasper ask Angie to put the topic of the slides on the whiteboard as well, while Neil continues with another slide and interprets what it is about. He is accompanied by Sophia and they all discuss whether they should use the slide or not. They think that the slide with comparisons between the countries fit well the story of Costa Rica as a success compared to the other countries. Jack breaks in and ask if anybody has actually created a slideshow with pictures, Neil says that they have found some pictures at least. At the same time Laura starts to talk about that they should not forget the trade agreements between the US and Costa Rica, as she thinks they exploit Costa Rica. Jack agrees, but says that she should really avoid pointing fingers at people. Samuel suggests they can just warn in general about unfair trade agreements and that it might have some costs for the poor countries; Sophia mentions there might also be some advantages with trade agreements. Jasper urges Neil to move on with describing the possible slides and Neil says Costa Rica is the fourth best country in Latin America, which Sophia contests and Lone starts to intervene as well. It seems they are

actually the second best and they want to add to the success stories of Costa Rica. Laura is still talking about the trade agreements, which she is really agitated about, as she thinks they are really unfair; they just have no other options than signing those trade agreements with the US, she argues.

Zoom-in on the cycle of remixing and patchworking

Let us zoom in here for a while and review the work they are actually accomplishing through these discussions as they are summarised in the vignette. First off, let's have a look at a picture taken just before they start to work with the slides, which is just before Jasper asks Angie to add the slides to the whiteboard:

Figure 11: Overview of Whiteboard I

What we see here is an outline for the presentation which they have been constructing through the discussions that are reflected in the vignette. The notes on the whiteboard can in one way be seen as a way of reifying their discussions revolving around of the final presentation, as we saw it in the preceding chapter. However, the whiteboard and other mediational means are used more actively in structuring and orienting this patchworking proc-

ess.

The whiteboard, together with other tools, acts as an unstable boundary object or mediational mean, through which they reify the concepts, ideas and content for the presentation that has come up during their discussions. The whiteboard, however, is used in a much more active and transformative way, as it is not only used to reify, but to dynamically negotiate the form and structure of the presentation and their overall argument. Therefore, this is not only a reification of the presentation; rather the presentation itself is coming into being, as the whiteboard is also a working table for their anticipative work, where they are trying to construct a shared representation of what the next day's presentation will look like. As such the whiteboard comes to represents the dynamic construction of their argument, narrative or conceptual blueprint: what is the problem, what are the causes and what are the solutions?

Furthermore, it incorporates their analysis of what Costa Rica has done and why this has become a success (cutting the military, investing in education), but also what might still be done. The latter refers for one thing to Costa Rica, but also functions as a wider solution for other countries, or some conditions for development (reduce corruption, taxes, clubhouses, education). From the picture of the whiteboard itself, it is difficult to show the dynamics of this process of patchworking, but exactly the construction of the representation on the whiteboard is indeed such a process, as we shall see. What is worth noting is the degree to which their thinking and discussions 'melt together' with the reifications on the whiteboard. This is both in the sense of creating a 'spatial' and a 'temporal' representation of the dynamic, ongoing simulation of the next day's presentation through the whiteboard. But also the linguistic reifications, such as 'what about future' and 'can it be used in the world' become 'boundary terms' that represent more complex constellations or chains of arguments. This becomes visible through a zoom-in on their conversation which is next to incomprehensible if one disregards the whiteboard.

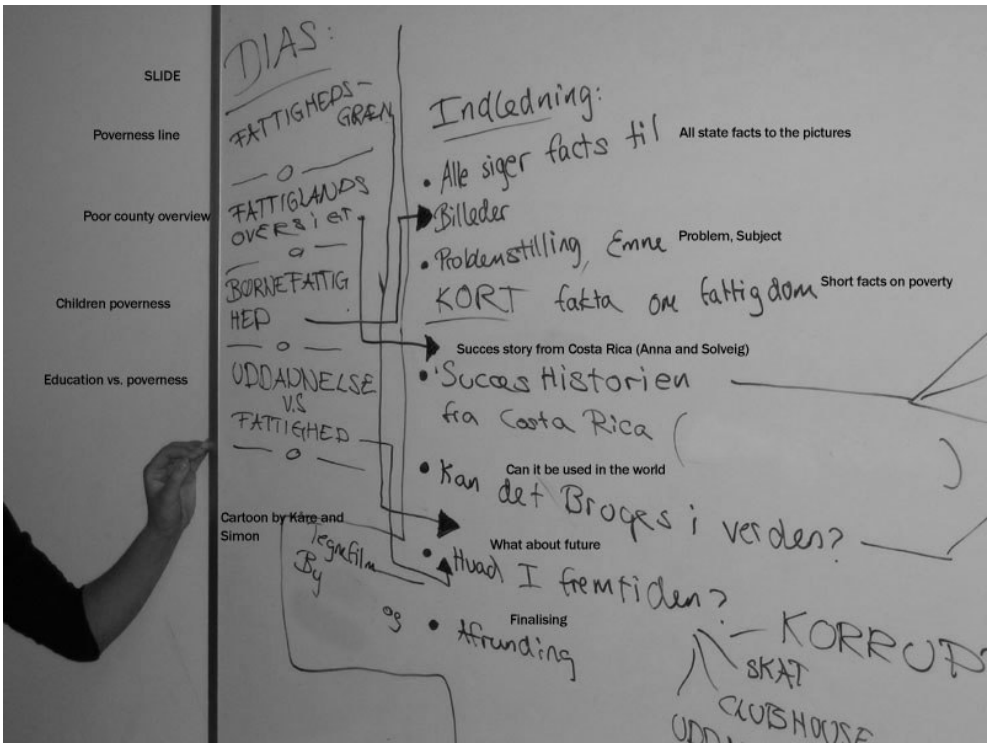


Figure 12: Overview of Whiteboard II

Above is a full-screen picture of the whiteboard taken a few seconds before the end of the excerpts, which is important to know, as to be able to understand what they are talking about:

Excerpt 8 – DVD4 – Title 3: (00.09.40 – 00.11.58 – to be continued)

Jasper:	it comes after-
Neil:	(to Lone) oh no no no
Jasper:	it comes after `can it be used in the real world' - that is where we begin to show slides - some diagrams right
Laura:	(to Jack) they're so dependent on that country (*TR: The US*) it is so stupid

Jack: they are dependent on someone

Jasper: (to Neil) are you ready with those (inaudible) diagrams

Laura: [(to Jack) yes exactly

Lone: [(to Neil) okay

Laura: and you know and there [now so right? everybody can see it's wrong and everybody can see that it is just so

Lone: [but those are the countries you have also seen before all those I think - right

Laura: bad

Neil: (to Lone) oh yeah that's right

Laura: but they just couldn't fall out with them you know then their economy would shatter
[if they fell out with them about that

Jack: [it's like drug users and pushers

Jasper: [okay Neil,

Jack: Laura in one way it is just like drug
[users and pushers

Jasper: [can we hear one more Neil (1,5)

Laura: (to Jack) yeah

Jack: they're dependent on
[someone who

Jasper: [can we hear one more Neil
Laura: (to Jack) yeah, that's right

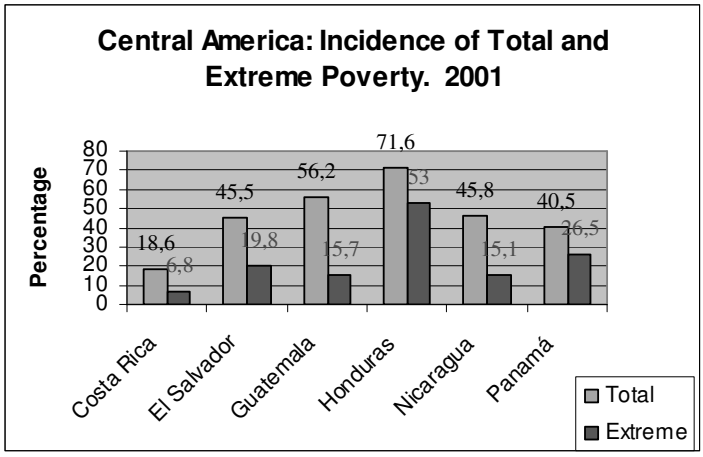
The excerpt is quite complex, as there are multiple 'unrelated' conversations going on at the same time and a lot of overlapping speech. During the first part Lone is negotiating the meaning of a slide with Neil, Jack and Laura are discussing the trade agreements, Jasper is focused on moving on and primarily orients to Neil who sits with the slides on his computer and then Angie who is the 'master of the whiteboard'.

Laura and Jack are continuing their discussion about the trade agreements, which Laura feels very strongly about: "they're so dependent; it is SO stupid". Jack has already agreed with this and he compares it with the relation between drug-users and pushers, but as he also says, they should be careful about discrediting or smearing others. Again Jack, though he agrees, revives the diplomatic stance. He has earlier, himself, been very critical towards the US international policies and relations, but they also exhibit a very refined intercultural competence. This in a sense could be interpreted as keeping up appearances and as a superficial politeness or diplomacy. However, from being with them and also having access to their conversations, I think it actually goes deeper than that. In my interpretation, I believe they are able to distinguish between concrete people and policies; they might disagree with American macro politics, the current administration and so forth, but this does not apply to or exclude that they build friendly, open, appreciative relations with American people[19] who have also kindly hosted the entire event and have helped and supported them.

When we enter their conversation they are trying to integrate one of the slides they obtained earlier that day from Mauricio's Dierckxsens PowerPoint presentation. During the day Neil and Sophia have been sorting and selecting from these, as part of their stabilisation work and Neil is looking at this modified slideshow throughout this excerpt (appendix D5). This seems fair to assume even though Neil's screen is not actually visible. However, this can be partly traced through their conversations and a clip not long after, where the camera focuses on Neil's screen and the slideshow is visible. The slide they are trying to work in is the one they term 'fattighedsgrænse' or 'poverness line' which is the slide below:

Eradicate poverty and hunger

- Reduce by half the proportion of people living on less than a dollar a day.



•In all Central American Countries, the incidence of poverty is bigger in rural areas.

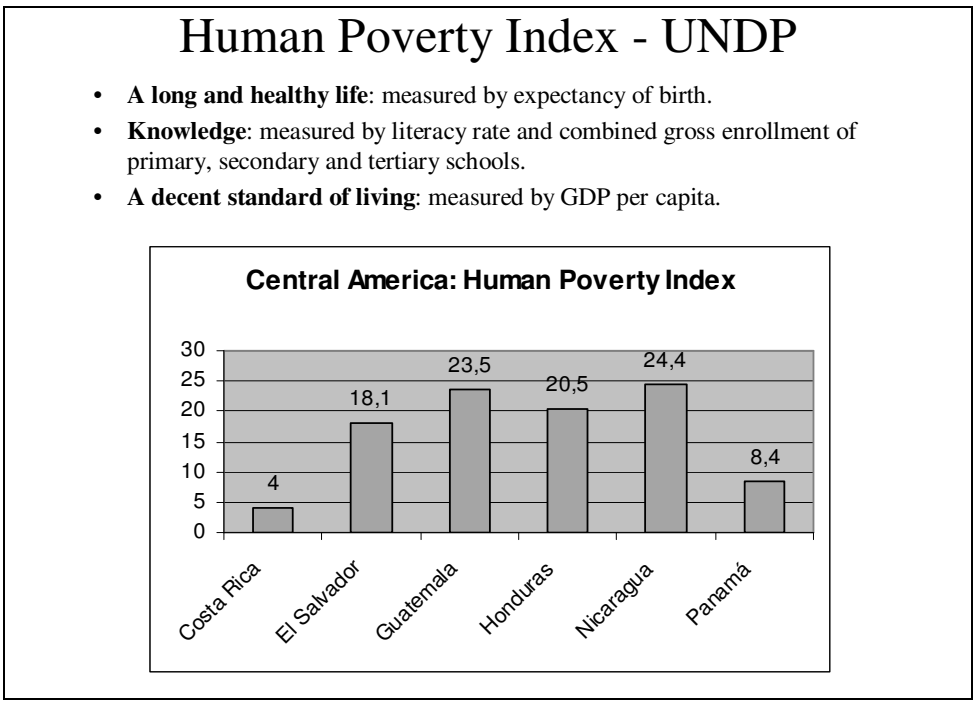
•33% of poor people live in urban areas and 67% live in rural areas.

The slides are somewhat different from the other boundary terms. Whereas some of the boundary terms represent complex clusters of their arguments, or temporal-spatial representation of the future presentation, the slides come to represent 'scalable arguments'. By this I mean that the slides are given variable weight and meaning, as they can be couched as e.g. 'facts', 'information', 'evidence' or 'arguments'. Their 'status' as fact or arguments depends on, where they are placed in the patchwork. So in some cases, the complex slides are reduced to the category 'facts to pictures', which is envisioned as small bites presented to quickly show 'facts' about poverty. But at other times the slides join a more complex argument and become elaborate 'arguments' or corroborative 'evidence'.

While in one way the slides are worked into the patchwork, they also come to structure the very construction of this. Just like the whiteboard plays an active role in structuring their patchworking process, the slides become what structure their conversations and the work on the whiteboard. The slides are weaved into the patchwork, but equally the construction of the patchwork of the presentation and the conceptual blueprint is structured and transformed by the slides, as we shall see in the following excerpts.

Working in the slides

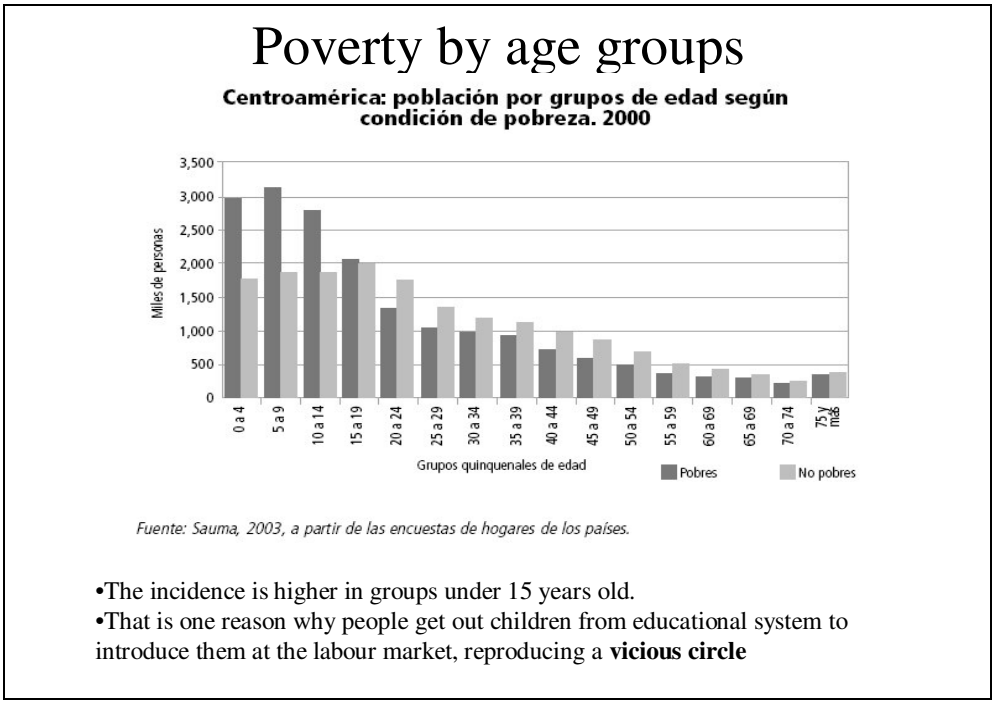
The slide, which is coined as 'poverness line', is placed in/after the category 'can it be used in the real world', which initially seems to be a choice based on 'that is where we begin to show some slides'. It is not quite clear, why it should enter exactly this category, as it could equally (which they also discuss earlier) be constructed as part the 'success story'. It might be meant as an argument to illustrate what Costa Rica has done might also help in other countries. The placement of this slide actually happens after they have negotiated the placement of the slide, which is coined 'fattiglands oversigt' - 'poor country overview', which they want to embed as part of the concept 'Success story of Costa Rica':



Therefore, they might feel that they have covered this already, and use the slide as an argument that is part of another cluster instead, namely if it 'can be used in the real world' (Costa Rica managed to do it, then others could also benefit from doing the same). However, I do want to note already now that the 'slides' and arguments are moved very dynamically between the categories over time, and we are not seeing the exact conceptual blueprint of their final presentation; rather we are seeing the emergence and genesis of it. Only two of the slides discussed in this excerpt are actually used in the final presentation ('poverness line' and 'education vs. poverness') and the former

is used as an example of Costa Rica's success and not as a part of 'can it be used in the real world'; a category which is instead translated into the 'future' or the concluding part. This exactly is the process of reweaving the patchworking, where patches are joined, ripped apart, the seams inspected and then reorganised into a new patchwork. In this way they are continuously realigning and reconstructing the conceptual blueprint and narrative of the final presentation; they are fitting the slides into the unstable patchwork, but the slides at the same time transform, re-structures and re-aligns the patchwork.

Neil goes on and introduces a new slide, about children being the most poor:



Excerpt 8 – DVD4 – Title 3: (00.09.40 – 00.11.58 – Continued)

Neil: (0.5) yeah then we the one that says ehm (1.0) that it is more the young (1.0) ehm children that become poor (1.5)

Jasper: what?

Neil: ehm
[it is the children

Samuel: [it- but it's

Neil: [that become

Sophia: [child-poorness

Neil: children below fifteen years are the most poor

Jasper: should we bother using that?

Samuel: that is that- it it is those who live at
[home and can't really make [any money

Jasper: [should we use that?

Neil: yes, precisely

Samuel: so- and it is the poor families who have the most children

Laura: yes

Sophia: yes

Angie: that is because we must teach them something about protection (*TR: contraceptives*)

Jasper: should we use that or what?

Sophia: no we want- we want to have children as ehm savings or whatever we want

Laura: as pension

Lone: heh heh

Jasper: shall we- shall we use that

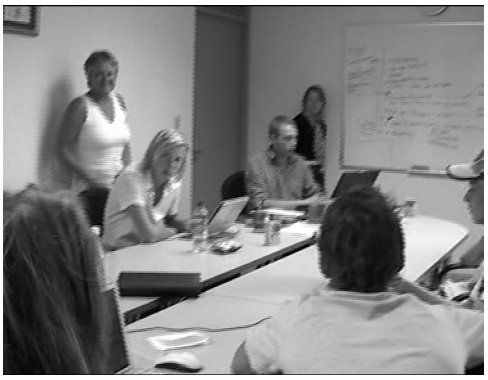
Jack: yeah why not

Samuel?: why not

(1.5)

Laura: [why?

Angie: [it is good



Sophia: yeah, I think it is good, [but I just don't know what it [should appear under

Laura: [what should we use it for?

Neil: (to Jack) I just think

Jack: (to Neil) ai okay okay okay it doesn't matter

Sophia: HELLO, hello how about we can put under that thing `facts to [pictures'

Jack: [shh

Sophia: with ehm to you know that thing that it is actually kids under fifteen who are the most poor (1,5)

??: yeah
[so we

Jasper: [that's actually something we could do (0.5) put it over on the other with `facts to pictures'

Neil: better there

Laura: yeah, but it should not be part of our wo- you know- you know [in order to make it to the conclusion

Neil: [but it shouldn't really

Angie: no

Jack: no it shouldn't be something for the conclusion - it should just be

Laura: I mean we haven't made anything
[which especially

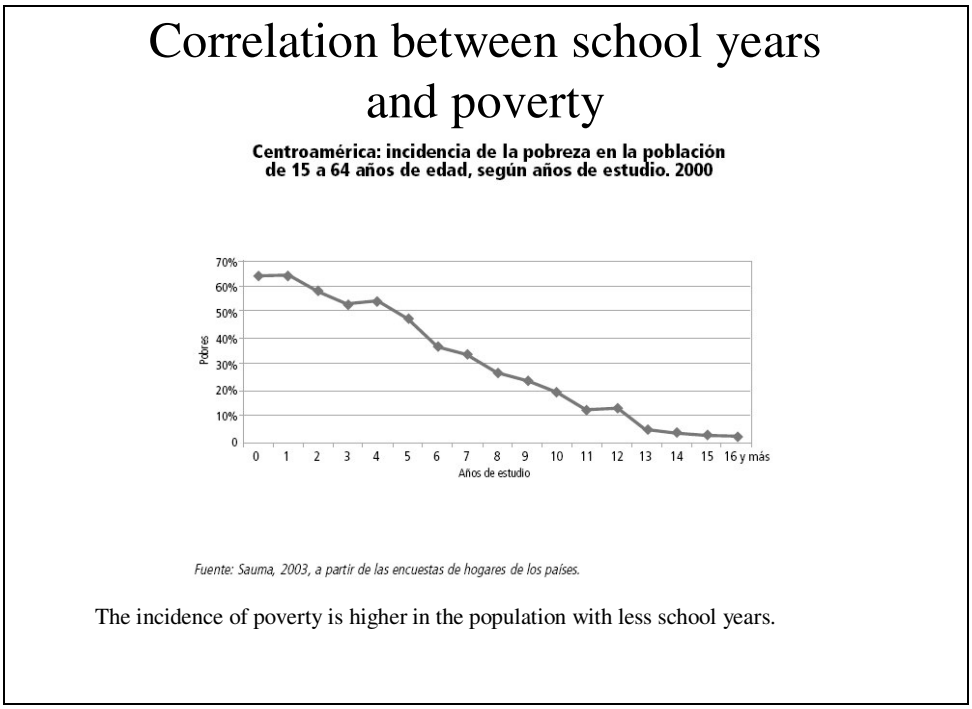
Jack: [some facts about

Jasper: [it should be a pretty good plan for what will come else we will just forget it

Samuel immediately starts to explain why this group is the most poor, which is partly because kids do not really make much money, but also the poor families have the most children. Sophia initially contests the use of the slide and says they ‘want to have children as savings’; or ‘pension’ as Laura follows up. This does sound rather odd, but this stems from the perspective that they want the young population to appear as resources, rather than a burden or problem. In their narrative they want to position the young population as a hope for the future, rather than being a problematic group. In the light of this we can interpret Sophia’s suggestion to put it under ‘facts to pictures’, as a way of positioning it as a fact, but a fact that might need to be changed or dealt with. Laura contests the use of the slide for other reason, but agrees with the placement under ‘facts’, as she thinks they have not done a lot of work related to this particular perspective. Jack later suggests that it is moved from ‘facts to pictures’ to ‘short facts about poverness’ (two catego-

ries that will later merge), which can be read as a 'demotion' of the importance of the slide.

Neil moves on to mention another slide which he thinks is even better than the previous one:



DVD4 – Title 3: (00.09.39 – 00.11.58 – Continued)

Neil: yeah, but then we have a pretty good slide

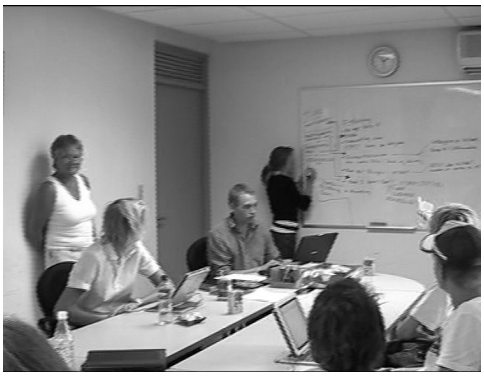
Jack: shh

Neil: here where you can see that there- (0.5) the more years of education, the

Samuel: less poor people there is

Jasper: but education [equals less poverty

Neil: [decreases enormously



Lone: [yeah, it is fine

Jasper: [write something about that

Neil: it is really good

Lone: yeah

Jack: listen, the thing about that it is children below fifteen that are (0,5)

Samuel: poverness he he (a wrong form (fattighed) on the wb; should be fattigdom: poverty)

Sophia: it is those who [are below that with `what is the future'

Jasper: [it is plac- written it is up by the pictures

Jack: (to Jasper) but it should be up by `short facts about poverness' (2,0) that is [just a mistake

Neil: [Jacks

Jasper: (1.0) it is put where `all state [facts to pictures'

Sophia: [Angie, I think it should be connected to `what is the future' (1.5) there we actually have something about education

Jack: `what is the future' isn't that sort of the solu-

Sophia: about ehm

Jack: solution or `what is the fu-

ture' is that a conclusion?

Angie: (3.0) it is pretty funny drawing this

They all agree that this slide is very good and Sophia wants to place it under 'what is the future', which is about what can be done to fight poverty. However, we can see from Jack's comment that the exact content of the boundary term is not quite clear. Is it a solution or is it something for the conclusion? But also he misunderstands Sophia who is talking about a different slide. Jack has just been talking about the previous slide, whereas Sophia is talking about the current slide.

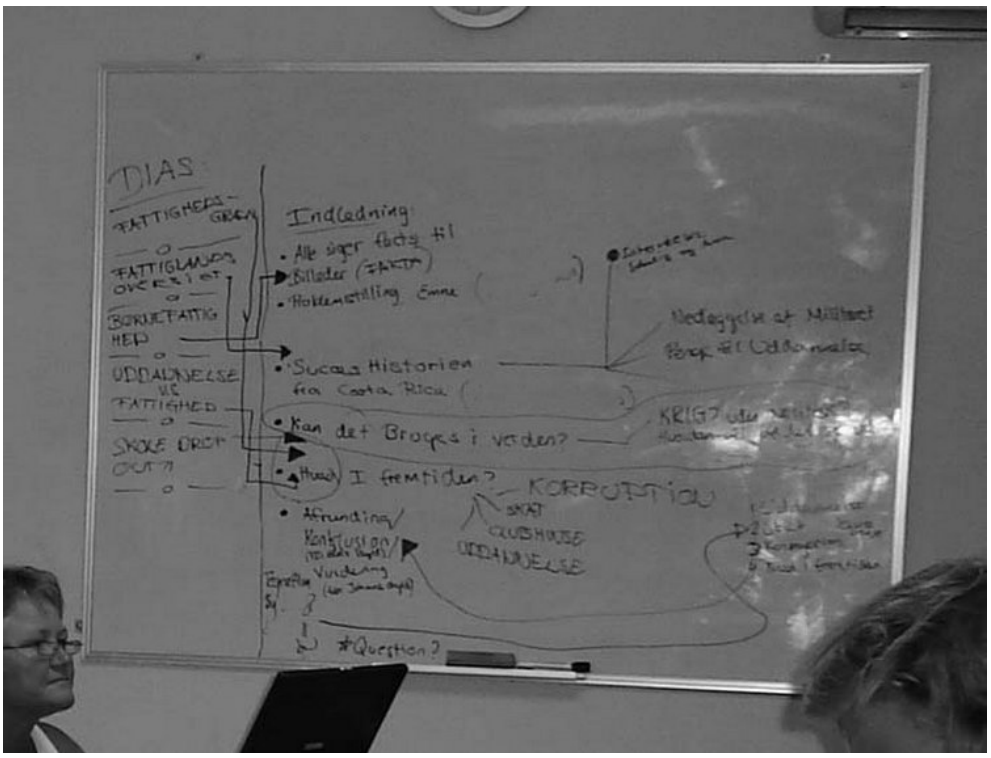
Clearly, this particular slide about the correlation between school years and poverty represent quite strong 'evidence' for their hypothesised causes and solutions; namely that education is very important in reducing poverty. Therefore, it also has another status, and it does not enter as a 'fact to pictures' like some of the other slides, but gets a more fundamental role as part of an argument and as 'evidence'. In this sense the slides are granted different meanings and status which is linked to the narrative they want to construct and conceptual blueprint they are forming.

The dynamics of the whiteboard as a simulation space

In looking at these examples of how they work with incorporating dynamically the slides, one can initially note the spatial-deictic statement of Jasper "It comes *after*". This is correlated with Angie's simultaneously moving the pen around on the whiteboard pen to point under "can it be used in the real world" and she draws an arrow connecting the slide 'poverness line' to an insertion point under 'can it be used in the world'. Jasper follows up with a spatial-deictic about "that is *where* we begin to show some slides". The deictic statements refer for one thing to the spatial organisation on the whiteboard as in "*after* the bulletpoint", but as can be seen from the second deictic marker "that is *where* we begin to show" (Danish: Det er *der*, hvor vi begynder at vise nogle dias) the statement cannot only be referring to the current situation or the whiteboard (as they are actually not going to show

slides on the particular whiteboard). Here Jasper is referring to the future and imagined presentation which they are going to deliver the next day in front of all the symposium attendees. The lines, arrows, bullets and words on the whiteboard are all different mediational means that act on many different levels at the same time. For one thing they are crystallisation and reifications of some of the patches they have foraged over time. But also when an arrow is moved, deleted or added they are acting *on* the future. They are simulating, creating and colonising different 'futures' through this work, and if one could actually create a computer simulation of the next day's presentation from different instances of the whiteboard there would be many and very different presentations. It does make a big difference if a slide is positioned as a fact, or whether they want to use it as a more elaborate argument; through this anticipative work they are simulating and running the different presentations and testing the structure, narrative and overall argument of them. Here we see, what I earlier mentioned about the differences between the technologies as mirroring, reflecting or reifying the discussions and then using the technologies more actively in structuring, transforming and orienting their discussions.

They use the whiteboard as a very dynamic work table which is continuously updated, as new arrows are drawn, bullets added or deleted, slides are taken in, concepts change and so on. This can also be seen from the development over a lengthier period of time as illustrated by the difference between the whiteboard pictures in the vignette, and then the final whiteboard representation which can be seen below:



Complex past interactions and chains of patches are reified into the 'boundary terms', but the terms and categories are unstable and continuously negotiated, as is reflected by Jack's question (is that a solution or conclusion). Equally, the term 'what about future' is a whole set of different arguments and patches they have picked up, which revolves around taxes, corruption, clubhouses and education. These are connected to what Costa Rica has done and what they and others could do to develop even further. Taxes are an important solution to the young people, but they know they will need to take into account the distrust to the politicians. This is therefore linked to the notion of education, which is good in many ways, but in this specific cluster and patchwork it comes to mean education for citizenship and engagement with democratic processes. But 'education' also enters a cluster about raising the general level of education, which has proven already a success in Costa Rica, but could be further improved (e.g. too few take a secondary education) and the Clubhouses represent education especially to the poor. So these boundary terms and topics represent chains of patches and pieces and arguments, but they are equally dynamic, as the arguments or narratives can be re-structured, re-ordered and take new meanings; basically by moving arrows, bullet points, terms they are reweaving their patchwork and the

conceptual blueprint. In this way they are unravelling their patchworks, inspecting the seams and then stitching or weaving them back together. In this phase of their work this process is especially visible through their work on interpreting and fitting in the slides. Here we can see how their placement makes a difference in the narrative they are constructing and in the rhetorical weight they grant the individual slide.

The complexity of incorporating of 'patches and pieces' in the patchwork

When looking at the work on integrating these slides, I think a few comments 'On the Origin of Slides'[20] are in order. When the young people ask the lecturers of the origin of the statistical diagrams in the PowerPoint presentation they are told that the researchers made some of them; others, they think, originally came from UNDP-websites or reports (their answer is a bit hesitant suggesting they can't remember the exact source of the diagrams and they also discuss this with each other). What is interesting to note is the 'transgression' of levels of scale through the idea that specialised knowledge or global-scale expert knowledge developed from trans-national academic research on Central American economy falls into the lap of 8 youngsters. If we imagine we should unfold the reasoning processes, histories, methods, mathematical calculations, and academic work hours etc. that have gone into these 'simple' statistical objects, we could probably find a rich and diverse history. These processes and considerations are now, within a few seconds, revived and reified as e.g. 'poverness line' on a whiteboard by 8 young people.

In this sense we can talk about how 'patches and pieces' travel across different levels of scale and how they are reinterpreted and put into new syntagmatic relationships with other 'patches and pieces'. With the term 'patches and pieces' I certainly do not mean to convey that view that 'knowledge' transfers un-problematically or untouched from one domain to another, but rather that these 'patches and pieces' become resources in the young people's negotiations and production of new patchworks. They act as unstable 'patches and pieces' representing previously negotiated and reified knowledge which is then being transformed and embedded in new contexts to tell another story. In this case the final presentation of the youngsters, where they construct a final PowerPoint presentation in which some of these diagrams re-appear. But these are not just randomly or blindly put into the presentation, but are negotiated and granted different meanings, as to reflect different ways of presenting and structuring their argument.

In the previous excerpts I have been looking especially at the incorporation of the slides. However, what is also evident from the vignettes and the excerpts is that the interviews have equally, or even more substantially, furnished their discussions. Laura's indignation with trade agreements have been strengthened through the interview with the expert, as is visible from the first excerpt. But also the notion of relations between education, civic engagement and trust (hence a willingness to pay taxes) has become visible to them through the interviews, as Laura and Diana report when they return from their interview (Chapter 8½). Also, their visit to the Intel Clubhouse has gained an important role in their work after the interviews, which is remarkable, as they had only very faint ideas of the role of the clubhouses before going there. Especially, the interview with the young girl has made an impact on them, as she tells them about how the clubhouse has drawn her away from hanging out with 'people that had a bad influence on her'.

Likewise, Sophia and Angie draw on their interviews as resources throughout their discussions, for instance, as Sophia later says, there might also be some advantages with the trade agreements, though they are problematic in the long run. Angie also volunteers to work on specific topics, as the person they interviewed 'said something about that'. Also, Diana and Laura use this as an argument to work with specific topics. So, the interviews are very important resources and pools of arguments they draw from, which is also visible from the final presentation where they use specific pieces to corroborate or illustrate a point.

Copycatting or creative use?

From the outset, and not having looked into the actual work processes, a critical observer could ask if they are not just copying existing knowledge and embedding it as their own. However, this is certainly not the case, as we can see from how dynamically they actually embed these patches and pieces. As reported in the vignettes they also discuss how many of the slides they should actually incorporate, and agree that they should certainly not use all of them, as that would just be copying. Though, they use patches and pieces they have come across, these are integrated and negotiated into a narrative or overall argument which is something they create. They are the ones connecting the threads, stitching together the pieces and deciding on the conceptual blueprint of the patchwork.

The process of negotiating the meaning of slides, the interviews, the order of the presentation, the arguments and constructing different narratives goes on for a while, where they add more slides, remove some ideas, merge cate-

gories, re-draw relations between slides and their placement in the presentation outline. Finally the whiteboard is occupied by several arrows and relations which has become somewhat difficult to read and interpret, as they are placed between different bullets, with small letters and so on. Thus, the representation on the whiteboard becomes too complex and they initiate some work on translating the whiteboard into a work plan. The whiteboard was actually initiated as a way of stabilising and reifying their work as Angie originally 'just' wanted to distribute the work, allocate different persons to task and find out what they would be saying. However, the whiteboard and the integration of the slides spawn a lot of ideas and in a sense becomes almost a destabilisation.

The tensions between stabilisation and destabilisation is also seen throughout the excerpts; Jasper is very eager to move on and pushing the next slide. Jasper thinks very much like Angie about the whiteboard as a plan, as he states in the third excerpt (it should be a pretty good plan for what will come else we will just forget it), whereas Jack, Laura and Samuel seem to want to discuss more in depth the different slides and concepts. This might be because Jasper is working on making a 'copy' of the whiteboard. He is simultaneously working on writing down an overview of their work and presentation in a document (appendix D8). Due to his work with the document Neil starts to take over from Angie and he tries to summarise what they have put on the whiteboard and create a work plan.

Vignette III: Second Phase of remixing and patchworking. Creating a work plan

(DVD4 Title 3: 00.26.20 – 00.38.50)

Jasper asks where their animation/cartoon will appear and when the interviews will be shown. They start to discuss the different categories. What is meant by 'finalising' Jasper asks and the others say that is the conclusion, where after Jasper queries about 'what about future' and Angie suggest they can delete the bullet 'can it be used in the world'. Jasper asks whether they should have something called judgement, but the others think this is encompassed by the conclusion. Jasper is not sure where the animation should go and the others suggest 'what about future' as Laura thinks this is where they talk about the need for taxes. They discuss a lot of the different topics and where they should appear and what they are related to, Jasper mentions corruption, the clubhouse interviews and education and want to

know what they are related to; Should it before or part of 'what about future'? Laura tries to present her view; if there's a slide about education, then we can talk about education. This, she argues, will also prompt them to talk about taxes, as taxes are important in relation to financing education for all. This would then automatically bring them directly to corruption, as they don't want to pay taxes for different reasons; and then they need to be taught about politics, says Jack and compliments Laura for creating this argument or chain of events. Meanwhile Jasper is trying to fit the different things into his word document and adds that they will need to make a list of what should happen in their overall PowerPoint presentation, else it will become completely impossible to figure out he says.

Jack says it is very big project they have managed to do in two days, while Angie summarises the order to Jasper 'education, taxes, conclusion, 'what about future'. How about the Clubhouses, Jasper asks and they agree this must be part of education, as they use technology as a way of educating people. Then corruption, Jasper says, but is corrected by the others – taxes go first; Jasper continues: 'what about future', then conclusion. Laura asks where trade agreements fit in or whether they should not include that. Angie mentions there were different opinions on that. The person they interviewed also spoke positively about those agreements, although he thought they were problematic in a long-term perspective, Sophia adds. Jasper queries about the cartoon and they discuss whether it should be part of the conclusion or whether it is related to taxes. Laura argues it should appear in relation to taxes and corruption, which Jasper accepts and summarises – club house interviews, then the tax animation, then about corruption and taxes, then finally 'what about future'. The others complement Jasper for his ability to sum up and order the presentation. They start to discuss the concluding part and want to know whether the audience can pose questions. I am not sure about that and says that might happen, but I don't know exactly how the organisers have envisioned it. Jasper asks what he should write in relation to the conclusion. Nothing yet, Laura says, and laughs – we don't know anything about that yet. Samuel starts to mention higher taxes, avoid unfair trade agreements and Laura adds giving poor people access to the web; meanwhile there are discussions of what is meant by conclusion, finalising and judgement and Angie yells they're the same!

Jack comments that it must be pretty hard writing down all of the presentation, but Jasper says it isn't that hard and shows Jack how he has done it. Jack thinks that is a good way of doing it and Louise comments that it is a good idea to do. Jack then asks whether a lot of people from Copenhagen

use the word 'fesen' (slang, youth lingo, untranslatable). Angie and Sophia don't think so; Angie thinks it is a 'nederen' (downer) word to use. Jack explains to one of the others that 'fesen' e.g. could be if you wear girl-like clothes, something pink and comments he might be a bit 'fesen' himself (he is wearing a pink shirt). Sophia suggests that they compile a 'thank you' slide and list the names of all those people and organisation that have helped them. Jasper suggests they do it like movie credits and have some scrolling text.

Jasper moves on and wants to create a list of all the slides they need to use or to produce and Angie suggest they also allocate people to the different parts; but Jasper thinks they should wait a bit before doing that. He starts to go through from the beginning of the presentation and talks about the slides that will come. The first thing to come is child poverness-thing Jasper states, as part of the success stories. Jack thinks he should write projector one and projector two into the document, so they are sure what goes where. Angie thinks it is the wrong slide and says it must be another that should symbolise the success story and Jasper suggest 'poor country overview' instead. But also it incorporates the interview Sophia says. The interview with Ricardo Monge should come right after that Sophia and Angie argue. Jasper mentions they can use Brickcast to split up the interview and then moves on. What comes next, he asks and Jack mentions something about poverty/poverness and Jasper recaps: Poverty line, school drop out and the education. Jasper says that the clubhouse interviews should then go after that and suggests that their animation should come and Jack says he can call it 'tax clown movie'.

Planning work in action

This process goes on for yet some time before they enter a third phase, where Diana reveals that she has been foraging a lot of different facts, they might be able to use. First and foremost this part is about planning and how Jasper together with the others are constructing an outline of the entire presentation as to be able to overview, what they still need to do, and what they have already done. While the whiteboard seems as a good tool for drawing, creating relations and for visualisation, it becomes harder and harder for them to maintain an overview. Adding topics or deleting them becomes increasingly problematic and in the end the whiteboard is a quite chaotic representation. This ordering and restructuring seems to be well afforded by the document.

But apart from planning they are collaboratively engaged in constructing a narrative or chains of arguments that can carry forward their message. This is done by moving from the beginning of the presentation to the end where Jasper adds, deletes or merges topics, bullet and some of the different 'boundary terms' that have spawned from their whiteboard work. From the planning work itself it becomes quite evident that the planning work is really needed. They often have different interpretations of the 'boundary terms' (e.g. the discussions of conclusion, finalising and judgement) and the sequential order of the slides, arguments and so on. This is also because they are not only fitting together different finished parts, they were very actively constructing their ideas, the narrative, the clusters of arguments and so on during the whiteboard work; and this also continues in their creation of a work plan, though to a lesser degree.

It does matter, where the different slides appear and what they are meant to illustrate or prove; and these relations are not straightforward. Several of the slides can be used to highlight different perspectives. The slide where Costa Rica is compared with other countries can be used to illustrate a success story, but equally it can illustrate that there are still people living in extreme poverty. The slide about correlation between education and decreasing poverty is a strong argument for educational programmes which Costa Rica has undertaken and invested in. As such, it can be used to show the success of Costa Rica. However, if coupled with a slide showing that too few people finish a secondary education, it suddenly turns into a problem that needs to be resolved to reduce poverty and increase the welfare. So both the whiteboard work and the planning work are quite complex processes of constructing chains of arguments where the patches and pieces, if they are re-organised, can be used to tell other stories. Therefore, both the whiteboard work and the following planning work encompass the construction or negotiation of their conceptual and moral blueprint.

Changing the conceptual blueprint and re-organising the patches and pieces will in turn yield different patchworks for the audience to view. Clearly, they are very aware of this, which can be seen from both the whiteboard work on integrating the different slides, but also these negotiations and different perspective are brought up again during their creation of the work plan.

The struggle of reaching stabilisations

The work they are doing here is very much about reaching stabilisation and quite obviously about planning, what they will be doing. Though they are

mostly engaged in translating their ideas and structure from the somewhat chaotic whiteboard into a more concrete plan, they also come up with new ideas or elaborate on existing ideas throughout this sequence. As the stabilisation and planning work progress they come up with ideas for the presentation and they sharpen their arguments, as for instance illustrated with Laura's reiteration of the connections between taxes, corruption and education (which she further discusses with Samuel, as they start to wonder, whether they have any slides that illustrates corruption (DVD4 – Title 3: 00.38.55). Also, they start to go more into detail with some of the ideas that have come up, as they begin to discuss how their concluding slides should look (DVD4 – Title 3: 00.46.00). Jack suggests that since they have the two animation characters, they could have them show up on the different projectors smiling, or maybe there could be a slide where they hold hands. Jasper thinks it might be a bit difficult to time the two PowerPoint shows, but Angie says that is what they have the chaperones for (suggesting they can manually do this). Equally, they start to talk about some music they want to use to accompany the picture slideshow. Though, the creation of the work plan is a way of stabilising their final presentation, new ideas and suggestions emerge from these discussions.

The dynamics of the word document as a planning space

The document Jasper is working on in many ways functions in the same way as the slides and the whiteboard. While it is a way of continuously reifying their discussions and patchworking processes it is also a mediational mean that is used in structuring, transforming and reweaving their patchwork. Essentially, the bullet points and notes Jasper has taken during their whiteboard-work are used to structure their whole discussion in this phase. When he runs through these points they start to negotiate and discuss the order and reweave their patchwork. The mediational mean then are used as structuring and transformative tools in constructing and reweaving their narrative and the chains of arguments. This is accomplished as a very dynamic process, where Jasper adds, deletes and merges the different 'boundary terms' that have spawned from their whiteboard work.

Finally, they go through the presentation once again from beginning to the end, and Jasper refines the document, but also they allocate two persons on each of the different tasks (DVD4 Title 3: 00.48.18 – 00.54.05). The result is reified in the overview document which is later distributed on all the computers. It is also during this process that we learn Diana has been foraging facts for use in the presentation and after going through the presentation

they turn their attention to Diana who reads the facts and they negotiate which should be used.

Third phase: Working in the facts

DVD4 – Title 3: (00.54.05 – 01.01.20) & DVD3 – title 1: (00.10.55 – 00.15.36)

This phase resembles in many ways the work with the slides, but has a less profound impact on the backbone threads and the conceptual blueprint.

They have already agreed that they need a certain number of facts, where they will appear in presentation and what the purpose is. The facts will be short statements read by each of them in succession, so each fact is more like a statement or news flash than an argument or explanation. Unlike incorporating the slides, where there were stronger relations between the overarching argument and conceptual blueprint of their presentation and then the individual slides, the different facts serve a more oratory purpose. The different facts do not suddenly provoke them to change course or reweave the blueprint of their argumentation and overall narrative, as they are corroborative pieces that fit well their overall message. Still, the process of adding these facts is not a random selection, but a negotiation of which facts will have the strongest impact, and also how they may be delivered in a communicative way that will enforce the message. This is also quite visible from their discussions, from which I shall draw out a few examples:

Excerpt 9 – DVD4 – title 3: (00.54.02 – 00.56.23)

Diana: Yeah but then, should I just try to read them aloud?

Jasper: yeah

Diana: Then you can like be part of selecting

Jasper: I'll write it down

Diana: Okay (1.0) 1.1 billion lack clean drinking water

All: That's good, that is pretty good he he

Samuel: That is god damn many

Jack: It is damn many compared to that we are only 6 bil-

lions

Diana: [Aii how extreme

Jasper: [Isn't it something about that 1.1 billion
[have never had a glass of clean water

Neil: [(to Diana:) where did you find that?

Jasper: That sounds a little more extreme

Laura: [(Laughing) (Harh Harh)

Neil: [where did you find that?

Jasper: I mean would do it

Diana: I have found them on UNICEF and just on- like just looking for facts on

Jack: Has never had a glass of clean water - aii that is so mean

Sophia: Aii is that what we have-

Laura: Just write have never had water

All: (Laughing)

Jasper: I'll write 1.1 billion have never had a glass of clean water

Samuel: [How many then have only had *one* glass

Diana: [Yes and then four
[and then it says

Jack: [Shh

Diana: one that is related to it- that is that four million children

die because of that every year (2.0)

Jasper: [we want that as well right?

Diana: [that is because they have no water

Jack: Yes that that is that what do you say that is one

Laura: it is connected so just do such a small dash

Neil: We could also use that thing they always said in that LiveAid thing that every third second some number die (1.0)

Jack: Yeah

Neil: Like- isn't that – wasn't that what they said

Jack: [every sixth second

Jasper: [that seems pretty

Neil: No, it is every third I think

Jasper: [four million what?

Samuel: [Aii, it is every sixth second, but I don't know

Diana: Four million children die every year
[because of

Sophia: [That thing about- at least that thing with starvation we could also use that
[it has also something to do with poverty

Laura: [Yeah, they are related the two

Diana: Yeah, but then there are really- there are some more

that are related then, but that is like, yeah (1.0) and then are you ready

Jasper: two seconds

Neil: That is the same as if a jumbo jet crashed every day

Laura: Owww the next one – it is also very good

Diana: Yeah

Laura: It fits right into what we will talk about (1.0)

Diana: Exactly

Jack: (to Neil) You are so sick Neil

Neil: But it does

Jasper: What does?

Neil: It amounts to a jumbo jet crashing every day filled with children

All: (Laughing)

Jasper: That was not funny

[...]

Jasper: but okay 1.1 billion have never had a glass of clean water 4 million children die every year because of that

Others: Okay

Diana: Okay 100 million don't go to school and that is 18 per-cent of - like all (2.0)

Sophia: All children?

Diana: [Yes- like of those that are in that age

Laura: [Jasper can't you write them down in English

Diana: School- what do we call it
Jasper: Yeah, that is what I am so good at
Samuel: Aii, not quite
Sophia: What- write 18 percent (1.0) of
Jasper: That amounts to [18 percent
Diana: [but I just think that 100 million that sounds
??: Is that the one with AIDS?
Diana: It sounds like more
Sophia: Yeah, I actually don't think so, I mean 18 percent of those kids [that's god damn many
Jack: [Then you put the pressure
Diana: [Yeah it is
Jack: One HUNDRED million
All: Hehe yeah
Samuel: [Eight hundred MILLION
Jasper: [and then 18 percent of all children in the world right?
Laura: Upbringing wuwuwuw (strange sound)

First off, it is worth mentioning the work that Diana has done throughout the entire session. She has meticulously been collecting a number of facts from different web pages and written them down on paper. This is a good example once again of foraging information and about the gathering processes of these young people. The process of her information search is quite opaque, as she sits quietly surfing the web and the camera only occasionally scans her screen. However, the most interesting part is not her information search in and off itself, but rather the collaborative work done fitting in these patches of information into the existing patchwork and aligning it to the ideas and narrative they have created. As earlier written, the layout is al-

ready somewhat negotiated, but the selection criteria for choosing the different facts are interesting; these are the negotiated blueprint for, whether a fact is interesting for their presentation or not.

They are looking for the most shocking and spectacular facts. They comment on whether a fact is 'good', which of course does not refer to the numbers or the facts in themselves, but rather their possible impact on the audience. It is pretty shocking that 1.1 billion people do not have access to clean water, and this should provoke a reaction of almost disbelief from the audience: 'it can't be true, it shouldn't be true'. Neil even queries for the source, which could be out of disbelief (but exactly why he does so is not clear). The source, it turns out, is UNICEF who most people would probably find to be a trustworthy source. They, however, choose to make it even more interesting, as Jasper seems to remember that 1.1 billion people have actually *never* had a glass of clean water. This renders the fact even more shocking than it already is. Equally, we find the same line of thinking in their discussions of, whether they should say 100 million or 18 percent of all children have no access to schools/have ever attended school. Factually, this would be same, but the discussion revolves around which of the two would sound like the most, and thus have the most impact on the audience. Jack and Samuel even start to experiment with intonation and ways of pronouncing the numbers, as to make it sound more dramatic.

The facts Diana read aloud are all 'facts', but some facts are obviously more shocking and worth highlighting than others. For instance they reject a fact about 'in the development countries one out of three below five [years of age] are malnourished'; Laura immediately responds, 'I didn't get that, let's proceed to the next one'. Obviously, Laura would be able to understand it, but they are also aware that they have only a few seconds to deliver each fact or message to the audience, which means that it should be clear-cut and persuasive. The facts are therefore chosen from a persuasive or oratory perspective. They are meant not only as 'objective information about poverty', but persuasive means to highlight the need to really address this huge, global and almost unbelievable problem; and for this purpose they do not mind manipulating slightly with the 'facts' as to make them sound more dramatic. They are fully aware that this is what they are doing, as can be heard from Laura's way of laughing and also her own exaggeration and suggestion of writing an even more absurd fact 'that 1.1 billion have never had any water'.

This might seem a bit cynical, especially when coupled with their discus-

sions of jumbo jets crashing every day. It can be read as a defence mechanism; they simply have to maintain some ironical distance to these almost unbelievable numbers. They are not detached and distant from these problems, and I think their discussion revolving around the Liveaid concerts/events (whether a person dies from hunger every third or sixth second) illustrate this. It shows that they have incorporated such 'facts' as part of their moral blueprints and part of 'their being in the world'. Not as 'facts' to be just remembered and cited, but more as a part of a moral blueprint in engaging with reducing poverty in the world. However, the 'cynicisms' can also be read as part of their composite identities, as I earlier mentioned. While maintaining the identities of concerned citizens, who have to persuade an audience about the gravity of the problem of poverty they are also playful, ironical teens who can't help pitching a joke even though it is very cruel and mean.

Fact is back – and this time it's personal

From the empirical data it is visible that they are or have become personally engaged in these problems. For instance Laura is really agitated and furious with the 'unfair' trade agreement, but also in negotiating these different 'facts' to be used, we see they do 'get under their skin'. They are massively disturbed and appalled by the facts they find:

Excerpt 10 - DVD3 – Title 1: (00.10.56 – 00.12.37)

Diana: but is in billions
Jasper: That is just COMP [letely insane
Jack: [What- what does it say about (inaudible)
Diana: it says: half of the world nearly 3 billion people [live on less than two dollars a day
Angie: (Inaudible)
All: WHAT harh harh (laughter of disbelief)
Jasper: OK that was pretty [insane
Angie: [Aiii whaaaat?

Jasper: Give me another one

Diana: Yeah ehm it is (inaudible) but it is actually good- okay- less than one percent of what is yearly spent on military could be used to send all children in the world to school

All: Aiiiiii (cheering and applauding)- Wuuuuhuuuu-

Neil: Less than one

[percent of what?

Thomas: [I think

[we'll use that one as

Astrid: [it fits pretty well

All: Yeah yeah (messy)

Diana: less than one percent of all the money spent on military can be used to send all ehm the children of the world to school

Others: Wouw- it is just so extreme

Diana: [less than one percent

Samuel: [I would like to know how many of

[the world military spending are used by the US

Angie: [now IT STOPS aii we are really ought to just abolish all military

Others: Yeah yeah

Diana: It is so crazy

Jasper: For military every year?

Diana: [Yeah, it is probably worldwide but still

Neil: [It is something like- they

use (inaudible)

Samuel: They spend 1000 billions

Neil: that's possible but anywho (inaudible)
[but the second place use less than half of they spend

Laura: [Oneee percent?

Jack: [Yeah yeah but

Samuel: [It is madness

Jack: Yes but try use
[so many so much money

Jasper: [Could send all children

Diana: Aii sorry it is only for weapons it is not even military, it is only for weapons

Others: Aiii (laughing)

Jasper: Hello – it is only for weapons

Diana: I thought it was military
[but then

Sophia: [less than one percent of the money spent on weapons every year (inaud) (messy talk)

Jack: Aii
[they friggin have to control themselves

Laura: [Yeah but just try just read it aloud from beginning to end, just listen

Sophia: Okay

Diana: Less than one percent of what the world spend every year on weapons was needed to put every child into school by the year 2000

and yet it didn't happen (2.0)

??: Whaaaaaat?

Jasper: Weapons every year on global scale it could put all of the [world's children to school

Angie: [That is ONE percent

Jack: Less, less

Angie: Less than one percent (messy talk)

Jasper: Okay that is a very good closure I would say

Here we see a good example of how the facts they find appal and disturb them. There are several outcries and yells of disbelief. The words 'insane', 'crazy' are coupled with the facts that are so horrendous they are hard to believe. The first fact about 3 billion living for less than 2 dollars a day is very disturbing to them and there are outcries like 'WHAT!?' and Jasper stresses that it is just 'COMPletely crazy' and adds 'OK that was pretty insane'. This gets even worse, as Diana goes on to the fact that less than one percent of the global military spending pr. year could give every child in the world access to schooling. Quite clearly, they find this to be stark, raving, global madness and Angie utters 'Now it STOPS' and says the world should just abolish the military completely; Jack thinks that 'they must friggin control themselves'.

Whereas some of the facts they have gone through were initially discussed in terms of their persuasive effect, it seems now as an almost moral obligation for them to present this madness to people. They do discuss the facts in light of their persuasiveness, but if we take into account their reactions and outcries, I believe it is fair to say that these facts really stress the importance of their own work to them. They react quite strongly and are profoundly affected by these numbers. It seems that the gravity of these facts they have just gone through provokes them even more to think about how to actually perform the 'facts' (they refer several times to intonation, timing and pace when discussing).

Presenting the facts

As they want the facts to have the most possible communicative impact,

they decide on a model, where one fact at a time zooms in and out in a PowerPoint while each of them read aloud a fact (while the slideshow with poor people runs in the background as well). This idea spawns from a short brainstorm where they imagine different ways in which the facts can emerge, and whether they should stay on the screen. Diana questions whether people will be able to read them if they have them all in one slide. This make them abandon an idea of having all the facts on the screen at the same time, and results in the model where each fact will emerge for five seconds and then disappear. This is another example of their anticipative work and how their experiences with and simulations of the presentational means cause them to explore different possible models before settling on the final design.

This is essentially the last thing they discuss before they start working in smaller groups, that is, shift to stabilisation work or their final production phase. The transition from working as one large group to smaller groups happens as Jasper finally reifies and concludes their work plan. He proclaims that it is now ready and he asks for a USB pen so they can distribute the plan to each computer. Right after giving the USB to (Neil) he turns over to Sophia and they start to work with subtitling the video-clips.

Development and crystallisation of the problem space

In this cycle we have seen both an expansion and development of the problem space; while new ideas and threads have emerged they are simultaneously starting to structure, select and construct the connecting threads of the final presentation. Through their anticipative work and drawing on their shared pool of knowledge they are creating a narrative and structuring an overall argument which could have looked otherwise. What they are doing throughout this chapter is essentially to create a representation, crystallisation and a construction of the problem space which acts as a conceptual blueprint

I have argued that their work on the whiteboard and the subsequent translation of the whiteboard into a word document is a complex process of patchworking. It is not a matter of randomly bringing together disparate information and various patches and pieces; rather it is a complex process of integrating the patches and pieces in a meaningful, coherent conceptual blueprint and overall argument. The different patches and pieces, as illustrated

with the different slides, can be used to convey different stories depending on how they are integrated in the patchwork. They do not represent unambiguous chunks of knowledge, but function as resources for negotiation and construction of a problem space and the representation of this problem space.

The construction of the conceptual blueprint is fundamentally intertwined with their moral blueprint; they are not just constructing any narrative or overall argument, they are constructing a patchwork in which the patches and pieces are stitched together in alignment with this moral blueprint. The reason for calling it a moral blueprint, rather than a certain perspective is to stress their personal engagement with the problem. As we can see from their negotiations and discussions they do hold certain values and views of the world which are made part of their argument. They are aware of these values and know they embody a perspective which is not a universal truth, but rather a contentious and debatable issue; nevertheless this is their conscious construction and representation of 'how to improve a poor society'. And from their discussion of 'facts' to include it also becomes visible that they are not detached and distanced from the problem, as the different disturbing facts do get under their skin and spawn quite strong personal reactions.

The overall argument and narrative or conceptual blueprint they construct throughout this chapter is then their way of reweaving and combining the different backbone threads and topical threads. The backbone threads of 'the problem', the 'methodology' and their hypotheses of causes and solution are now spun into their final product or the backbone thread of the presentation. The latter is not something which only emerges as a 'final thing' bringing the others together. This backbone thread has been prevalent throughout the entire process, and as I have argued in other chapter, their discussions and anticipative work revolving around the presentation has equally structured the other backbone threads. Often it is through imagining and simulating the final presentation that they have tested the strength of their claims and explored various counter arguments and possible conceptual flaws. Also, their ways of engaging with the interviews (recording them) and which causes and solutions to highlight have been negotiated through orienting to the thread of the presentation. Had they for instance chosen to work in depth with the idea of the role-play, their 'own' solutions and causes might have played a less visible role.

The cycle of remixing and patchworking in this chapter is where the final presentation takes shape and is constructed. This does not mean that they

finish the working on it here, but they create the conceptual blueprint, narrative and the overall argument of the presentation throughout this process. This we can see from the first page of the work plan below that Jasper makes (appendix D8). This is what structures the rest of their work process. Essentially, the document outlines the structure of the final presentation, as it is also carried out (though there are some minor changes with the order in the different sub-parts). At the same time it gives them an overview of slides that need to be done etc.

Introduction:

- All state facts about pictures

Diana – 1.1 billion has never had a glass of clean water – 4 million children die because of that every year
Samuel - 100 million children don't go to school that amounts to 18 % of all children in the world
Jack - 30.000 children below 5 years dies every day due to poverty
Jasper - 100 million live on in the streets and 40 million of those live in Latin America
Angie - 880 million can't read or write
Laura - 8.000 children die every day because they can't afford vaccinations
Sophia – Half the world live on less than 2 dollars a day
Neil – Less than one percent of the money spent on weapons every year on a global scale could give all children in the world access to schooling

- The Problem (problemstilling)
- Presentation of topic

The Success story of Costa Rica:

- Slide – poor country overview
- Interview –
- Abolishment of the military
- Money for education

Slide with info-talk:

- Poverty line
- School drop out
- Education vs. Poverty

What in future:

- Education – Clubhouse
- Taxes – Animation from PowerPoint
- Corruption
- Interview about corruption and taxes

Summing up/conclusion/ assessment:

- What in future

Gone with the (whirl)wind

This is how they choose to build up their argument and narrative, and thus how they construct the relations and connections between the backbone threads and the topical threads which then comes to constitute the conceptual blueprint and problem space. While many of the topical threads and different causes and solutions they have discussed are represented in this overall argument, there are also some that have been left out. Most noticeably the thread about trade agreements has been left out apart from the small mention in the concluding statements "We have to stop making trade agreements that make workers from poor countries unable to sell their products in their own homeland". I have commented on this earlier, as they discuss it many times. Basically, they leave it out because they find it slightly too critical and possibly offensive.

It is imagined as a critique of the uneven relation between the US and Costa Rica and highlighting what they find to be unfair trade agreements exploiting Costa Rica. They, however, decide to almost leave out this perspective, although Laura is several times trying to bring it into focus during their discussions.

They leave it out as an act of diplomacy and to avoid smearing and critiquing anybody, which, I think, is quite thoughtful and interesting. Though, they are quite critical about the foreign policies of the US, they do not seem to think that this is the time and place to let their steam out. In my interpretation they start acting not only as teens, but also as ambassadors and diplomats acting on basis of almost national interests. As well as they do not want to take on the identities of a cultural hegemony or positioning Costa Rica in a bad light, they do not want to create antagonistic feelings between themselves and the people from the US (which apart from one of the Power Users team is the entire organisation behind the event and many of the people attending). This for one thing, of course, is an issue of being polite, but certainly also because they have only experienced the people present as nice, helpful and welcoming, which also make them re-inspect their moral blueprint. But also I believe it illustrates the notion of scaling identities. It is only because they imagine themselves as part of, or representing a nation, and perceive others in the same way, that it could be considered impolite or a critique.

Secondly, the thread about jobs and brain-drain has completely disappeared

in this chapter. Why this is so, is actually not visible from the material. It is not part of their outline for the presentation as it is represented on the white-board and it is not part of their discussions in this cycle of remixing and patchworking; or before for that matter. It just seems to vanish into the thin air without leaving a trace. There may be different explanations of that, though they are, I must admit, somewhat guesses. First of all they may just completely have forgotten this thread; this however does not seem very likely, as they in general seem to have somewhat sticky tentacles and are able to draw out lots of different previously mentioned patches and pieces from their shared pool of knowledge. Secondly, they might have rendered the hypothesis and the importance of brain-drain less important after their first interview with Ricardo Monge. From Angie's notes and the interview we get to know that the general unemployment rate of Costa Rica is quite good/low (approximately 5%) and while he does mention that there are trouble finding good researchers and teachers within special areas, he also stresses that a lot of people from Nicaragua come to work in Costa Rica, as payment in Costa Rica is higher than in other Central American countries. They might have discussed this during the evening, which could explain why Laura, during her interview, asks the questions about jobs as sort of bonus questions. After having discussed in Danish with Diana and Jonas, whether they have anymore questions, she poses some other questions and amongst those are the questions related to jobs and brain-drain; however, the issue is really never unfolded very much during the interview, as they ask it as a part of a longer question. This suggest that it has already been somewhat backgrounded in their enquiries. Furthermore, the lecture and the slides they get from the lecture connect better with the threads revolving around education and taxes. From this it seems that one of their initial hypotheses and topical threads might not be as important, as they initially imagined, leading them to background it (a third possibility is that they, for some reason, do not consider PhD students and researchers leaving for other countries as brain-drain :-).

Apart from these more prominent topical threads that are left out, there are also several smaller topical threads that are never followed up, such as notions about property taxes, tourism, debt to other countries and import and export (the latter two were explicitly part of the interview question, but they are told that the balance between import and export is actually very good). These various patches and pieces were thrown into the air during their whirlwind processes the day before, but they never really settle and become part of their final patchwork, as these threads are not thickened, through the

interviews, the lecture or their other foraging processes. In this sense they remain hypothetical causes or solutions which dissolve when not corroborated and thickened throughout the process.

The role of technology in this cycle of remixing and patchworking

In the previous chapter I argued that the interplay between technologies and the remixing processes would be of a different kind in this chapter. In the previous chapter the technologies were mostly used to document, reify and mirror the ideas that were part of their patchworking process and not really used as an active part of structuring, transforming and reweaving the patchwork. It should now be clearer how I perceive of the difference in their ways of using the technologies in the two chapters. In this chapter we see initially how the whiteboard is used as a dynamic space, not only for reifying the ideas, but also for structuring, transforming and reweaving them. This is the same for the process of working in the slides and the process of transforming the whiteboard into the work plan.

Moving around the arrows, the order of the bullet point or connecting the slides to different bullet points is not only a matter of reifying the presentation; rather this is a process of patchworking, where they are dynamically constructing and reweaving the conceptual blueprint. Moving a slide from 'facts to picture' to another category change the entire meaning and rhetorical weight of the slide and reweaves and reorganises their narrative and overall argument; and thus the conceptual blueprint for their patchwork. They are using the different mediational means as dynamic spaces in their construction of many different possible 'future presentations'; and by moving, deleting or adding different elements they are unravelling the existing patchwork, inspecting the seams and then reweaving the patchwork.

In the former chapter, I argued that their experiences and knowledge of various constraints and affordances of different technologies were used as imaginative resources in their planning processes and anticipative work. For one thing in estimating and planning their workload, but also in relation to conveying effectively and persuasively their messages to the audience. This is also prevalent in this chapter, but we see a transformation where the technologies are not only used as imaginative resources, but as very concrete and 'physical' resources that become inseparable parts of the processes of patchworking, planning and their anticipative work. This can also be seen from their conversations which are almost impossible to understand if one

has not seen the whiteboard.

Summing up the chapter

In this chapter I initially explored in a little more detail a cycle of stabilisation work and production. This was done to show the porous and fleeting nature of the ways in which they organise their work and secondly to argue that cycles of stabilisation work and production equally encompass processes of patchworking.

In relation to the former, I have pointed to a silent and less visible layer of coordination that is a part of their planning work. They enact and orient to this both through small remarks, comments, open questions or suggestions about what they are doing, or what others are doing. However, this coordination is equally enacted through their physical and spatial re-organisations. They change the constellations of the groups, or quickly review and peek at each other's work. In this sense the dyads and smaller work groups are continuously monitoring each other's work and progress, through which they create a shared workspace awareness. An awareness we as researchers and facilitators were not always quite up to speed with, which is also the reason why we are often two steps behind.

Through this chapter and the preceding chapters, I have argued that the cycles of stabilisation work and production are not just arenas for routine or practical work. They are equally processes of adding ideas, rethinking, reweaving, negotiating and discussing. For instance in relation to identifying pictures to use, the pictures 'are out there', but bringing them in, making sense of them, weaving them into and aligning them with their existing blueprints is a more complex enterprise.

The reason why I differ between the two cycles is because the cycles of stabilisation work and production mainly encompass work on smaller discrete task. Although the tasks are related to the overall problem, the work carried out does not directly encompass reweavings of their overall problem or problem space. Choosing, changing or deleting some of the pictures found through their foraging processes will not directly change, transform or disturb their overall conceptual blueprint. This, however, is exactly what happens in the cycles of remixing and patchworking. Through the cycles of stabilisation work and production they create smaller patchworks which then enter the cycles of remixing and patchworking where the smaller patchworks are unravelled, inspected, combined, patches and pieces reorganised,

criticised and then re-weaved into a new patchwork and made part of the larger patchwork and conceptual blueprint. This is also what happens in this chapter, where they need to combine all the different little patchworks they have been working on; therefore, they enter a cycle of remixing and patchworking.

This cycle of remixing and patchworking is structured around three phases. The first phase is a complex brainstorm and negotiation of the problem where they use the whiteboard as a dynamical space to construct and reweave the blueprint of their presentation. This representation becomes so complex that they initiate a second phase where this structure is renegotiated and transformed into a work plan reified in a word document. Finally, they enter a phase of discussing which facts to use as a part of their presentation. Especially, the two first phases are complex patchworking processes where they construct the conceptual blueprint of their presentation.

Through these phases we see both an expansion and development of the problem space and the conceptual blueprint, but also a crystallisation and reification of these. New ideas and threads have emerged, but they are simultaneously starting to structure, select and construct the conceptual blueprint of the final presentation. In relation to this, I have argued that we see another role of the mediational means, as they are used more actively and as an integrated part of the patchworking processes. The whiteboard, the slides and the work plan are not only mirroring, reifying their discussions; rather they are used actively in structuring, transforming and reweaving the discussions and the entire blueprint.

From the process of working in the slides we also see how ‘patches and pieces’ travel across different levels of scale. The slides are complex models that represent previously negotiated and reified expert knowledge which is now reinterpreted and put into new relationships with other ‘patches and pieces’. Here it is important to keep in mind that the patches and pieces are not only slides, but equally informal conversations, pictures, facts, arguments and expert knowledge from interviews. All of these ‘patches and pieces’ become resources in their negotiations and production of their patchwork. They do not represent unambiguous chunks of knowledge, but function as resources for negotiation and construction of a problem space and the representation of this problem space, through the crystallisation of the conceptual blueprint.

I have argued that the patchworking processes and the construction of the

problem space and conceptual blueprint are intertwined with their moral blueprint. The problem space is something in which they are, or become, personally engaged, as it becomes visible through their strong reactions to the facts they find; but also it is evident from their discussions they have certain values which are made an intrinsic part of their argument. They are constructing a patchwork in which the patches and pieces are stitched together and aligned with their moral blueprint. The conceptual blueprint builds on their moral blueprint and though they know it is a debatable issue and not a universal truth; the presentation is their conscious construction and representation of the problem space of 'how to improve a poor society'.

The overall argument and narrative they construct throughout this chapter is their way of reweaving and combining the different backbone threads and topical threads. The backbone threads of 'the problem', the 'methodology' and their hypotheses of causes and solution are now spun together and are crystallised into the final product. The topical threads of education and taxes are the most prominent in their final product; whereas the topical thread of trade agreements have almost disappeared, apart from a small mention in a concluding statement. Likewise, the topical thread of jobs and brain-drain has dissolved and disappeared, as they have found it to be less important through their enquiries. Equally, many thinner threads and hypotheses have dissolved over time.

The cycle of remixing and patchworking in this chapter is where the final presentation crystallises and takes shape. They create the conceptual blueprint, narrative and overall argument, but this does not mean that they finish their work on the presentation here. In this chapter I have mainly looked the technologies in relation to the cycle of remixing and patchworking and to a lesser degree, in relation to their cycles of stabilisation work and production. They now enter a long cycle of stabilisation work and production, where they have to add flesh to the conceptual blueprint by narrating oral presentations, add video clips, creating slides and finally negotiate how to perform the presentation. This work will be reported in the following quick summary and description of their work. After this summary, I shall return to a final discussion of their presentation in its entirety.

Chapter 8½: Quick Summary: Entering the final cycle of stabilisation work and production

In this chapter I will give a quick summary of their work during the late afternoon and evening, as these are the final activities they engage in before presenting on the next day. During this very productive cycle and stabilisation period they create a lot of the different digital artefacts that are part of their final presentation. When they begin this cycle they have already produced or foraged some of the parts and pieces for the presentation, but still a lot needs to be done, as can be seen from a list of what they have finished:

- The structure and overall argument of the presentation is settled
- Two video interviews from Intel Clubhouse almost complete
- The Tax-animation
- A slide with the team name and the problem formulation
- The three slides from the Researcher's slideshow

The rest of the 'patches and pieces', video interviews, slides, oral presentations and the performance of the presentation is produced and negotiated during the afternoon and evening.

Working in the group room at CINPE

After they have created the work plan and briefly discussed the presentational means they dissolve into smaller groups. They work in small unstable dyads for a little more than an hour until the bus comes to pick them up; this cycle carries on when they arrive at the hotel later and continues almost the entire evening.

Following immediately after the distribution of the USB stick they start to work in smaller groups. Angie asks Sophia to join her in looking through their interview, as to identify which clips to use for the presentation and what information can furnish their oral presentations. Sophia is working on finalising some of the interview material from Intel Clubhouses, but will finish soon she says. They are all trying to negotiate when to do what, as they will have to work in small overlapping dyads and not as steady pairs (for instance Diana and Jasper are doing something together, but Jasper will also be doing something together with Neil, who is doing something to-

gether with Laura, who needs to look through the interview with Diana as well). Jasper and Neil are trying to establish which computers should be used for the different presentations, as to collect the relevant material for the picture slideshow and the larger presentation on those two computers. They also need to install Quicktime on the computer that will be used to show the video-clips. Jasper distributes the USB-stick with the work plan, and then turns to Sophia to wrap up their work and load another interview into the editing program.

Diana has started to download the Quicktime plugin on her computer and Samuel and Jack are working with some parts of the larger presentation. They are creating the concluding slide where the two characters (Fernando and George) from their animation are both happy. This, however, causes some problems, as the drawings are made in different scales. Jasper later helps them to resolve this. A lot of different, overlapping activities are going on. Jasper moves around and tries to manage what should go onto the different computers, while talking to Diana about when they should discuss their shared presentation. Sophia and Angie are working on finding some illustrative clips from the interviews and Jasper and Neil start to work on the

picture slideshow, while Laura is preparing for her oral presentation. After having installed the Quicktime plugin, Diana also starts to prepare her oral presentation. Jack and Samuel are working on creating the extra slides of George and Fernando cheering together. They work in these constellations for some time, but constantly they coordinate with the others or help resolve problems whenever they arise. They also quickly review what the others have been doing, and Jack's initial design of the two characters joining each other on a slide is dumped by the others. It features too wild animations of the characters jumping around they think.

Neil comes over to Diana to get the final pictures for the picture slideshow and Sophia also has to transfer some pictures stored on her computer via the IR-connection. Laura is searching for information to use for her presentation and discusses the pages she finds with Diana and the 'grown-ups. Jasper and Neil are still working on the picture slideshow, and they are trying to identify some music to use. Eric Clapton's 'Tears in Heaven' start to play and they all comment on the sad mood of it which they think would fit well the presentation. Sophia asks them to shut it off after a while, as Angie and her are trying to listen to the interview and reviewing their notes. Angie comments that she has not really used a Mac before, but it does not seem to bother her that much, as she and Sophia have already started to edit and cut in the movie.

Neil switches seat with Samuel because he and Jack now needs to do some work on creating the overall presentational slides, while Jasper and Samuel work on the pictures slideshow. Neil starts to translate some of the facts they have found. They work very concentrated in these constellations for some time with their different tasks, while discussing different issues when they arise. Laura has run into the term 'under employment' and asks me

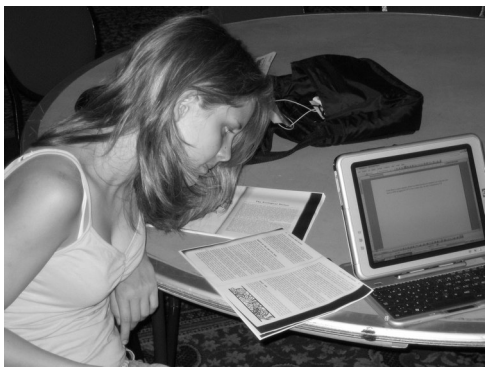
what it is; neither Lone nor I are quite sure and start to look it up, but Samuel offers a correct explanation that seems to fit what Laura is reading.




Lone tells them that the Danish radio program 'Harddisken' (The Hard drive) would like an interview with one of them on the next day. They don't know the program, though Angie has heard of it 'It is something my parents listen to', as she coins it. Lone tells a bit about it and then have a look at the picture slideshow. She asks why they have converted all the pictures to black and white and they explain that this is more dramatic and sad. Astrid proclaims that the bus will soon arrive (at 4.15 PM), but just before we start to pack the picture slideshow has been completed and Jasper runs it for all of us to see. We are all quite impressed with the mood it conveys through the combination of the looping black and white pictures and Eric Clapton's 'Tears in Heaven'. Louise comments that it gives her goose pimples. We start to pack our things, as the bus will soon arrive, and Astrid comments that she is really looking forward to seeing the presentations the next day. We collect all our stuff and leave for the bus.

Evening work at CINPE

When they arrive back at the hotel they immediately pick up working again. Laura, Samuel, Diana and Neil are discussing the interview they did with Manuel Bersone. Laura is giving them a summary of the interview, while Neil seems to be reviewing the notes from the interview simultaneously. Sophia is reading some web pages to prepare for her presentation, and I am helping her with translations. Jack and Jasper are working with the overall slideshow and creating slides for it. Angie walks around in the background and looks at the different activities and starts to play with Laura's hair. Sophia cries out for Lone and Lone comes over to help, as does Angie. Sophia needs some texts from a book that she knows Lone has. She then sits and reads from some paper copies together with Angie.



They continue with these different tasks for some time. Neil is called over by Jack and Jasper to review something for the presentation and also Angie is called over and sits with them for some time, while they are incorporating different slides from the researchers' presentation or creating some intermediate 'transition' slides. Most of them leave the room for dinner, but Jack, Jasper and Neil stays back to work on the presentation; they need to work very concentrated to be able to finish they say. They work alone for approximately 20 minutes, but eventually they also leave for dinner.

After they come back we move the camera. Samuel, Jack and Jasper are working with the overall presentation and Jasper is also starting to discuss their final statements with Laura and Samuel. They suggest different lines in English which Jasper notes on paper. In the background and out of the camera view Sophia and Angie are selecting and cutting their clips for their presentation, they ask Jasper for some help with editing. Jack is going through the presentation and making sure the order is okay, while creating intermediate slides. Jasper, Samuel and Neil start to help out and plan some

of the intermediate slides (the intermediate slides are black slides with white text outlining what will come. See appendix E1). Diana and Laura join the discussion as well.

The camera moves the focus onto Sophia and Angie who are still working with finding clips for the presentation. Sophia is navigating in the movie while Angie notes time codes on paper for the different sequences they might want to cut out or single out. They work very concentrated with this for some time and the camera switches back to the other group. The four boys are working on the overall presentation, discussing the order and how to design the different slides. Meanwhile Diana has moved over to Angie who guides Diana on how to use the program, as they still have some interviews to edit.

Laura has moved over to the same table as well, as she needs to talk to Neil later about their oral presentation; now she is trying to write down her suggestions for what to say. The four boys are working with the presentation (the other participants are out of camera view), but they split up and Neil and Samuel groups to translate some statements. Laura comes over to Jasper and the remaining participants are sitting by themselves preparing for their presentations. Sophia is reading a difficult text about the famous Costa Rican president, and I help her read the English text by providing translations of different words or meanings.

Diana is working with her presentation and so is Samuel. They sit by themselves, while Laura and Jack are working with translating and typing in some of their statements. Jasper is making some notes for his oral presentation which he subsequently coordinates with Diana. Neil and Jack are looking through the presentation. Diana and Samuel are discussing their presentations and going through Samuel's manuscript.

They move around a lot and discuss the different things people are producing. Jack, Neil, Diana, Angie and Laura sit by the table and discuss different aspects of the presentation and Diana is working with her presentation. Jack takes up the work on the presentation again and is joined by Angie who starts reviewing and commenting, while the others move to another table for a while, but soon after return.

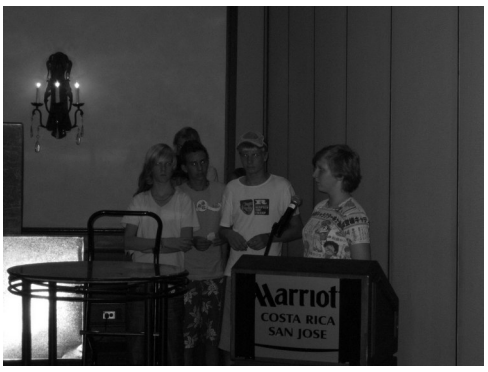
Laura and Neil now start to work with selecting and editing for their interview and the camera focuses on them for some time, while they are working.

The camera moves back to Jasper and Jack who is reviewing the overall presentation. One of the organisers, Siobhan, drops by and asks them when they will be ready to rehearse and give the organisers their final PowerPoint slides. They get to choose when they want to present and they discuss this and report back to Siobhan. Jack then sits by himself and work with the final slide (the 'thank you' slide), Jasper comes by to review it – Angie and Sophia joins as well.

Laura now sits with Astrid, as she has to translate something Manuel Bersone says and identify where he says, what they think he must have been saying. This is somewhat difficult, as Manuel Bersone spoke in Spanish and the guide then translated what he said. So, Laura knows from the guide's translation when he says something they want to use, but the actual excerpt she cannot identify, as she does not understand Spanish.

Laura leaves Astrid alone and the camera moves on to Diana and Samuel are working with their presentations, while Laura and Neil are trying to explain to Astrid what they need her to do. Sophia has joined Samuel and Diana and they are now discussing Samuel's presentation, as he is the one to present the team and the problem. They move around and talk to their different presentation partners, just to touch bases and go through their shared presentations to avoid overlaps.

People are working with their own presentation or collaborating with their presentation partner. Laura works a bit on her own, but then joins Astrid who is working on finding the clips on basis of how they were described by Laura. Astrid and Jonas are working with the interview with Manual Bersone, and also they still need to compile one big movie from all their clips. Some of them have now grouped in the middle of the room where they chat and discuss. Lone, however, queries into how they are going to present, and she orders them to do a test run where they do their presentation. Therefore, they now they line up by the speaker's chair and get ready to perform their oral presentations:



They run through the oral presentations twice, where after Lone comments on their performance and gives them some advice. They are then told that they will be able to actually run through their performance on the real stage, which is the next thing they do. There is an abrupt camera-cut and we have now all moved into the big conference room, where they are to perform the next day. Here they do yet another test run of the presentation and this time with the PowerPoints and videos available.

This is the time where they finally establish their bodily performance and the choreography of the whole show. They initially discuss how they want to set the scene with the two projectors and how they should move. They agree on the setup with eight chairs where they will sit, while their team members are presenting. They coordinate the routine on how to get up, go to the front of the stage, deliver their oral presentations and then return to their seat.

After having rehearsed their presentation on the actual stage we decide that we need to stop for the evening. Their presentations and the video are finished. Furthermore, it is getting late and they were supposed to be in their

beds…but I do seem to remember them jumping in the pool around midnight (and me trying to tell them to be more quiet half an hour later).

Summing up the results of the productive cycle and stabilisation work

Before discussing and summarising the final presentation, I will quickly try to outline what they actually produce throughout this period of time. During this stabilisation work and productive cycle they engage in producing:

- The slideshow with pictures
- Identifying the music to use
- All the intermediate slides, and combining all the slides into one presentation
- Writing manuscripts for all their oral presentations
- Narrating the concluding statements
- Cutting, editing and choosing clips from two interviews and subtitling one of them
- Creation of one movie file containing all the clips
- The rehearsal and choreography of the presentation

The final thing they do is to rehearse their oral presentation, settle the whole timing and choreography for the presentation, which they do late in the evening…apart from jumping in the pool, which I think they really deserved after a long, tough day. In the next chapter, I will return to the final product of all their hard work during this event to briefly sum up and discuss the development of the threads and their final patchwork.

Chapter 9: Discussing the final presentation

In this chapter I will return to the final presentation in order to briefly discuss and sum up the development and the composition of the different threads in their final patchwork. In doing this, I refer the reader to the summary of the presentation (appendix A) for a more detailed overview of the presentation. From their own work plan they have segmented the presentation into five overarching groups or topics which I have earlier mentioned in briefly presenting their overall argumentation:

- Introduction
- The Success story of Costa Rica
- The Latin American Problem (Originally: Slide with info-talk)
- The future? (Originally: What in future)
- Conclusion (Rounding off/conclusion/ assessment) (I shall not go further into that part here, as it is basically the eight statements mentioned in chapter 4)

Their main arguments for how to address the problem of poverty, or 'how to improve a poor society', as their problem formulation came to be, revolve around two overarching concepts or threads; namely taxes and education. In the following I will go into how they convey these notions through different media and modes of communication, but also how especially the notion of education is presented from many different perspectives.

The introduction

The introduction can be viewed as consisting of three different segments:

- Presentation start
- They present the team and their challenge
- They state some facts about poverty

The introduction is really just about presenting the topic and problem of poverty, but becomes both a way of presenting the wider, global problem of poverty, as well as presenting their own way of addressing the challenge. The wider, global problem is communicated in a very emotional and sensuous way. Initially, through the multimodal composition where they sit qui-

etly, with the looping slideshow and the sad music; but also through them delivering the statements one by one, as to emphasise the serious nature of the facts, while the disturbing facts emerge and disappear on the big screen.

Between these two segments Samuel stands up and quickly presents: the topic, why they have chosen to work with the challenge of how poverty and briefly about what they will present. Much of their actual work on coming up with, developing and settling this 'problem formulation' is rendered completely invisible. All the work and negotiations, discussions, reweavings, perspectives, tensions, interpretations, ideas and threads are crystallised into the formulation 'how to improve a poor society' which is then configured as a stable problem they have addressed; and from which they will now present their findings.

The backbone thread of the problem has been a very important part of structuring and orienting their work, and they have put quite some time into negotiating, crystallising and developing the problem formulation and the problem space. Their first way of formulating their problem was initiated during their work meeting before coming to Costa Rica, where they came up with the two different problem formulations which were reified on a poster and in the LearningTimes environment.

These initial formulations addressed a tension or contradiction which has been prevalent throughout the entire process and is also encompassed in their final presentation; roughly the tension can be described as working with Costa Rica as a case from two different perspectives: Costa Rica as a model for other countries in reducing and successfully fighting poverty or Costa Rica as a country in which there are still problems with poverty to be resolved. This tension is present throughout their entire work process.

The cycle of remixing and patchworking on the first work day revolves around addressing this tension, which they do through coming up with the formulation 'How can we improve a poor society'. This way of representing the problem actually opens the possibility of exploring both these perspectives within the broader frame of the problem formulation. During the final cycle of remixing and patchworking on the second work day they settle on the model of using Costa Rica as a success story by drawing out and highlighting the different things Costa Rica has successfully done to reduce and fight poverty (and by referring multiple times in the presentation to slides and graphs showing how well Costa Rica is doing compared to others). But also they highlight that there is room for development. However, merely saying 'they settle on the model' is somewhat misleading, as coming up

with the narrative and overall argument of the presentation that eventually come to represent the problem space was a complex negotiation, as we saw during the analysis of the final cycle of remixing and patchworking. Creating the narrative, overall argument and the conceptual blueprint on basis of the wider problem space required multiple smaller cycles of unravelling, inspecting the seams and re-organising patches and pieces, as to reweave them into this particular patchwork. This encompassed also the negotiations of which facts to present to the audience, which is what is presented in the third segment of their introduction.

The success story of Costa Rica

While the first parts of the presentation were more separate segments the success story is a more coherent argument and narrative, although it is also composed of different parts. It is initiated by Angie states that they chosen to work with Costa Rica as a success example to show what they have done to fight poverty. This is elaborated by Sophia who explains about the famous president who started a civil war, then abolished the army and made a number of social reforms. The overall argument of this segment is that the abolishment the army, investments in education, health and infrastructure and the social reforms were some of the reasons for Costa Rica's success. These claims are then corroborated and illustrated by showing pieces from the interview, where Richardo Monge talks about the abolishment of the army and the strong feelings among Costa Rican people that having an army is stupid. Secondly, he tells about the historically strong commitment in Costa Rica to give access to primary schooling for all. They end by showing the slide, where the level of poverty in Costa Rica is compared to other Central American countries, which illustrates how well Costa Rica is doing ('poor country overview').

In these segments we see the first part of their double perspective; namely the perspective of Costa Rica as a success, which have been one important part of the backbone thread of the problem throughout their work. Already at the initial work meeting the topical thread of abolishing the army and investments in education were ideas that came up. It was a hypothesis that was made into an overarching category in their interview guides, but it was also corroborated through their interviews with the experts and through the lecture, from which they gain the slide that illustrates that, compared to many of the other countries in the region, Costa Rica is quite a success. The low level of poverty and the rapid growth of Costa Rica they especially connect to the investments in education.

Another thing to note is the prominent role of the narrative revolving around the president which Sophia presents. This is an idea that originates from their conversation with the young guide in the bus and it is taken up several times during their streams of ideas on the first day. But also Sophia brings it into their conversations during their discussions on the second day. It is a thread which especially Sophia continuously bring into their conversations and she spends considerable time during the final cycle of stabilisation work and production reading about the history and deeds of this president (who is a also a national hero and legend of Costa Rica) to construct her oral presentation.

While the interviews and slides are used as corroborative or illustrative evidence in their presentation, they have been very important resources in their work and have played a much larger role in the actual work process, than is visible from the presentation. The interviews have been important part of their foraging and gathering processes and in constructing their shared pool of knowledge. They several times refer to or worm-hole to something that they have come to know through these interviews. In their patchworking processes arguments, interpretations and opinions from the interviewees are drawn into the work as arguments for causes and relations, and they are used to explore and construct relations between the different patches and pieces. For instance, when Laura suggests a chain of arguments where the notion of education for all relates to taxes, which brings in the topic of corruption, which again lead them back to education and getting students interested in politics and civic engagement.

The Latin American Problem

In this part of the presentation, which is quite short, Jasper and Neil expand and corroborate further education, as one of the very important factors in reducing poverty. This they do through using especially two slides from the researchers' presentation as corroborative evidence. Initially, Jasper explains the problem of many Latin American countries which they argue has to do with too few people finishing a secondary education. Here again Costa Rica is presented as a good example, as they have the second highest number of people finishing a secondary education, but also Jasper mentions that there are still a large percentage of people not finishing a secondary education. The problem of this is expanded by Neil who shows a slide that illustrates the correlation between number of school years and decrease in poverty. Roughly, speaking the statistics show that risk of becoming poor decreases with the number of school years, and thus that there is a strong cor-

relation between years of education and poverty. Furthermore, it shows the great value of especially secondary and tertiary education, as poverty among people with secondary and tertiary educations is almost non-existent or very low.

Throughout the entire process the thread of education has been very important, as was also reflected in the previous segments. From the very beginning they have had the hypothesis that education is an important measure in reducing poverty, though it was stated in very general terms 'education is important'. Through these slides, the lecture and the interviews this hypothesis is certainly corroborated, and they gain an even more refined idea about education, especially through realising the importance of secondary (and tertiary) education. The distinction between primary, secondary and tertiary education is not something they have operated with throughout the entire process. They have more broadly worked with 'education' as an umbrella term, but their conceptualisations around this issue develop and become much broader and refined, as we shall also see during the next segments.

The future?

This is a longer sequence that is structured around three overarching topical segments:

- The Intel Clubhouses
- The tax animation (tax clown animation)
- Taxes and corruption

In the first segment Jasper and Diana argue that the clubhouses around the world provide opportunities for young poor people between 13-18 years to engage in learning projects, and they explain how this helps young people change their perspectives in life, and to engage in constructive learning, rather than involving in crime and violence. This they corroborate and illustrate through two interviews, one with a manager from the clubhouse and the other with the young user of the Club House. While the interviews also revolve around the value of education, it is at the same time a very different perspective and way of illustrating this value than statistical information and graphs. Most of the other segments deal with education from a more societal or macro-level perspective, whereas this segment present education as a way of changing perspective in life and as creating opportunities for the future.

What is interesting about this part of the presentation is that a few hours be-

fore actually going to the clubhouse, they had little idea of what they would meet, or how this visit in any way would give them insights into the topic of poverty. They were actually somewhat discouraged when realising they would have to create new questions for the interviews at the clubhouse, and they were in some doubts about what questions to ask. The interviews obviously feed well into their thread about education, but it also alters their view on the topic of education. Before these interviews they have mainly been working with education at a more societal level e.g. as something governments should invest in to increase welfare and decrease poverty. But the personal narratives have quite a strong impact on them, and they find them important to incorporate in the presentation, as another way of stressing the importance of education; a way which represents a somewhat more human and personal perspective than talking about statistics and governmental investments. Through the interview with the young girl they encounter someone who has radically transformed her identity and the trajectory of her life through the Clubhouses. Both the interviews are memorable and interesting narratives that really convey a feeling of education as an important factor of transformation in people's lives, and an important entrance into societal participation, which is also why they make it part of the final presentation.

After this segment Samuel and Jack get up and start to explain that they have made an animation which explains the importance of taxes. The presentation is difficult to represent, as much of its function is distributed between the slides and then their oral statements and showmanship (their timing and intonation is an important part of what makes it work), but it is a very pedagogical, funny and down-to-earth way of explaining taxes.

The notion of taxes has been a one of the main topical threads for them. It is raised quickly during their first work meeting, and later becomes one of the main hypotheses during the first evening of work in Costa Rica, where the notion of taxes is made a prominent part of their interview guide. However, it is also rendered a problematic and contentious issue at this point in time, as they have encountered the disruptive piece of corruption and distrust between government and the people, through their conversation with the young guide. This disruption is overtly dealt with and addressed in the next segment of the presentation, but this disturbance to the thread is an ongoing issue in their discussions and patchworking processes.

However, on their first workday at CINPE they decide that taxes are indeed very important, which is why they start to produce the tax-animation. It originates from an idea which is initially pitched by Angie and Sophia about

doing an animation with real pictures or a matchstick man animation of a rich and a poor person breaking their leg (which is pretty much also how it ends up). Initially, however, they work with an idea of comparing Denmark to Costa Rica to show the importance of taxes. But both Diana and Jack counter this idea of using actual countries, as they fear they might expose others and make them look bad. In this sense they for a while become little ambassadors or diplomats who do not want to take on the identities of an ethnocentric, cultural hegemony and embody a Eurocentric (or Scandicentric) agenda. They are well aware that they embody a certain view of the world and a range of values that might not be shared by others, but which are at the same time so deeply embedded as part of their moral blueprint. They do not themselves change their moral blueprint, but they are or become very aware that this is a very Scandinavian perspective of the world. This is an underlying tension and contradiction that pervades their work and discussions.

In the final segment before the conclusion they also take up the tension of distrust and corruption which have been one of the disruptions and challenges to the thread of taxes as a solution to poverty. This they corroborate through a video clip with Manuel Bersone arguing that distrust between people and the government is the reason why it is difficult raising the taxes, This reflects a more complex view and give some more nuance because taxes are rendered a more contentious and problematic issues than presented in the tax animation. Here they argue that building trust and creating collaboration between the population and the politicians is important. They argue for the importance of people engaging in and getting information about politics, as to create civic engagement and trust. This is especially emphasised in relation to youth, as they argue it is central that politics and civic engagement becomes part of the education.

As I have argued, the ideas of corruption and distrust between people and government being reasons for people not willing to pay taxes are somewhat new to them. Initially, this disruption is introduced by the guide in the bus, but also corroborated through the interviews and the lecture. It has been an ongoing tension in their work that has often come up whenever the idea of taxes as a solution to poverty has been discussed. This also sheds a different light on the notion of the importance of education which is now also understood as a key condition for civic engagement and democratic participation in a society.

Final remarks on their final patchwork

As earlier mentioned the final presentation is an assemblage of many different media, means and modalities, through which they present their ideas, arguments and solutions – from the emotionally appealing, pathos-laden performance with facts accompanied by sad music and pictures, to the more logos-oriented display of graphs and videos with expert statements.

The different video clips and graphs are constructed as corroboratory evidence for their statements, but it is important to keep in mind that all of these foraged patches and pieces have also been very important resources from which, and around which, their discussions and reweavings have revolved. They have not just been clear-cut 'patches and pieces' telling just one story. In this way the different patches and pieces are not just ready-made objects of knowledge that can be drawn in, but rather represent complex resources that need to be negotiated and aligned to their conceptual and moral blueprint. As such the different patches and pieces also become interesting examples of how 'knowledge' travels between different levels of scale and across different boundaries – from a UN-website into a researcher's presentation and then into the presentation of 8 young people, where the patches and pieces become part of a different narrative.

Equally interesting are the different knowledgeabilities represented in the presentation. This is especially visible through the different ways in which education is constructed. It is presented both as a macro-societal resource and necessity for development, as a way of changing one's trajectory and a mean for civic engagement and democratic participation in a society. These knowledgeabilites are also communicated through different modes spanning 'the personal story', 'the expert statement', 'scientific graphs' and emotional, moral appeals supported by the pathos-laden pictures, music and mood.

As the final patchwork is a reification of a much more complex process of negotiating and patchworking it is difficult only on the basis of the product to elicit much about the underlying processes and how the different threads developed. It tells us little of how the problem developed and transformed or how the thread of taxes developed from being an uncontested model or solution to becoming a more nuanced and contentious issue. Looking at the product in isolation we can see only the final reified forms, but not how the thread of e.g. education developed from the more general 'education is good' towards becoming a much more rich and nuanced concept. These developments and transformations I have aimed at documenting, exploring

and explaining through the entire analysis, and I would argue this is an important way (albeit one out of many) of enhancing our knowledge and understanding of such open-ended learning processes. This is what I will explore and elaborate further on in the next chapter.

Chapter 10: Understanding learning as a process of patchworking

> "In contemporary society, human work increasingly is constituted by creation of knowledge artifacts. Most people are required to develop competencies that allow them to work productively at levels of knowledge that formerly characterized only a small elite of intellectuals. Rather than relying on pure mentation, educational institutions could teach young students to deliberately use and construct artifacts for expanding their intellectual resources. The knowledge society is not reflected in citizen's lives merely through work; our entire everyday environment also is undergoing similar changes. Ensuring our development and wellbeing outside work requires us to develop the advanced skills of a knowledge society. As a consequence, there is an increasing need, in almost every area of life, to understand theoretically and practically how new knowledge, mediating artifacts, and practices are created. Thus it may be argued that conceptually well-founded approaches to knowledge-creation are needed to help people make the epistemological and ontological shifts required to participate productively in an advanced knowledge society." (Paavola, Lipponen, & Hakkarainen, 2004, p. 573)

The citation capture very well the intentions and results of this thesis, as the aims are to shed light on a process of knowledge creation and to develop a conceptual and analytical framework through which such processes can be understood and analysed.

Throughout the analysis I have aimed at conveying a sense of how learning can be understood as a process of patchworking. Learning as a process of patchworking foregrounds the constructive and productive aspects of learning and aims at understanding how different 'patches and pieces' are assembled into provisional patchworks that are continuously negotiated, changed and reweaved. The reweaving of the patchworks happens through a process where the patchwork is unravelled and the seams inspected before it is reweaved into a new provisional patchwork. This is also entangled with a process of aligning the patchworks with the conceptual and moral blueprints or reconstructing and reweaving these blueprints. As the metaphor of patchworking highlights the constructive and productive learning processes, it bears some resemblance to the metaphor of knowledge creation (Paavola, Lipponen & Hakkarainen, 2004) and expansive learning (Engeström, 1987), though there are some differences. I will argue that such concepts are important in order to address the challenges of the knowledge society. Therefore, I will discuss them in relation to each other and more broadly in relation to different socio-cultural theories of learning.

Also, this particular case and analysis can give us valuable insight into how

such processes can be nurtured and designed for. This is of increasing importance, as I shall highlight through a discussion of the challenges of learning and education in the knowledge society. Finally, the case and the analysis give us some important insights about youth, learning and technology; or Power Users of Technology which is a metaphor I shall return to in chapter 11.

Through the analysis I have employed and argued for a specific way of analysing and looking at such learning processes and in this chapter I will clarify and discuss these concepts in relation to understanding and studying processes of patchworking. Furthermore, in chapter 12 the analytical framework will be discussed in relation to different ways of approaching the unit of analysis and the empirical data in socio-cultural theories of learning. This will situate this kind of analysis into what I believe to be a broader and emerging movement within this theoretical landscape. I will argue that this kind of analysis can be a helpful analytical tool in understanding a wider range of learning settings and processes which might become increasingly important to understand as part of the rapidly evolving knowledge society. As such the analytical framework can be used to shed light on a range of learning settings and processes that might have gained less attention so far. This particular study and analysis, however, does not in itself analyse such a variety of settings, practices and processes that might actually exist when we look beyond and in-between the stable work practices, the communities of practice and the sturdy systems of activity. However, the overarching analytical categories, that are part of the analytical framework and the underlying perspective or outlook of the framework, might in time help us learn more about such learning processes.

Before engaging in more details with the notion of understanding learning as a process of patchworking it is important to lay out and discuss some of the conditions from which these processes have evolved and unfolded. I shall argue how notions of indirect design and designing *for* learning, rather than 'designing learning', were important conditions for this entire process to succeed. I will argue how creating an open-ended learning environment, ecology (Nardi & O'Day, 1999) or designing an infrastructure for learning (Guribye, 2005; Jones, Dirckinck-Holmfeld et al., 2006) formed the foundation and conditions for the patchworking processes to flourish. Equally, I shall argue why these kinds of learning processes and such open-ended designs for learning are important in a broader societal view. This is because the case and the analysis nicely reflect some of the current societal trends and movements within learning work and education.

Conditions for Productive Patchworked Learning Environments

In this section I will describe how the case represents a horizontal, self-organised, peer-learning process of problem oriented inquiry, controlled and driven largely by the young people rather than the researchers and facilitators. As an overarching description it was a process focusing on the constructive and productive aspects of learning through enabling free exploration and inquiry; rather than the acquisition of a specific and well-defined body of knowledge and skills through a series of sequenced events decided and pre-designed by us. I will reflect on how they increasingly took control of the entire process, but also how this was encouraged and supported by our way of creating an infrastructure for learning or some Conditions for a Productive Patchworked Learning Environment.

This very formulation plays on, and makes reference to, a European research project which I have been part of throughout the entire process of working with this thesis. The research project is part of the larger Kaleidoscope research project which other colleagues and I have been members of. Initially through a research group or JEIRP (Jointly Executed Integrating Research Project) called "Conditions for productive learning in network learning environments" and then subsequently an ERT (European Research Team) under the heading "Conditions for Productive Networked Learning Environments"[21]. I will relate and reflect the discussions of the case to some of the theoretical ideas of pedagogical design and learning that have spawned from these research collaborations.

The organisation of their work

As mentioned the ways of organising the work was largely controlled by the participants. There was no pre-fixed schedule for how to organise their work in-between the scheduled interviews or going back and forth to the hotel. The organisation of the work in-between these events was controlled by the young people, and, as I have argued throughout the analysis they increasingly took control and managed the work and learning processes. Transitions between cycles and whether something provided a satisfying stability or needed further discussion was an outcome of their own negotiations, rather than pre-designed or decided by us in the situation.

As mentioned in Chapter 2, some designs of PBL-processes are more tightly controlled, sequenced and scaffolded by teachers or tutors, whereas in this particular case the participants were in control of all of the dimensions. This

could very well have been designed completely different. We could have made requirements for what to include in the final presentation, both in relation to the topic and the presentational means. We could have narrowed down and defined the problem space more tightly by demanding that they had to work with certain dimensions. We could have controlled their work process and demanded for instance that they should convene at certain times, and we could have distributed the work between them and placed them in stable work groups throughout the process.

We did to some extent try to control the work process as to get them started, but also quickly decided not to interfere too much and instead leave them in control. Here we can return to the graphical depiction that was presented in chapter 2 in relation to the discussion of different types of PBL processes (See Figure 3).

In chapter 2 and in (Ryberg et al. 2006) it was argued that we can use the model to query into who is in control of the different dimensions, the 'teacher' or the 'participants'. In this case they increasingly took charge of all the different dimensions. The *problem* was only circumferenced as the wider (or extremely wide) problem space of poverty, in which they would have to formulate and identify their own problem. From the analysis it is clear that this was an ongoing negotiation and process of exploration. This was equally true for the *solution* and how to *organise the work* process.

The case, therefore, is a good example of self-organised, horizontal peer-learning and an instance of knotworking, where there is no center of control. The notion of knotworking can be seen on different levels of scale, as for one thing the entire work process carries strong resemblance to the process of knotworking. They were a dispersed group of young people coming together for a shorter period of time to engage with an open-ended task. The problem and the solution were not given, and neither were the ways of working. All of these elements had to be identified, orchestrated on the spot and continuously negotiated. Secondly, the ongoing coordination of the work process, the distribution of the tasks, deciding on groupings was a pulsating, organic and dynamic negotiation of roles and responsibilities that were horizontally distributed among the young people. In this sense an important part of the patchworking and learning process was also mastering and orchestrating the whole process.

This does not mean that we as grown-ups completely disappeared. However, we entered in a dynamic, organic weaving of the collaboration processes, where we were dynamically configured as central or peripheral, hori-

zontalised resources and actors. It would be wonderful to say that we consciously and intelligently acted as facilitators who were constantly aware of their needs and asked the right questions at the right time. However, as it is visible from the analysis our roles are more composite and complex. There was a delicate balance between facilitating, scaffolding and then deriving them of their ownership, as became visible when we took control on the first day of work. On the other hand such orchestration and control was accepted on the evening before the presentation, where Lone ordered them to rehearse their presentation and coached them on how to deliver their oral presentations. Sometimes we were ignored and sometimes we were very important resources that managed to give helpful guidance and advice. The latter was especially the case when we were called upon to help them with translations or how to use the video software, but also when engaging in negotiating the meaning of slides or clarifying the role of the clubhouse.

It is easier to point to reasons why we sometimes became sources of less helpful disturbances, as this had to do with their ways of organising the work and coordinating the tasks. As I have described, their planning work resembled that of knotworking and was often accomplished through informal conversations and coordination between smaller groups. Much of their planning and coordination work was carried out by moving around physically, while dynamically forming and dissolving ad-hoc groups and engaging for shorter or longer periods with alternating tasks. This fleeting, mutable and dynamically negotiated assemblage of groups and tasks made it difficult for us to overview the process, and we were often left out of the loop in relation to who was doing what and when (which is also visible from some of our less fortunate attempts at coordinating, where we quickly realised they were way ahead of us).

However, we actually had a major role in this fleeting and mutable construction of the work process. This may sound a bit strange, but the success of this work process actually relied on our acceptance of *not* being the centers of control. It relied on our acceptance of becoming horisontalised (and sometimes subdued voices); rather than enacting and enforcing the role of an authoritative choir of imagined wisdom, experience and superiority. We accepted being out of the loop, and though we were sometimes not sure if they knew what they were doing, we gave them the benefit of the doubt. Even though, we experienced a lack of control and felt there was a lack of coordination we also trusted them when they expressed they knew what they were doing (and in retrospect this was a wise decision on our part, as they actually did know what they were doing). In a sense we followed the words

of a wise man:

> "So, like us, let your children run wild and free, because, as the old saying goes: Let your children run wild and free." (Simpson, H. in (Oakley & Weinstein, 1995))

This is not entirely true, as I have also indicated in the introduction to this section. We actually did facilitate and support them quite a lot, but this happened more indirectly through our design of the event itself. In the following I will discuss how this was accomplished.

Power Users do not fly – the Costa Rica Event flies

The heading is a small reference to a citation from (B. Latour, 1999): *"B-52's do not fly, the U.S. Air Force flies"* (Latour, 1999, p. 182) and without going into any detail with the artist formerly known as actor-network theory, now known as actor-network theory; I just want to stress that the case in this thesis, and what has been scrutinised in the analysis, was indeed part of a larger event.

This I have described chapter 2, where I also made clear that much work was put into organising the overall event and the infrastructure for the Nordic power users team. The entire process was heavily reliant on a smooth and well-run infrastructure of logistics and support (getting back and forth to the hotel, visiting a Volcano and the InBio parque, arranging dinners, accommodation, travel, getting a second projector and so on). But also the whole setup with speeches, guests, applauses and the positioning and construction of the young people as being 'special' gave the entire learning environment an extra touch and layer of motivation. In this sense there was a whole setting or infrastructure which had been designed for them to operate within. Here we can turn to Peter Goodyear visualisation of how to design for networked learning environments (Goodyear, 2001):

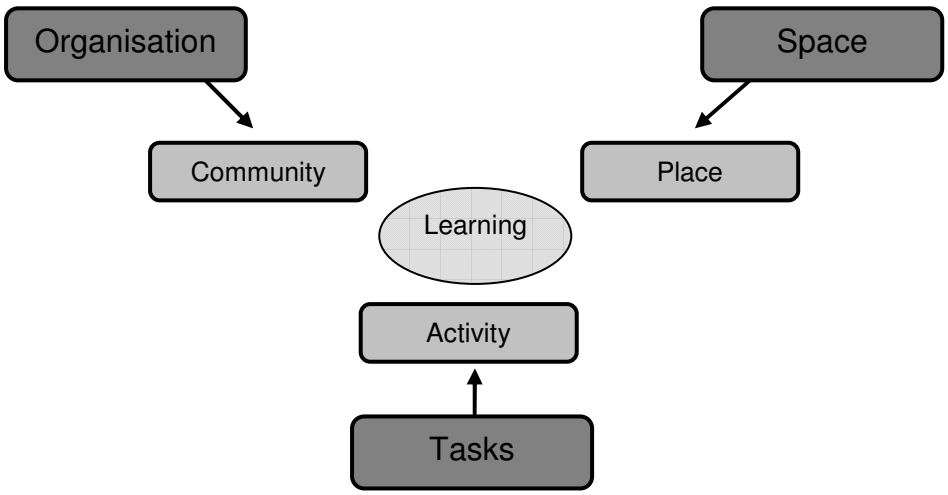


Figure 13: Indirect design - model adapted from (Goodyear, 2001)

The basic claim of this model is that one should refrain from designing or interfering in detail with the components that are most closely related to learning, but instead focus on designing organisational forms, learning spaces and tasks which then learners will respond to, appropriate and enact in an emergent, non-predictable way by forming communities, engaging in various learning activities and transforming space into place (Ponti & Ryberg, 2004; Ryberg et al., 2006; Ryberg & Ponti, 2005). This is also well described by (L. Dirckinck-Holmfeld, Jones, & Lindström, 2007 Forthcoming):

> "Learning itself is only indirectly related to what we design and plan, indeed we argue that it is at least two steps removed. The activities, spaces and organisations we design rely on being inhabited by others, the particular teachers and learners who 'enact' our designs." (L. Dirckinck-Holmfeld et al., 2007, p. 10)

For this particular event we can further distinguish three different levels of design and planning and describe them in terms of a macro-, meso- or micro level. This way of approaching different levels of scale, and thus exploring the relations between designing, planning and learning, is equally one of the outcomes of the work accomplished in the ERT research project. For one thing the levels can be interpreted as relatively fixed categories describing the relations between small-scale, local interaction and large-scale policy and institutional processes; and with the meso-level being the place where 'top-down meets bottom-up', reflecting the tensions between structure and agency (Jones, Dirckinck-Holmfeld et al., 2006). However, the three levels can equally be thought of as relative analytically categories not bound to a

specific level of scale:

> "We would also suggest that it is possible to use levels and the distinctions between macro, meso and micro levels in a more analytic way. Used in this way the meso level points to the place of social practice as the locus in which broader social processes are located in small, local group activity (Schatzki 1996; Schatzki, Cetina, and von Savigny, 2001). […] In this analytic form, meso is an element of a relational perspective in which the levels are not abstract universal properties but descriptive of the relationships between separable elements of a social setting."(L. Dirckinck-Holmfeld et al., 2007, p. 14)

Therefore, in relation to this case and the setup of the Costa Rica event, we can use these categories to identify three different levels of design and planning.

- A macro level being represented by the overall planning group of the event (which we as researchers were also part of).
- A meso level being the management of the Nordic team (a process also involving the power users to some degree).
- A micro-level being the actual work of the power users (including us as researchers and facilitators).

As part of the overall design of the *organisational forms* the notion of teamwork was established and the *tasks* were widely formulated as 'the UN millennium goals'. The *space* was designed as the whole setup of having the event on Marriot Hotel in San Jose and the various logistical arrangements.

This was the wider frame in which each of the power user teams would have to navigate and choose a way of designing the environment for their specific team. Our team translated the notion of organisation and tasks into a PBL/POPP model of group work organised around a common problem owned by the participants. Furthermore, we arranged some different spaces for them to engage with (the spaces in Goodyear's terminology are the physical learning environments, including all the artefacts embodying 'content' (Goodyear, 2001, p. 97)). This can be understood as a kind of indirect design for learning and represents a meso-level approach to pedagogical design.

In the following, I will describe and reflect on three factors that have been important in relation to the event, and which can be understood as a level of design, where we 'invisibly' and 'indirectly' facilitated or designed the learning event:

- Providing and nurturing a learning environment

- Providing and nurturing a social ecology
- Providing and nurturing a technological infrastructure

Providing and nurturing a learning environment

This was basically enacted by creating connections to various resources for them to draw upon. Most visibly through the arrangement of the interviews with resource persons and having a lecture arranged for them. We could call this 'arranging for learning opportunities', as there were no fixed learning goals for the different interactions. How to exploit these resources was something they would have to decide themselves. In this way it seems more appropriate to speak of providing resources and opportunities, rather than 'content'. The learning opportunities were not only sources of gaining knowledge on a matter, but also ways of experiencing a practice or a world view and, as such, an example of exploring boundaries. They were school students who for a shorter time got to experience and connect briefly to the world and practices of research and people working with education of poor kids (the Intel Clubhouses). In engaging with these experiences we as researchers acted, also as mediators in interpreting and making sense of the encounters with the resource persons and the material they collected e.g. by helping with the graphs on the slides.

Providing and nurturing a social ecology

As I have pointed out throughout the analysis, they were actually having a great and enjoyable time, while also working very hard. I have pointed out in the analysis how they were continuously creating a sociable and funny atmosphere, both through their verbal interactions, listening to music, joking and teasing each other, but also this was reified in their notes, drawings, file naming and so on; something I termed 'reifuncation'.

Even though this was very much their own accomplishment, we were conscious about establishing or supporting the sociable atmosphere. First of all, this was our main reason for spending some days together ahead of the symposium, and the reason for asking them to do small interviews as to get to know each other better. However, establishing and sustaining a sociable and funny atmosphere was equally an ongoing process for us, which was enacted through allowing them to be joking, noisy, listening to music, yelling, bathing and just being young people. We very seldom asked them to be quiet, sit straight or listen carefully to us; we allowed them to sit on the floor, lie down, crawl on or put their feet on the table, hug each other, sit on

each other and fiddle with each other's hair. We never really enforced any kind of behavioural control, and we can only imagine how an insistence on them staying in their group, not walking around and asking them to focus on one thing at a time could have impacted negatively on their planning and coordination processes.

Often the notions of socialising and having fun are understood as something that should be allowed and also designed for, but it is often thought of as extra-curricular, non-task or non-learning related processes. Goldman (1992) identified 'three worlds' that students constructed as part of a classroom interaction (social, conceptual and task and procedural) which have been adopted in other studies within CSCL and CSCW. For instance Goldman's notion of the social is laid out by Guribye (2005) where *social processes* are termed as 'extra-curricular', such as talking about parties, what to do in the weekend and is described as 'socialising'. The *task and procedural* focus is centred on understanding the task and how to accomplish it. The final is the *conceptual* process where the focus is on negotiating the conceptual aspects of the process. Likewise, these distinctions are taken up by Gutwin, Stark & Greenberg (1995), where the social processes come to mean the negotiation of roles in the group (What should I expect from other members of this group? How will I interact with this group?) (Gutwin, Stark & Greenberg, 1995, p. 148).

Though it is often mentioned in describing such categories that they are interwoven and overlapping, there is a danger in splitting and categorising the different realms and couching the social processes only in terms of 'extra-curricular' and 'socialising'. This might cause the analyst[22] to overlook the tight interconnection between the 'three worlds' which is actually present in Goldman's distinctions:

> The interactional work the students did in their social world was embedded in their science work and the social work they did seemed related to accomplishing a conceptual learning conversation. Building relations in one community of practice produced situations and conditions that made other ways of participating possible […] Their social work is not counterproductive to the accomplishment of their science work and may even be a necessary prerequisite. When the group engaged in conceptual learning conversations they became very close, focussed and unified (Goldman, 1992, p. 6-7)

From Goldman's own analysis and conclusion one could actually question the idea of describing these processes as 'three different worlds or practices', as the analysis of Goldman highlights the strong interdependence between them. They are, however, good general analytical categories and I just

mention this to say that we should be careful not to understand the 'social processes' as a secluded category of non-task, extra-curricular work that has no interconnection with 'task and conceptual learning'. This can easily turn into or be reified in designs as 'a necessary breathing room for the students to have fun and play around, but otherwise not connected directly with learning'. In a field study I did in relation to my master thesis (Ryberg, 2003) I studied the work of a class in upper secondary school and also interviewed teachers and students. The teachers talked about the necessity of the social spaces and processes, but largely understood them as extra-curricular, informal talk about weekends, parties and having fun. However, the social spaces had a much more important role, which was not noticed by the teachers:

> "The social space has two primary functions: For one thing it is a space for opposition where the students negotiate and reify what they do not like, what is annoying and what they will not do. [...] At the same time the social space is what legitimates school going. This is where the students negotiate and produce the meaning of school going. They engage in discussions of reports, home work and what they have to accomplish; but through this they simultaneously produce and legitimate the meaning of school going and it becomes a central part of their lived experience. Their mutual engagement, their shared repertoire and their joint enterprise is very much an ongoing response to schooling where they mutually negotiate the meaning of handing in essays, being graded and doing physics reports." (Ryberg, 2003, p. 130-131 – My translation from Danish)

Equally, in this case and analysis we can see how the social processes are instrumental in their negotiation of a moral blueprint, and how it is through playful brainstorming they construct a mutual perspective that come to be very important for how they engage with the problem. Also, this is very much embedded in their solutions to the problems. The social processes are equally about negotiating the meaning of the whole enterprise and negotiating alignment with broader structures (e.g. fighting poverty in the world, aligning with the UN Millenium goals or being a Dane in an international context).

Finally, we should remember that learning is not only about acquiring certain skills or facts, but more profoundly it is also about becoming a person engaging in various and complex ways with the world (Wenger, 1998, 2005). As I have argued through the analysis, the work or learning processes are also about investing their identities and engaging personally with a broader enterprise; both as funny, humorous, satirical and playful teens, but equally as critical, concerned citizens of the world. We can see how they increasingly work with the problem not as an abstract, conceptual task, but

as something that involves them at a level of personal engagement with the wider world. In this sense the social spaces are equally arenas for negotiating identity, different modes of belonging to and aligning with the wider world.

Providing and nurturing a technological infrastructure

There would not have been much 'power users of technology' had they not had access to various technologies, such as the tablet pc's, video cameras, wireless access, a mini-disc, a Macintosh and the software packages that were used to edit videos, write documents, do presentations and so forth. But also the support from us was important. For instance, Jonas helped them with the video software and subtitling and we did spend some time getting the wireless to work in collaboration with Hamid.

But what was even more important was the fact that we allowed them ownership of especially the computers and other equipment. The computers and equipment were not work tools that would be locked up in the evening or that they were only allowed to use for special purposes. They were allowed to, or rather, completely free to use the computers as personal tools to write small diary notes, store their personal pictures, play games, listen to music, draw funny drawings and so on. Neither did we specify a certain way of using the computers as part of their work processes e.g. how to name their files, use specific folders or share their files. How to incorporate the computers in their collaboration was for them to decide and carry out as part of the process.

Indirect design – creating infrastructures for learning

In the preceding sections I have described how they engaged in a horizontal, self-organised, peer learning process, where we as 'teachers' or researchers interfered very little on the micro-plane and let them organise and control the learning process themselves. It was a process focusing on the constructive and productive aspects of learning and processes of free exploration and inquiry.

However, this free and self-organised learning process was embedded in a wider design and planning process which enabled, afforded and made this possible. In this sense we can say that the pedagogical design and planning consisted in creating a learning infrastructure (Guribye, 2005; Jones, Dirckinck-Holmfeld et al., 2006) that supported well the kind of PBL learning process we had imagined and designed for. Our design and scaffolding operated more on a meso-level of design where we had indirectly designed for

learning through providing and nurturing learning opportunities, a social ecology and a technological infrastructure.

In this sense the whole learning environment was built on the central assumption that we cannot design learning in itself, but we can design *for* learning to unfold (Guribye, 2005; Jones, Dirckinck-Holmfeld et al., 2006; Wenger, 1998). Furthermore, during the actual work we accepted and supported that they were in control and that we became horisontalised voices, rather than the authoritative voices of control and management. The indirect design of this framework and the conditions we had provided for them were important vehicles in enabling the patchworking processes to flourish. It was an open-ended, explorative process where we abandoned having full control of the process, the solution and the ways of arriving at that solution. Neither did we have clear definitions of the knowledge they were to acquire, the learning goals and how to scaffold them in achieving these.

In this sense we were all in deep waters, and one could argue that it could have ended with them not being able to cope with the openness, thus learning very little and producing a terrible presentation, because we did not have strong control with the solution, problem and the process. In this way such open-ended processes are sensitive, fragile processes that are not as easy to guide, control and assess. This prompts the question why these types of open ended learning processes are even important compared to more controlled, structured and well-defined processes where there are clear learning goals and notions of what knowledge and skills to achieve as an outcome of the process. This is something I will discuss and unfold by describing in more detail the challenges of the knowledge or learning society.

Understanding learning in the knowledge society

The argument presented in the preceding section requires that we take a step back and look at learning from a wider and more societal level of scale; namely the necessity of learning in the knowledge society (or what others call the network society (Castells, 1996, 2001), a global learning economy or the century of identity (Wenger, 2005)). It is against this backdrop we need to discuss how to understand study and design for learning.

Learning, education and ICT are envisioned as key factors in the global economy and the various nations' capability of learning, creating and innovating are becoming the crucial parameters of economical growth and wel-

fare.

> The last decade of the twentieth century has brought about significant changes in the global environment which, in one way or the other, bear heavily on the role, functions, shape and mode of operation of tertiary education systems all over the world, including in developing and transition countries. Some of these trends represent sources of opportunities; others constitute potential threats. Among the most influential changes are (i) the increasing importance of knowledge as a driver of growth in the context of the global economy, (ii) the information and communication revolution, (iii) the emergence of a worldwide labor market, and (iv) global socio-political transformations. (World Bank, 2002, p. 7)

Many authors, governmental and institutional bodies argue that we are increasingly moving away from an industrial model of society towards becoming a knowledge society, with the result that both work and learning are under transformation.

Challenges and transformations of education in the knowledge society

For education this entails that a quantitative change of learning alone is not enough (more education and at a higher level), rather we need to qualitatively change our ways of designing for learning and education to address the challenges of the knowledge society (Engeström, 2004; Paavola et al., 2004; The World Bank, 2002; Trilling & Hood, 1999; Wenger, 2005):

> "Today, in a number of scientific disciplines, elements of factual knowledge taught in the first year of study may become obsolete before graduation. The learning process now needs to be increasingly based on the capacity to find and access knowledge and to apply it in problem solving. Learning to learn, learning to transform information into new knowledge, and learning to translate new knowledge into applications become more important than memorizing specific information. In this new paradigm, primacy is given to analytical skills; that is, to the ability to seek and find information, crystallize issues, formulate testable hypotheses, marshal and evaluate evidence, and solve problems. The new competencies that employers value in the knowledge economy have to do with oral and written communications, teamwork, peer teaching, creativity, envisioning skills, resourcefulness, and the ability to adjust to change." (The World Bank, 2002, p. 29-30)

It seems to be increasingly recognised that we need to move beyond thinking of education as the mass production of skills towards models that favour critical thinking, problem solving and the ability of transforming information into new knowledge (or new innovative products and services to echo the more economically minded perspectives). Some of the reasons or trends underlying these needs are cogently summed up by Wenger:

> "(…) we will have to shift from an industrial model of education as the *mass pro-*

> *duction of skills* toward a knowledge-era model of education as the *customized production of individualized learning trajectories*. (…) Trends would suggest that finding a universal curriculum beyond a few basic skills of literacy is going to become increasingly difficult and less and less useful. The main reasons for this hypothesis have already been mentioned:
> * the destabilization of cultural canons, which make curricular decisions arbitrary and indeed divisive
> * the increased access to information and peripherality, which allows students to find sources of content other than educational institutions
> * the individualization of trajectories of identity, which focuses students on specific goals
> * the receding of common ground as the main source of social cohesion in favor of boundary crossing
> * the shorter half-life of knowledge, which makes it less likely that what a student learns in school beyond the very early years of "basics" remains relevant later in life." (Wenger, 2005, p. 44)

This suggest that the idea of schools and education providing the students with a large, stable body of knowledge, which they can then apply and draw on for the entirety of their future career, is increasingly becoming unviable. With the half-life of knowledge becoming shorter, we need to move our focus from 'knowledge' as a static entity onto the continuous process of 'knowing' or learning (learning to learn or enhance our learning capabilities). As reflected in one of the trends identified by Wenger this also has to do with the world becoming smaller in the sense that access to information and ways of participating in different practices (or at least being given a window into them) have been altered by information and communication technologies; This is also articulated in other authors' reasonings revolving around the difference between the industrial society and the knowledge society:

> […] the school and learning praxis of the industrial age have the characteristics of a time slotted and scheduled organisation with curriculum-directed and primarily fact-based learning and classroom bounded communication. In this organisation the teacher is an instructor and a knowledge source. On the other hand, the school and learning praxis of the knowledge age have the characteristics of open, flexible, student-directed and primarily project- and problem-based learning. Learning and communication processes are not restricted to the physical classroom but take place in a worldwide communication with dynamic multimedia interactions and with the computer as a tool for all learning. (Holm Sørensen, 2005, p. 2)

The same changes are also prevalent in contemporary interpretations of 'literacy' where there is a movement away from focusing exclusively on the three R's, as for instance reflected in UNESCO's goal of universal literacy under the motto "Literacy as Freedom" (UNESCO, 2004):

> "This motto reflects the fact that over the past few decades, the conception of literacy has moved beyond its simple notion as the set of technical skills of reading, writing and calculating – the so-called "three Rs" – to a plural notion encompassing the manifold meanings and dimensions of these undeniably vital competencies. Such a view, attending recent economic, political and social transformations, including globalization, and the advancement of information and communication technologies (ICTs), recognizes that there are many practices of literacy embedded in different cultural processes, personal circumstances and collective structures." (UNESCO, 2004, p. 6)

The changes above call for a focus on continuous or lifelong learning and focusing on the ability to learn (learning to learn). They increase the needs for building up capacities for engaging with, analysing, transforming and creatively applying knowledge within new domains; rather than a focus on absorbing a large body of facts or specific skills. But also it encompasses a challenge of bringing together different arenas of learning and traversing boundaries between work, play and schooling; or settings couched as formal and informal learning environments (Holm Sørensen, 2005). These latter points I shall return to in more depth when discussing the notion of power users, as it does seem quite evident that children and young people are learning quite a lot through engaging with technologies in their informal learning environments. Furthermore, that there is a potential in these more informal learning processes which, however, has not been successfully reconciled with the formal educational system.

The metaphor of knowledge-creation

Paavola et al. (2004) argue that the challenges of the knowledge society prompt us to develop or consider new metaphors for learning, and they suggest a metaphor of learning which they call 'knowledge-creation'. They arrive at this concept through a discussion of two other metaphors of learning: the acquisition metaphor and the participation metaphor:

> Approaches belonging to the acquisition metaphor typically emphasize individuals, processes happening in individuals' minds, conceptual knowledge, and clearcut logical rules. (…) Approaches belonging to the participation metaphor typically emphasize communities, social practices, activities, and the situated nature of human cognition and knowledge. (Paavola et al., 2004, p. 569)

The two metaphors were initially suggested by Anna Sfard, as two overarching and somewhat incommensurable metaphors or perspectives on learning (that are nevertheless both needed to understand learning according to (Sfard, 1998)). However, through a discussion of the two metaphors Paavola et al. (2004) argue that both metaphors are insufficient to understand the notion of knowledge-creation:

> "The main focus of the acquisition perspective has been on the acquisition of knowledge that is more or less readymade or on clear-cut developmental rules or phases, rather than on the creation of something "expansively" new. The participation perspective typically has focused on examining how knowledge and practices are passed from one generation to another in traditional cultures or in cultures without substantial and deliberate changes or cultural transformations (see, e.g., Lave & Wenger, 1991). The focus has been on how newcomers become oldtimers by participating in cultural practices, not on the radical advancement of knowledge or practices." (Paavola et al., 2004, p. 569)

As an alternative Paavola et al. (2004) identify and discuss three frameworks that they consider to be different perspectives embodying the metaphor of knowledge-creation (Nonaka and Takeuchi's model of knowledge-creation, Engeström's model of expansive learning, and Bereiter's model of knowledge building). Through this discussion they arrive at the metaphor of knowledge creation which they regard as a metaphor more ample for the knowledge society:

> "Knowledge-creation models conceptualize learning and knowledge advancement as collaborative processes for developing shared objects of activity. Learning is not conceptualized through processes occurring in individuals' minds, or through processes of participation in social practices. Learning is understood as a collaborative effort directed toward developing some mediated artifacts, broadly defined as including knowledge, ideas, practices, and material or conceptual artifacts. The interaction among different forms of knowledge or between knowledge and other activities is emphasized as a requirement for this kind of innovativeness in learning and knowledge creation." (Paavola et al., 2004, p. 569-570)

The case in this thesis fits very well the descriptions of knowledge creation and also it embodies the visions of the learning processes needed in the knowledge society. It is an open ended learning process based on knowledge creation, inquiry and exploration, rather than focusing on the acquisition of a curriculum. It is a self-organised, flexible, horizontal process that is not time slotted, curriculum driven and at the same time it draws heavily on the incorporation of ICT as a mean to identify information, solve, communicate and present the problem solution; but also as a tool for supporting the collaboration.

I shall return to the metaphor of knowledge creation and how this metaphor is interesting in relation to discussing different views of learning and understanding learning as a process of patchworking.

The metaphor of learning as a process of patchworking

In the preceding sections I reflected on some of the conditions that afforded the learning processes in this case to unfold. Furthermore, I argued for the important and exemplary nature of the case by relating it to the wider challenges of the knowledge society. I shall now return in more detail to the notions of patchworking as a metaphor for learning. The first step in doing this is by returning shortly to the different components of the patchworking processes.

Throughout the thesis I have argued how patchworking is a continuous process of creating patchworks of different granularity, by bringing in different patches and pieces as resources for the discussions revolving around the different threads. Patchworks are not stable entities; on the contrary they are continuously reweaved and embedded as parts of larger patchworks. The process of reweaving consists in unravelling a patchwork, inspecting the seams and reweaving a new provisional patchwork; but also in aligning and comparing the patchworks with the conceptual (and moral) blueprint which can cause a reweaving and reconstruction of these blueprints. The reweaving processes are especially interesting in relation to learning, and therefore, I shall return to analysing the reweaving processes in more detail after discussing the different components of the patchworking process. Because apart from looking at patchworking from the perspective of cycles, processes and threads, we also need some analytical and theoretical concepts to connect more intimately the concepts of patchworking and reweaving with theories of learning, as to better understand the relations between ‘patches and pieces’, threads, cycles, processes and blueprints. This is something I shall return to after having discussed the components of patchworking and relating these also to technology.

In the following, I will therefore discuss the components of the patchworking process in relation to the analytical categories. This is because the relations between these different processes were not given in advance; rather the way of organising and orchestrating the entire process of patchworking was constructed and enacted as an important part of the learning process.

Components of patchworking – cycles, processes and threads

Below I have created a graphical representation of the relations between cycles, processes and threads. This is not a model meant to express the relations between these components in general, but a way of representing in a sketchy way the relations, as they played out in this particular case:

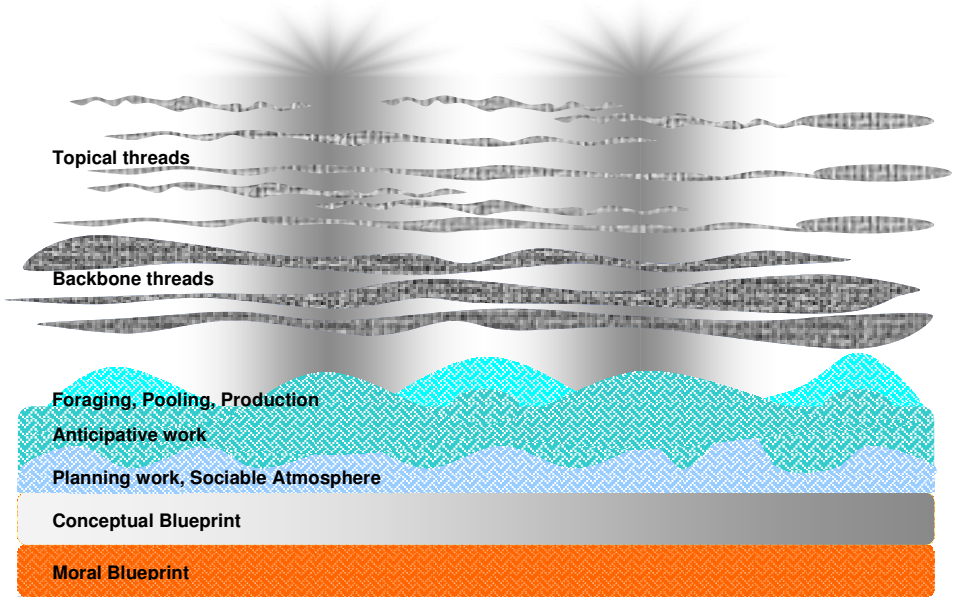


Figure 14: Components of Patchworking

When looking from a bird's eye view at the entirety of process we can identify processes, cycles and threads which almost seem to have followed a pre-established order. However, the emergence and organisation of work was very dynamic and organic, as I have described through the previous sections and the entire analysis. In this way the learning process did not only encompass finding a solution to a problem, through different enquiry processes, it also encompassed mastering and controlling the entire process of patchworking, the collaboration and the use of technology.

It is important to mention that the model should not be interpreted as a way of representing the entire process in detail. For instance the graphical representation suggests a temporal rhythm and sequential order which is not correct (neither are the numbers of the different cycles or different threads). The model should only be read as a way of graphically representing some of the relations between especially processes and cycles. Neither is the model

or the illustration an ideal-typical model of patchworking, it is a way of mapping and exploring the dynamics of a particular case and how these different threads, processes and cycles were organically organised or orchestrated creating a specific instance of a patchworking process. However, the components of the model might have wider analytical currency, as I shall return to when discussing the analytical framework.

Finally, one could wonder where the technologies fit into the model and how the relations are between the technologies and the different components, this I shall return to in more detail after having discussed the cycles, processes and threads in relation to each other.

The difference between the two cycles

Here I shall return to the distinctions between the two types of cycles, as they have been analysed throughout the thesis, namely cycles of 'remixing' and cycles of 'stabilisation work and production'. In the graphical depiction the cycles of 'remixing and patchworking' are represented by the red vertical columns.

The cycles of stabilisation and productive work, I have argued, are organised as work in smaller groups where they share, collaborate, select, add and align the new ideas to existing ideas or skip some of them. The results are negotiated, reified 'patchworks' (interview guides, proposals for an animation etc.) which embody their different ideas, inspirations, references and negotiations.

These in turn feed into the remixing and patchworking cycles which are where they deal more specifically with the backbone threads and the blueprints. This is where they engage in a collaborative negotiation of the more overarching questions 'what is their problem', 'what are the solutions and causes for poverty' and so on. In the cycles of remixing and patchworking they are consciously working with the backbone threads through reorienting, questioning and reweaving the very fabric and blueprint of their enquiry; should they work with Costa Rica as a model for other countries or understand Costa Rica as a problem-ridden country with unsolved problems of poverty? Redefining their 'problem space' or their conceptual blueprint impacts and transforms all the aspects of their work and suddenly brings other sub-parts into question, as e.g. is exemplified in their discussion of whether a new or altered perspective will cause them to reformulate all the questions in their interview guide.

The patchworks negotiated during the cycles of remixing and patchworking

are then fortified, developed and gain more flesh through the subsequent cycles of stabilisation and production. During these cycles they start creating different digital artefacts, such as the presentation or engage in translating and finalising the interview guide. In this sense there is an intimate relation between the two cycles where they continuously feed each other and the contractions and movements between them are an important dynamic in their work process.

I have repeatedly argued that the cycles of stabilisation and productive work should not be understood as routine or practical work, as they are equally processes of creatively negotiating, brainstorming and adding patches and pieces. However, the reason why I differentiate is because the cycles of stabilisation and production are focused on more discrete, bounded tasks. These are connected to and refer to the backbone threads, but the difference is that during their stabilisation work they do not directly negotiate, redefine, question and work intensively with the backbone threads or the blueprints.

Both cycles encompass the continuous process of reweaving patchworks through unravelling existing patchworks, inspecting the seams and the relation between the different patches and pieces and then reweaving them into a new patchwork. The reweaving of a patchwork then brings a provisional stability or a temporarily reified patchwork, such as a problem formulation, an interview guide or some ideas for how to progress with the work.

Threads and processes

The patchworks revolve around some threads which are orientation devices that cut across the entire process. Around these threads different little patchworks start to form, both as conceptual clusters of ideas, but also more tangible patchworks or artefacts, such as interview guides, slides, drawings and other ‘patches and pieces’ they forage or produce. In this way the threads increasingly become thicker and richer.

Some of the threads, I have argued, are backbone threads which are more general and persistent. For instance in this case they are the problem formulation/research question, the methodology, hypotheses (for causes and solutions) and the outcome/final presentation. Furthermore, some topical threads start to crystallise and become conceptually thicker; some of them live on through the entire process, whereas others dissolve over time. Also, different patchworks start to form around these threads, as different patches and pieces are brought in, which thickens (or contradict and kills) the topical

threads.

The developmental paths of the threads are then important to look at in relation to learning (which is what I have done in the analysis), as they represent the conceptual and "material" development of their work. Closely related with the development threads are the processes of continuously constructing, stitching and developing the conceptual blueprint. The conceptual blueprint is the blueprint for how the different threads, patchwork and 'patches and pieces' fit together and relate to each other e.g. "how do taxes affect the willingness of a large corporation settling in a country, thus creating new jobs", "why is education important to pay through the taxes"? The construction of the conceptual blueprint is also related with the process of stitching a moral blueprint or aligning the patchworks to the moral blueprint. The blueprints change and develop to different degrees throughout the learning process, as I shall return to shortly.

In the graphical depiction the two different blueprints are seen as forming some underlying structures. The blueprints are not in themselves processes, but the ongoing work of stitching and constructing them are. The conceptual blueprint continuously develops and becomes an increasingly clearer idea of the relations between the threads, the 'patches and pieces' and the different patchworks. As the topical and backbone threads start to thicken (or disappear) the blueprint also becomes clearer and more stable. While, the conceptual blueprint is a dynamic and changing entity the moral blueprint is less mutable and fleeting. The moral blueprint reflects the participants' more fundamental views of the world and is part of their identities, habitus or historical body (Scollon & Scollon, 2004, Wenger, 1998); both as individual persons, as a group and on a more national level of 'being a Dane coming from a high-tax welfare society with high level of equality'. In this sense the moral blueprint is more stable and backgrounded, as it reflects their cultural background, habits, norms and beliefs. Therefore, the conceptual blueprint can be seen as being constructed in the dynamics between the threads and processes of the work, and then their underlying moral blueprint. Reweavings of either blueprint are most predominant throughout the cycles of remixing and patchworking, but I will return to these two different blueprints, as I believe they are especially interesting in relation to understanding the "depth" or complexity of their learning processes.

The processes of creating a sociable and funny atmosphere and their planning work, I have placed in the same 'layer' of the graphical depiction. This is not because they are especially linked to each other, but because they both

have the same pattern of becoming foregrounded and intense for shorter periods of time, and then return to the background again. This for instance is visible with the process of creating a sociable atmosphere which is an ongoing and always active process that is continuously fed by small jokes, comments, funny sounds, singing, listening to music. But also sometimes the creation of a sociable atmosphere or 'having fun' becomes the main activity. Though it has the purpose of socialising and having fun, it is also weaved into the work and is an important precondition for much of their work. The creation of a sociable atmosphere is instrumental in negotiating a mutual identity or alignment between them in relation to the topic.

But it is also a way of reconciling their playful teenage identities with the global problem of poverty and situating themselves within this. Especially, the playful, cartoonesque tax-animation can be seen as almost a reification of this reconciliation, where the teen-identities and identities of concerned citizens of the world come together and celebrate each other's existence. Furthermore, the 'social world' does not exist in isolation from the topic and the work they are doing; rather the different 'worlds' are mutually constitutive and are constantly interacting, weaved together and affecting each other. They increasingly work with the problem not as an abstract, conceptual, decontextualised, impersonal problem, but as something that involves them at a personal level of engagement with the wider world. In this sense the social spaces are equally arenas for negotiating identity and different modes of belonging to, and aligning with the wider world (Wenger, 1998). Furthermore, we should not forget that the energy and motivation with which they engage in the whole enterprise is heavily dependent on them also establishing an enjoyable and cheerful environment. Their ability to cope with the uncertainties, working hard with the tasks and actually being able to accomplish this complex work, within a relatively short period, is heavily dependent on trusting, liking and enjoying being with each other. Their smooth, fleeting and mutable ways of planning and organising their work, distributing tasks, working with different persons is heavily reliant on the creation of a strong social fabric.

The planning work is an ongoing process or layer that they continuously orient to more or less overtly. Sometimes the planning work becomes a focal issue for a shorter period of time where they distribute tasks, exchange files or resolve who will go where, and who will do what part of the presentation. At other times it is a more silent layer of exchange where they engage in smaller, informal conversations and are coordinating between smaller groups. Here also much of their planning and coordination work is

carried out by moving around, changing group constellations and switching tasks. However, the planning work is also about being able to overview the entire process and trying to estimate, whether ideas for the presentations or questions for an interview are the most feasible way of proceeding, and if they are manageable. It is about foreseeing, negotiating and managing a project to estimate whether the work needed will actually match the results. In this way it is connected to the anticipatory work, but I will touch upon this concept more in relation to the cycles of remixing and patchworking.

In the graphical depiction of their work process I have tried to illustrate that some of the processes are more intensive at certain points in time. During the cycles of stabilisation work and production, especially the three processes of "foraging and gathering", "production of artefacts" and "creating a shared pool of knowledge" are predominant. This is where they find all the different "patches and pieces" or produce these. But they do not start to reweave the conceptual blueprint or question their overall problem when they encounter corroborative or disruptive 'patches and pieces'. The disruptions are mentioned, acknowledged and made part of e.g. an interview guide and can spawn the emergence of new threads for enquiry, but the larger patchwork and blueprints are not reorganised or worked with directly. During their foraging processes their tentacles are everywhere and they grab ideas, information, interpretations and digital artefacts, thus adding a lot of disparate chunks or pieces to the pool, which are then later connected, related and stitched into more coherent chains of arguments and patchworks.

In relation to such processes it is quite important to mention that foraging 'information' is quite a bleak word because through e.g. the interviews they are not only gaining valuable information, they are equally experiencing and exploring different real-world practices and activities. Therefore, the learning and patchworking processes are not restricted to identifying reifications, texts as objects or 'information', but also consist in real-live experiences and encounters with people working professionally with the problems of poverty, who share parts of their research, life and knowledge with the young people. Thus, as earlier mentioned, we can talk about the entire process as involving boundary-crossing and boundary exploration. This is actually true in many different ways (coming to Costa Rica, presenting to professionals and non-teachers, working with researchers and students). But also the different artefacts and information they get hold of are examples of how knowledge travels and transfers between different contexts. This is not really a question of transfer or travel, but more a transformative process in that the different 'patches and pieces' have to be actively weaved into the

patchwork.

While the foraging and gathering processes and the production of artefacts are processes directed towards finding or producing different 'patches and pieces' it is during the remix and patchworking cycles these are stitched together and start to form more coherent patchworks and clusters of ideas. However, the information, ideas and interpretations that they find, need to be aligned with or worked into the blueprint; or alternatively the conceptual blueprint needs to be reorganised and reweaved. Through these processes of reweaving and reorganising the blueprint they develop different chains of arguments and construct relations between the different 'patches and pieces' which also feed into the shared pool of knowledge. These smaller patchworks and chains of arguments then become part of the shared pool of knowledge and can act as argumentative resources or more unfolded sets of reasoning ('Education is good' towards: Education is an important measure in creating and sustaining civic participation in democratic processes; or people can come to see education as a way of empowering themselves thus creating a more constructive future).

Here the notion of anticipatory work is also important, as this is a process of simulating the strength of a claim and holding it up against possible or imagined counterclaims, obstacles or practical conditions that will render the idea or argument naïve or spurious. This is an act of imaging, inventing and simulating a possible future scenario which can act as 'testing ground' for ideas and interpretations. During their anticipative work these are then scrutinised, criticised or corroborated and confirmed. The anticipative work, like the planning work, is a process that is continuously present, as it is tightly connected to the planning work; but during the cycles of remixing and patchworking it becomes especially important. This is because the anticipatory work is about testing and querying into an idea, which can often cause a reweaving of the patchwork – and when discussing ideas that interact with the conceptual blueprint, this may cause reweavings of the conceptual and moral blueprint.

What is worth noting is that the relations between the processes, cycles, threads and the reweavings did not just play out automatically or followed a pre-designed plan; when and how to engage in collaborative reweaving and planning processes, to discuss the problem, to produce slides, to search for or discuss information, to discuss jobs and taxes, create subtitles, plan the presentation and so on was emergent, constructed and continuously negotiated amongst them (as we for instance saw when Sophia unsuccessfully at-

tempted to coordinate and initiate a cycle of remixing and patchworking).

In this orchestration and organisation of their collaboration the use of technologies also played an important role. Therefore, before entering in more detail into the reweaving processes, I will discuss the role of technology in relation to the different components of patchworking, as the technologies play a pervasive role in the whole patchworking process of the young people.

The roles of technology in relation to the process of patchworking

The different technologies, as I have shown in the analysis, have many different roles and functions. In relation to the development of the threads they play an important role in foraging many of the 'patches and pieces' that are used in the course of the entire process of patchworking. In relation to the two cycles, the technologies are mobilised in slightly different ways, and in general the technologies are more visible during the phases of their stabilisation work and production. However, as I argued in the analysis the technologies also play out differently in the cycles of 'remixing and patchworking'.

The reason for not locating the technologies e.g. as a layer in the model is that the technologies are part of the whole process of patchworking and pervade all the different processes. They are used as storage, for editing, reifying, foraging information, but also they are used for creative production of digital objects and as mediational means in restructuring and reweaving the patchwork, as we saw in chapter 8. Here the slides, the whiteboard and the foraged facts became instrumental in reweaving the relations between threads, blueprints and the 'patches and pieces'. Especially, the dynamic space constructed between the whiteboard and the different slides became a part of dynamically reweaving the patchwork. The technologies are thus quite pervasive, and are used actively in relation to the different processes.

While the technologies are an important part of the topical and problem oriented work, they are also supporting and reflecting the social processes. For one thing the computers are used as entertainment machines: playing small games, used as doodle pads and listening to music. However, the computers also act as repositories for their jokes and narratives and are part of what I have termed reifuncation. As part of creating a sociable and funny atmosphere there is a continuous process of participation and rei*fun*cation. It is enacted both through their dialogues, through which they create a shared

repository of jokes, histories and references. But equally, this shared repository, their mood, cultural references and their liveliness are produced through and reified in the materials they leave behind: drawings, little poems, letters, puns and references (e.g. the strange file names, Hakuna Matata-drawing/Lion King references and references to the song Imagine). These reifuncations also become sociable resources, when they are brought back into the dialogues, looked at, made reference to, shown to others or in the course of producing them. The young people are just very lively and happy, which plays out both through the cacophony of funny noises, jokes and songs, but equally through the dynamics inherent in producing and using the reifuncations as sociable resources.

This playful use of the technology also becomes part of their productions (the presentation) and the sociability and fun is weaved into the seriousness, through their playful post-modern'ish productions which are full of references, playful irony, genre-parodies, play on stereotypes and conventions etc. As I mentioned in the previous section the playful, cartoon or tax-animation can be seen as a reifuncation and reconciliation where playful teen-identities and identities of concerned citizens of the world shake hands and mutually recognise each other.

Some of the processes are more intimately related to the use of technologies, such as the foraging of information, creating a shared pool of knowledge and obviously the production of artefacts, but as I have also pointed out it is not a matter of technologies in-and-off themselves. Rather, it is the way in which the technologies become part of their processes of patchworking, their reweavings and negotiations. Foraging information and creating a shared pool of knowledge is equally located and enacted through their interactions where they share facts, observations and interpretations.

An important observation in relation to this is how they collectively make sense of the resources, ideas and materials that they come across, and how these are actively weaved into the patchwork. This is not to underplay the role of the technology, as quite apparently access to the internet greatly extends the reach of their sticky tentacles. However, to simply state that they 'find information' or 'search for information' would completely overlook the inherent dynamics and the relational nature between 'information on the web' and then how this 'information' is foraged, appropriated, made sense of and weaved into the patchwork through complex negotiations and discussions. This is evident already from their first work meeting where the foraged information is brought to live through their discussions, adding of

ideas and how they relate and stitch the ideas into patchworks forming small clusters of ideas; we see it in Diana's negotiations with others and her own reflections of what constitutes or portrays poverty when she is searching for pictures. Equally, the whole collective process of negotiating and transforming the 'objective facts about poverty' into persuasive statements, or working in the slides, which profoundly reweaves the whole conceptual blueprint, testify to the complex interplay.

In relation to the notion of producing (or transforming artefacts) we should also note that these are more complex constructions than encompassed in e.g. terms like producing artefacts, or creating an animation, subtitling a video and so forth. These processes are for one thing about mastering the use of technology with a relatively high-level of technological skill (e.g. using the programs), but equally they are related to competences such as being able to construct a good narrative and orchestrating various modes of communication and multimodal forms of expression (Holm Sørensen, 2005). As an inversion of this argument, it is also interesting to mention how the anticipative work and planning work rely on and interact with their technological skills. The technologies play in important role when they are trying to imagine and test out different ways of doing their presentation, as their previous experiences with and skills in using technologies are used as imaginative resources to structure their discussions. For instance this plays out in their discussions about the manageability of various ways of creating a presentation (movies or PowerPoint animation), as to be able to estimate and plan their workload. But also the experiences and skills are used to imagine and simulate how to employ the different technologies to convey their message in the most engaging and understandable way. In this way their experiences and knowledge of various constraints and affordances of different technologies are used as *imaginative resources* in their planning processes and anticipative work. However, there are equally examples where the technologies become very *concrete and 'physical' resources* which form inseparable parts of the processes of planning, anticipating and reweaving. In chapter 8 we see how 'the slides', 'the word document' and 'the whiteboard' are used as structuring devices when developing the work plan and reweaving the conceptual blueprint.

Finally, we should add in relation to the use of technologies that they are also very pragmatic in their use of different mediational means. For one thing, they do not necessarily cling to their computers, but use paper, whiteboards, pens, whenever they feel like it. Also, their final presentation is an assemblage of both digitalised presentational means, but equally spatial,

oratory and bodily performances. I have argued that this can be seen as connected to a critical, reflexive stance in relation to the role of ICT which is enacted in many different ways. For one thing they are clearly critical about what information the can find on the web and reflexive about what they do find; but equally this reflexivity can be seen in relation to the already mentioned reflections on different presentational means (how to convey the message in a persuasive and engaging way, while also being able to manage and carry it out).

From the above it is clear that the relations between the components of the patchworking processes, their ways of organising and carrying out their work, and the technologies are quite intimately related and mutable, by which I mean that the technologies are utilised and employed in many different ways in relation to the different components of patchworking; but equally in relation to the individual components. 'Foraging of information' or their 'planning work' do not reflect one particular way of using technologies; rather the technologies and the processes interact and mutually affect each other in a variety of ways. Rather than thinking about the technologies as being 'tools' for information search or for producing presentations we need to look at the inherent dynamics and the relational nature between the technologies or technological artifacts and then how they are appropriated, made sense of, interacts with and are weaved into the patchwork through complex negotiations and discussions. This suggest that one of the focal points in understanding the relations between technologies and processes of patchworking is to focus on the way in which technologies are mobilised and fuse into the creation of patchworks, and how the technologies become pervasive, dynamic parts of processes of reweaving and patchworking. I shall return to elaborate some of these points when discussing the notion of power users, but also in relation to the notion of reweaving which I will describe in more detail in the following sections.

The process of reweaving a patchwork

In the previous sections I have unfolded the notions of patchworking and reweaving in relation to the cycles, processes and threads and in relation to the use of technologies. In this section I will try to relate the notion of reweaving more intimately with learning theories. This discussion will take its departure in looking more detailed into the architecture or composition of a reweaving process. In doing this, I am inspired by Engeström's expansive cycle (Engeström, 1987, 2001, 2005) because the reweaving process can be seen as small cycles of expansion or innovation. But there are also some dif-

ferences, as the outcome or object of reweaving processes are not about modelling or constructing societally and culturally new activities and practices. Engeströms model of the expansive cycle consists of seven (ideal) steps (see e.g. Engeström, 1999, p. 383-384):

1. *Questioning*, criticising or rejecting aspects of an established practice
2. *Analysing the situation* by finding causes or explanatory principles. This can happen through different kinds of analysis. Historical genetic-analysis (tracing origin and evolution of the practice) or actual-empirical (explain the situation by analysing the inner systemic relations of the practice)
3. *Modelling a solution* – construction of an explicit, simplified model of a new idea that offers a solution to the problem
4. *Examining the model* – running, operating and experimenting on the model to identify potentials and limitations
5. *Implementing the model* – concretising the model by practical application
6. *Reflecting on the process* and evaluating the model
7. *Consolidating the new practice*- the outcomes are made into a new, stable form of practice.

First of all these steps reflect a slightly different scope than does the notion of reweaving a patchwork. Engeström uses the model to analyse and understand the construction and modelling of new forms of practice, whereas the notion of reweaving a patchwork also aims at describing smaller and more humble processes of idea generation, and the creation of small patchworks. The expansive model of Engeström seems to be slightly more finite and have a sturdier and robust outcome built into the model itself (the formation of a new practice).

In contrast to this, the notion of "reweaving a patchwork" does not have any specific level of scale connected to it. The process of reweaving a patchwork can be thought of as happening within a few minutes (or less) where an idea, such as an outline for the presentation, is unravelled, inspected and reweaved. But equally, we can think of the reweaving process as representing the entirety of a process, as for instance in this case where the final presentation and argumentation constitute a 'final' or larger patchwork. This 'larger' patchwork is constructed through a lengthier process consisting of

multiple smaller cycles of reweaving where small provisional patchworks are joined and reassembled into increasingly larger patchworks that form a "final" patchwork. The smaller patchworks do not haphazardly and suddenly join into a larger patchwork. The process of patchworking equally encompass the process of stitching and constructing a conceptual blueprint which evolves, develops and is reweaved in dynamic interaction between the underlying moral blueprint and the threads, patches and pieces and the different processes. It is through this entire process that a larger or "final" patchwork is constructed. By using quotes around final I mean to point that the 'final' patchwork is not a 1:1 model of what has been learned; for as we have seen many patches and pieces and threads have been left out of the final patchwork. Secondly this 'final' patchwork may itself become a 'patch and piece' in other patchworks, as the young people or others might in turn use some of these in other settings. In this sense the results of patchworking processes or the different patches and pieces that have gone into the production of it, might in turn show up in different settings and contexts (for instance one of the participants at the conference was very happy with the tax-animation and wanted to send it around to a political mailing-list – and also joked about sending it to President Bush). In this sense patchworks can be more modest, small, fleeting and mutable contributions to the world which may, however, suddenly become widespread.

Furthermore, the expansive cycle as laid out by Engeström also seems especially aimed at resolving problems and contradictions. The contradictions are sometimes built into the model where each step aims at addressing and resolving different levels of societal or systemic contradictions (primary, secondary, tertiary and quaternary types of contradictions) (Engeström, 1987, 2001).

In contrast to this the notion of reweaving a patchwork does not necessarily take a problematic situation as the outset. Even though, reweaving a patchwork is often a process of questioning and criticising the composition and pattern of the existing patchwork, it is not only a deconstructive process. It is equally driven by new ideas that suddenly pop up from the conversation, are drawn from the shared pool of knowledge, or created through a wormhole opened to "something someone said somewhere at some time". The new ideas are not necessarily a response to a problematic situation or aimed at resolving some immanent contradictions of a practice, but can be suggestions and ideas that just arise inspired by the discussion. Such new ideas can prompt a reweaving as well because the new idea need to be worked in, which means that one has to temporarily unravel and reweave the patch-

work.

As such, there are some differences between the notion of reweaving a patchwork and then Engeström's cycle of expansion, but also some of the elements are similar, as we shall explore in the following by taking departure in the graphical depiction of the reweaving process:

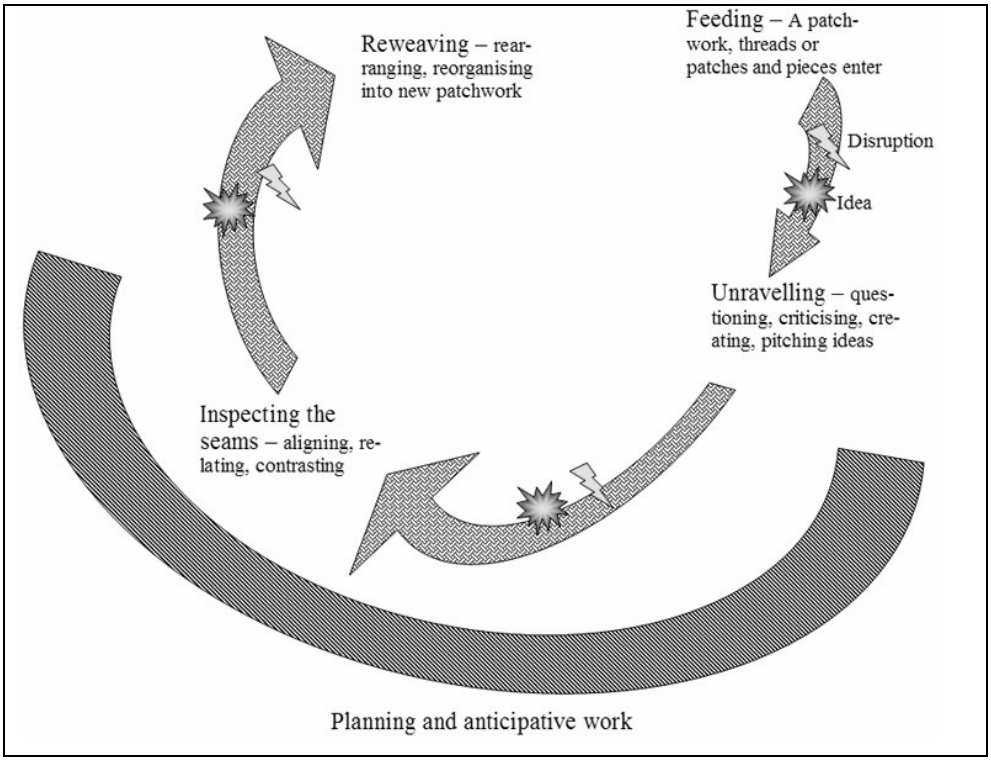


Figure 15: The process of reweaving

The process of "reweaving a patchwork" takes it departure in a patchwork, thread or some more loosely coupled patches and pieces that enter onto the working table. Here the patchwork is initially unravelled and pulled apart through a process of criticising and questioning an existing idea. Alternatively it can take departure in the emergence of a new idea that causes the need for reweaving the patchwork. The different patches and pieces are pulled apart, criticised, questioned or new ideas or patches and pieces are added or created (this process could be compared to the steps Engeström terms questioning and analysing).

The notion of inspecting the seams follows the unravelling process, as it is about inspecting the relations between different patches and pieces and the

conceptual blueprint or entire patchwork; how does an idea or slide fit in, are property taxes an issue we should go into? Can we do an animation and how would that convey the idea of education? Inspecting the seams is about contrasting and aligning the different patches and pieces with each other to see if they contradict, confirm or render other patches and pieces obsolete or wrong. This also encompasses aligning and comparing it to the conceptual and moral blueprint. This could be compared to the steps of modelling a solution and examining the model, as it is about coming up with a provisional "solution" and inspecting it in relation to the blueprints and other patches and pieces.

Finally follows a phase of reweaving the patchwork into a new provisional patchwork, which is done through rearranging and reorganising the different patches and pieces into a new patchwork which can then again become unravelled. This could be likened to the step of 'implementing the model', though it is not an implantation of a model, but rather the creation of a small provisional patchwork which can quickly enter a new cycle of reweaving.

I have also added the planning and anticipative work as part of this cycle, as especially the anticipative work is very important in the process. The notion of anticipative and planning work carry some resemblance to what Engeström coins 'examining the model', though I do not take it to be a separate step in the cycle. I see it as something which can be a part of all the different phases, and can be drawn in at any point. As we have seen from the analysis, it can be used as a part of a critique (for instance Jack raises a critique of an idea through asking the others to imagine how that would work in practice when standing on the stage), but equally, in reweaving or weaving a new patchwork the new idea is simulated and tested.

However, the idea of depicting the model of reweaving a patchwork is not to create a rigid or sturdy model for analysis of reweaving processes, but rather to highlight the idea of how dynamic and vivid the processes are. The reweaving processes sometimes follow more or less the cycle where the process is started by an idea being introduced or a disruption that causes the initial unravelling, inspection and then the creation of a new patchwork. But also the reweaving processes can often take the character of whirlwinds where one might not go through the entire cycle, but jump back and forth, as disruptions and ideas erupt at any stage in the process (which is equally true for the expansive cycle (Engeström, 2005)). Sometimes reweaving processes are quick and dirty exploration of adding a bit to an existing patchwork, but at other times they can become more time consuming and go

through many different iterations, while spawning multiple, overlapping, unfinished cycles of reweaving.

This is dependent on what enter or is the object of the reweaving process and how it affects and draws on the different types of threads; and more importantly how it affects or draws on the conceptual or moral blueprint. Sometimes a new idea or critique can easily be assimilated (to use a Piagetian term) into the existing blueprint or it fits well with an exiting thread, but at others times this becomes an accommodative process where the thread or the blueprints need to be revised and re-organised. In this sense we can talk about the 'depth' of a reweaving process and that the reweaving can expand to different layers:

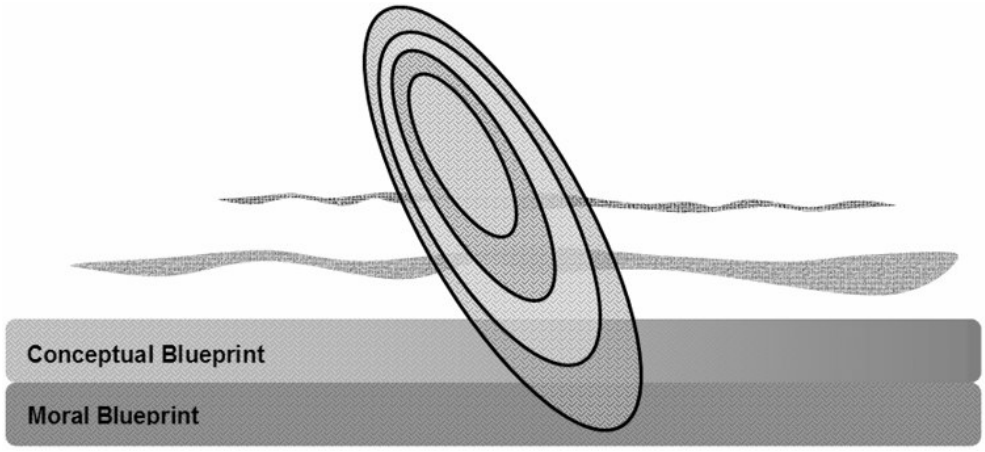


Figure 16: Layers in the process of reweaving

The aim of the model is to express how the reweaving processes can involve the reweaving and reorganisation of different "depths" or levels of threads and blueprints. The different circles represent 'a process of reweaving a patchwork', and that this process can have different extension and span various levels:

- the topical threads
- the backbone threads
- the conceptual blueprint
- the moral blueprint

This also means that the different 'patches and pieces' which enter as disruptive or corroborative to the threads and blueprints have different impact,

and thus cause reweaving and reorganisations at different levels.

The depiction is illusive in the sense that it could suggest that only one thread at a time is under scrutiny or that there are clear cut differentiations between the entities which can easily be distinguished analytically from each other. But as it should be visible from the analysis the actual reweavings can be very dynamic and jump back and forth between different the 'levels', involve several threads or feature fast-paced switch between them.

The different depths or levels are in many ways comparable to Engeström's reconceptualisations of Bateson's levels of learning (Engeström, 1987), as e.g. a strong disturbance or disruption (double bind situation) on the level of the moral blueprint could be interpreted as being the same as the individual explosive learning (if the individual is taken as the unit of analysis). Equally, I believe we can talk about patchworking processes as expansive learning depending on the level of reflection and reweaving carried out during a process of patchworking. However, this requires a discussion of what is meant by 'expansive learning'.

Patchwork learning as expansive learning and knowledge creation?

In Engeström's theoretical framework the concept of expansive learning take the form of collective transformations of systems of activity, through which different contradictions are resolved and crystallise into the creation of societally and culturally new systems of activity (Engeström, 1987, 2005). In recent articles Engeström (2004) also coins it 'radical exploration' and couples it tightly with the notion of co-configuration work. The idea of radical exploration (or expansive learning) is interesting to explore a bit more in relation to patchworking:

> "Radical exploration is learning what is not yet there. It is creation of new knowledge and new practices for a newly emerging activity, that is, learning embedded in and constitutive of qualitative transformation of the entire activity system. Such a transformation may be triggered by the introduction of a new technology, but it is not reducible to it. Radical exploration is the most poorly understood and historically most interesting type of learning." (Engeström, 2004, p. 15)

As Engeström argues former and contemporary theories of learning often fall prey not to able to understand and model learning as the creation of something new. I find that one of the most important insights of Engeström is exactly pointing out that processes of creation, creativity, production or in more broader terms 'how the new is generated' are very important to under-

stand and analyse to shed light on learning. Historically, theories of learning have predominantly been focused on acquisition of existing knowledge which means focusing on learning processes where the goal is for the learner to acquire and reproduce an existing well-established body of knowledge (Engeström, 1987, Lave & Wenger, 1991). However, this view of learning is quite problematic:

> "Certainly, any simple assumption that *transmission* or *transfer* or *internalization* are apt descriptors for the circulation of knowledge in society faces the difficulty that they imply *uniformity* of knowledge […] These terms imply that humans engage first and foremost in the reproduction of given knowledge rather than in the production of knowledgeability as a flexible process of engagement with the world." (Lave, 1996, p. 12-13)

While the model of transfer and transmission have been continuously criticised by many authors, it also seems fair to say that the models of knowledge and learning as transfer and transmission have been (and are) quite widespread in many schools, organisations and educational institutions (Engeström, 1987; Lave & Wenger, 1991; Paavola et al., 2004; Trilling & Hood, 1999); although experiments with transforming schools into 'knowledge creation schools' have been undertaken (Engeström, 2005; Holm Sørensen, 2005).

The transfer model and its embodied concepts of education and learning are under pressure and increasingly challenged by the emerging paradigm of the knowledge society, with the focus on nurturing creativity, innovation and entrepreneurship. This increasingly forces us to think about learning in the terms of knowledge creation, rather than acquisition, transfer or internalisation, as I have also laid out in a preceding section.

However, I think Engeström's descriptions of expansive learning suffer from a problem of scalability, or at least I do not think it is sufficiently clear, what actually constitute 'societally and culturally new systems of activity'. Often the terms are employed in e.g. analysis of workplace transformations where new ways of collaborating and new work practices are invented, thus changing and transforming large-scale activity systems, through the creation of new artefacts and practices (Engestrom, 2001). It seems that the notion of expansive learning is tightly connected to larger scale transformations of work practices or major cycles of organisational development. For instance in an analysis of the collaboration between a team of engineers where the ideal typical cycle of expansive learning is used as an analytical tool, Engeström concludes that the learning is only potentially expansive, as it does not reshape the entire system of activity.

> "Miniature cycles of innovative learning should be regarded as *potentially* expansive. A large-scale expansive cycle of organizational transformation always consists of small cycles of innovative learning. However, the appearance of small-scale cycles of innovative learning does not in itself guarantee that there is an expansive cycle going on. Small cycles may remain isolated events, and the overall cycle of organizational development may become stagnant, regressive, or even fall apart. The occurrence of a full-fledged expansive cycle is not common, and it typically requires concentrated effort and deliberate interventions. With these reservations in mind, the expansive learning cycle and its embedded actions may be used as a framework for analyzing small-scale innovative learning processes." (Engeström, 1999, p. 385)

> "To define the entire cycle as the *basic unit of expansive learning,* and consequently of developmental instruction, means that we are dealing with learning processes of considerable length. The intensive formation of a historically new activity system within a limited community or collective (e.g., workplace, school, family, trade union) is typically a matter of months and years. During such a period of creation, there appear iterative transitions back and forth between the phases of the cycle." (Engeström, 1987, p. 191-192)

In this way the demarcation line between innovation and expansion seems not to refer to the process itself, but rather the subsequent structural impact of the learning process and notions of temporal extension. Similarly in the article 'New Forms of Learning in co-configuration work' Engeström (2004) identifies four overarching modes of learning which are depicted in the figure below:

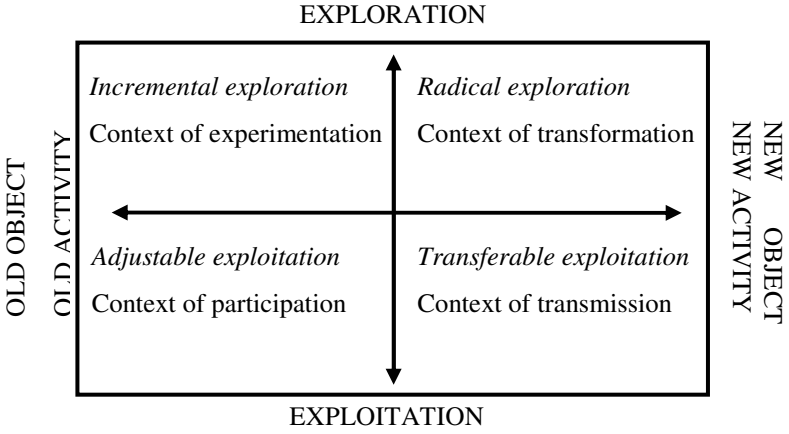


Figure 17: Four modes of Learning (Engeström, 2004)

The vertical and horizontal dimensions represent different modes of learning. On the vertical scale a distinction between *exploiting* or using what is already known and then the *exploration* for new knowledge is made. On the

horizontal scale there is a distinction between the *given context* and what Engeström coins the *newly emerging context*. Four different modes of learning emerge from this matrix:

- *Adjustable exploitation*: Cases in which there is a gradual acquisition and internalization of already established knowledge and skills within a given activity/context. Engeström compares this to apprentice-ship learning as an organisational form of work and learning. The mode of learning is about gradually acquiring and internalising existing knowledge on a certain subject or matter.
- *Transferable exploitation*: Cases in which already known knowledge from one domain is 'transferred' to another domain where this knowledge has not formerly existed. Engeström compares this to American businesses learning from Japanese organisations of work.
- *Incremental exploration*: Cases in which new knowledge is constructed through experimentation within the given context. It differs from modes of exploitation in that the knowledge is not pre-existing, but the context in which this new knowledge emerges is stable and known. Engeström compares this to an implementation of a new software system in an organisation. How it will work and how it should work is a matter of experimenting with different configurations through trial and error.
- *Radical exploration*: In a process of radical exploration new knowledge is also constructed, but the difference is that it does not do so within the given context, rather the context itself is changed; the existing knowledge is not obliterated or made irrelevant, but must be re-interpreted and re-constructed in the course of creating a new context and new practices.

The notion of radical exploration is laid out in one of the previous citations where we again encounter the notion of expansion as tightly connected to the development of societally and culturally new modes of activity. One could then argue that this is a simple problem of semantics where the notion of expansive learning can then be called innovative learning processes, if it does not transgress longer-term, temporal scales and encompass large scale transformations of societal and cultural systems of activity. However, the problem has deeper roots, as is has to with some of the initial thoughts or fundamental theoretical concepts expressed in the theory of expansive learning, through different levels of learning.

The problem is for instance that the other mode of learning dealing with exploration (incremental exploration), rather than exploitation, is largely equal to what Engeström coins as learning IIa+b:

> These two aspects of Learning II may be named (a) reproductive and (b) productive, for the sake of simplicity. In Learning IIa, the object/outcome is given and the instrument is found through trial and error, that is, through 'blind search' among previously known means. In Learning IIb, the object/outcome is given and the instrument is found – or rather invented – through experimentation. (…) At the first glance, Learning IIb would seem to be true learning activity. However, Learning IIb is still typically restricted to the insightful, experimental solution of *discrete, given problems.* In this sense, Learning IIb is essentially discontinuous, limited to the level of actions. The creation of new instruments within Learning IIb is potentially expansive – but only potentially. Learning IIb does not in any automatic manner imply that the context of the given problem is broken and expanded." (Engeström, 1987, p. 148)

In contrast the notion of learning III, which for one thing differs from learning II in that it features the conscious resolution of double binds, is then divided into three different modes: individual explosive (personal crisis, moments of revelation), the gradual collective (collective gradual societal development where small innovations become part of the larger social fabric) and then the collective expansive (which equals radical exploration/expansive learning). The latter is based on the collective production of historically new forms of activity, by resolving systemic double binds, through the invention or conquering of instruments:

> "Double bind may now be reformulated as a social, societally essential dilemma which cannot be resolved through separate individual actions alone – but in which joint co–operative actions can push a historically new form of activity into emergence. The mastery of double binds is first of all historical analysis or historical intuition of the inner contradictions of the activity system the subject is a part of. Here we come back to the instruments. To be inventive in a dilemma situation is to invent a new instrument for the resolution of the dilemma. This demands experimentation, borrowing or 'conquering' already existing artifacts (such as letters in the case of the Children's Campaign) for new uses." (Engeström, 1987, p. 165)

While I very much agree with the gravity of the learning process expressed in the history of the Children's Campaign for Nuclear Disarmament (which the citation refer to, and I shall return to), I still find it somewhat problematic that the learning process or the levels of learning becomes entangled with the outcomes and the level of scale. This could be interpreted to mean that the level of the learning process must be understood tightly in relation to its impact on, or the creation of large-scale societal and cultural practices and activities. While I do appreciate the notion of collective expansive

learning as a category in itself, I find it problematic that many learning activities then seems to be confined to or "restricted to the insightful, experimental solution of discrete, given problem" because they do not create large-scale systemic transformation. Are the 'small innovative learning cycles' of the Engineering Team then examples of Learning IIa+b, because they do not have wider impact on the entire system of activity? This cannot really be the case, as the small innovative cycles are exactly argued to be phases of problem construction or problem identification, rather than the solution of a discrete, given problem (Engeström, 1999, 2005):

> "Both meetings also demonstrate the crucial role of object/problem construction in innovative learning. The initial existence of a shared problem or task can rarely if ever be taken for granted in work teams. In fact, actions directed toward constructing a shared understanding of the problem took a lion's share of both discussions. The innovative solution itself seemed to emerge as a final burst after the painstaking period of object construction." (Engeström, 2005, p. 360)

Engeström also mentions the difference between problem solving and problem construction, although this is taken to mean that problems given to workers or pupils rarely stay intact, but must be interpreted, made sense of and turned into a shared understanding. However, the notion of problem construction, rather than problem solving is quite crucial in relation to understanding the differences between some of categories of learning that Engeström has proposed, as I will return to.

Between the solution of discrete problems and collective expansive learning

The case in this thesis actually fall in-between the categories, as it cannot, I believe, be said to encompass transformation or creation of societally and culturally new practices or systems of activity. The young people in this thesis do not experience personal crises or resolve critical double binds of their life, and they do not transform or create societally and culturally new collective practices or systems of activity. But neither are they working with a discrete given problem, and nor are the objects and outcomes given; rather the problem, object and the outcomes are continuously being constructed and negotiated. This is not only a discussion which is relevant for this case, as in a wider sense this would be equally true in many instances of PBL or POPP processes, as I mentioned in Chapter 2. One of the distinctive features of this pedagogical approach (in contrast to other interpretations or pedagogical designs of PBL) is exactly that the problem is *not* given. The learning processes do not unfold in staged sequences scaffolded by the teacher where the object and the outcome are given; as Engeström himself points

out *"the idea of scaffolding is restricted to the acquisition of the given"* (Engeström, 1987, p. 171). Rather, the problem is an emergent and changing object and so are the outcomes and the artefacts employed (or invented) in working with the problem. The artefacts or instruments (theories, methods, methodologies) are not given or fixed; rather they emerge as needs or tools to resolve the problem at hand (and new combinations of theories and methods are often an outcome of the enquiries and problem solution). However, the outcomes are not necessarily the transformation or creation of societally and culturally new practices or systems of activity (though in some cases this actually does happen). It seems that we have two examples of a learning activity, practice and pedagogical approach that do not quite seem to fit in either of the categories proposed by Engeström. Therefore, I believe we are in need of a category that can capture processes that lie in-between 'resolution of given, discrete problems' (or incremental exploration) and then the 'collective expansive' transformation of larger cycles of cultural and societal (radical exploration).

The issue raised here, I would argue, is equally reflected in the article by Paavola et al. (2004) where they analyse and compare three different theories of knowledge creation, with Engeström's theory of expansive learning being one of them. With reference to expansive learning they write.

> "Even if the product that emerges from students' efforts lacks wider cultural value as an innovation, it is most important for students to engage in knowledge-creating inquiry and to develop a corresponding identity— that is, to consider themselves to be not only consumers but also creators of knowledge. They may create knowledge for their local community, and they certainly can create knowledge in relation to their own initial position as learners. These kinds of considerations make evident the value of restructuring educational practices in accordance with knowledge-creation models." (Paavola et al., 2004, p. 572)

From this citation they seem to adopt the same understanding of expansive learning, as I have also argued can be interpreted from Engeström's theory; namely that the defining characteristic of 'expansive learning' can be identified by its societal and cultural impact. At the same time one can also sense an argument that we need to understand more modest contribution as instances of knowledge creation, though the authors do not enter in detailed discussions of how to understand this type of knowledge creation; apart from in flexible terms that are more open to interpretation, as expressed in an earlier used citation:

> "Learning is understood as a collaborative effort directed toward developing some mediated artifacts, broadly defined as including knowledge, ideas, practices, and material or conceptual artifacts. The interaction among different forms of knowledge

> or between knowledge and other activities is emphasized as a requirement for this kind of innovativeness in learning and knowledge creation." (Paavola et al., 2004, p. 569-570)

This opens to a more inclusive view of expansive learning or learning as knowledge creation, as for instance this could equally be used to describe the case in this thesis. But the tensions, contradictions, differences and relations between the seemingly smaller-scale types of knowledge creation and the larger-scale "wider culturally valuable" innovations (expansive learning) are left somewhat unexplored; apart from being expressed through the 'more or less wider cultural value'. However, the citation once again prompts the question, whether the cultural and societal extension of the 'products of knowledge creation' should be made the measure. Also, because I would argue that it can be problematic to view and measure the efforts of student's knowledge creation in terms of 'lack of wider cultural value' or apparent contradictions between their 'local community' and the 'wider cultural world'. A question would be if this interpretation of knowledge creation actually bridges the tension between 'resolution of given, discrete problems' (or incremental exploration) and then the 'collective expansive' transformation of larger cycles of cultural and societal activities; or whether it reproduces this tension by situating student's products of knowledge creation at a hierarchically lower level of societal impact?

Instead, I would argue that we need a vocabulary and concepts to understand, how we can talk about and analyse shorter and more modest processes of knowledge creation as cases of "expansive learning" or as knowledge creation. In this sense, I will argue that we need to add an extra category to the notion of expansive learning, while still maintaining the core of the level of learning represented. The springboard for doing this we can actually find in Engeström's own distinction between learning II and learning III:

> In Learning II, the subject is presented with a problem and he tries to solve the problem. In Learning III, the problem or the task itself must be created. (Engeström, 1987, p. 150)

Therefore, I would argue that we can speak of a fourth category of the processes couched as learning III or expansive learning (apart from the *individual explosive*, *collective gradual* and the *collective expansive*). We could provisionally call it 'problem oriented'. In this way we can think about learning processes as expansive, without having to relate them tightly to distinctions between individual and collective or the cultural and societal impact through transformations of larger, sturdier systems of activity. I cer-

tainly agree with Engeström that this is an important area of enquiry and research in its own right. And also that the notion of collective expansion as longer-term learning processes and contributions to societal and cultural transformations should be an important part of schooling.

However, as I have mentioned, I believe we also need an understanding and vocabulary describing shorter-term processes of knowledge creation that does not necessarily incorporate larger-scale, systemic transformations; we need models that also celebrate and credit the smaller contributions. In this pursuit the notion of knowledge creation as encompassing the construction of shared artifacts including knowledge, ideas, practices, and material or conceptual artifacts is important. This I have also stressed in the preceding chapters in relation to the metaphor of learning as a process of patchworking. Secondly, in order to understand knowledge creation processes, not only in terms of a 'product' that can extend to and transform different levels of societal and cultural scale, we should reconcile ideas of knowledge creation with the prodigal or lost son of 'expansive learning'; namely the notion of identity.

This reconciliation, I shall initiate by returning to one of the earlier citation where Engeström uses the example of the Children's Campaign for Nuclear Disarmament. Here a small group of seven children initiated a letter writing campaign which gained a wider momentum and resulted in numerous personal letters (5404 letters) from kids to President Reagan calling for nuclear disarmament.

> "The children who started the campaign did not experience explosive personal crises, nor were their contributions invisible, tacit and nonconscious. Their small actions grew into an objectively new form of societal activity. The societal development to which the circle of seven children had given the impulse has undoubtedly had important effects on the individual development of those children. According to Leont'ev (1978, 133), the first basic parameter of personality development is "the riches of the connections of the individual with the world" – something that was multiplied for the initiators of the campaign. The second parameter is the degree to which activities and their motives are arranged hierarchically. In this respect, a highly developed personality is characterized by central, dominant motives which have become conscious 'life goals'." (Engeström, 1987, p. 162)

In relation to this Engeström speaks of another type of development:

> "This suggests that there are two basic types of development – development being now understood as the *transitions between the levels of learning*, as movement from operations to actions to activity. These two types may be compared with the consequences of throwing a stone into the water. Normally, the stone produces a series of circles of waves, where the innermost waves are highest and then get smaller while

> moving outward, until they die out completely. In human development, there appears not only this type of movement, but also another, opposite type, where the waves grow while they move outward from the impulse, then turn back to mold the initial source of impulse, and finally create a new, higher–level structure or stability than the original." (Engeström, 1987, p. 163)

These two citations point actually to what could be called the level of individual development or identity. This is an aspect which seems to have increasingly vanished from the theory of expansive learning over the years, as it has increasingly focused on the collective levels of transformations of work. The individual identity or actor has nearly been diminished to a role of being the 'questioner' of the existing practice as part of the first phase of the expansive cycle (Engeström, 1999, p. 383) – or as phrased by Paavola et al. (2004) in describing the role of the individual within the different theories of knowledge creation:

> "In Engeström's model, although the role of communities, material things, and cultural history is emphasized, it is individual subjects who question the existing practices and start the cycle of expansive learning." (Paavola et al., 2004, p. 565)

This is, however, a very meagre role compared to the rich understanding of identity within social theories of learning (Lave & Wenger, 1991; Nielsen & Kvale, 2002; Pedersen, 2006; Wenger, 1998, 2005). This is not because the notion of identity is incompatible with the Cultural Historical Activity Theory (Stetsenko & Arievitch, 2004) or that transformations of work cannot be adequately understood when incorporating notions of identity; rather Michael Roth has shown how notions of identity and emotion can be very instrumental in understanding transformations of work practices from the perspective of the individual, as embedded in a social practice or activity. Roth cogently argues how different issues of motivation and construction of identity leads to different stances to the overall motive and object of the work activity (Roth, 2004). Equally, numerous authors within socio-cultural theories address notions of identity as part of learning, participation and becoming increasingly legitimate members of and contributors to social practices (this is basically one of the two fundamental metaphors for learning laid out by Anna Sfard (1998)). Notions of emotion, identity and individual transformation, through engagement in collective activities seem to be largely left out of the scope in recent developments of theory of expansive learning; though we can find small hints of it:

> "Here development means changing one's course of life, including the destructive rejection of the old, together with significant others - and by means of crossing boundaries between worlds, not just by means of ascending on ladders of competence and maturity. The challenge to developmental theory is to account for such

processes of boundary crossing." (Engeström, 2005, p. 44)

But the notion of changing one's life seem to disappear and become an invisible factor in the larger scale transformations of historically, culturally and societally new forms of (work) activities. In this sense notions of agency, identity, individual meaningfulness and human engagement with the world become but small, invisible parts in the wheels of larger-scale societal or organisational changes. The notion of expansive learning from Engeström invokes strong pictures of motive-directed, purposeful, coordinated collective work activities and labour; whereas concepts as play, having fun, socialising, being a humorous teen, cheerfulness and the whole social fabric that is so very visible, important and pervasive in the case analysed in this thesis are left unexplored. This, in a sense, renders other spheres of life and meaningful activities less visible, though they might be important for learning[23] (Ryberg, 2004; Ryberg & Dirckinck-Holmfeld, 2005). However, the notion of identity has not only to do with playfulness, socialising and being cheerful. In Wenger's social theory of learning the development of identity is a core-issue:

> "learning transforms our engagement with the world as well as our being in the world. Learning is a therefore a social becoming, the ongoing negotiation of an identity that we develop in the context of participation (and non-participation) in communities and their practices." (Wenger, 2005, p. 15)

We do not just participate in one primary and overarching 'community of practice', but engage and participate in many overlapping, conflicting and heterogeneous communities, with different degrees of peripherality or closeness to the core (Wenger, 1998, 2005). Through these engagements our identities become unique intersections of complex trajectories of participation. This of course seems to be inherently tied to the individual, rather than pointing to notions such as collective knowledge creation, though this might be part of the different communities of practice. But in recent developments of a social theory of learning the focal point becomes the interplay between identity and larger learning system and the interaction, bridging, scaling and crossing that happens between these two entities. Therefore, some of the important concepts of a social theory of learning are notions of boundary crossing, brokering and the continuous moves between peripheral and core engagement in various overlapping communities that span different levels of scale:

> "Our multimembership reflects the boundaries of our social systems, but we also bridge and redraw these boundaries because we are one person across them. We belong to specific generations, but we can take in the stories of our elders and share

> our own stories with those who follow us. As we walk through life with our identities in the making, we are constantly—in our own, partial, and largely unknowing ways—weaving and reweaving the social fabric of our societies (…) Competence and experience are in different relations at the core and at the boundaries of practices, at the encounters between generations, and in relations of power among participants. The innovative potential of a system lies in its combination of strong practices and active boundary processes—people who can engage across boundaries, but have enough depth in their own practice that they can recognize when something is really significantly new." (Wenger, 2005, p. 25)

In this sense the innovative cycles of learning or the knowledge creation are seen as happening through the interaction, encounters and horizontal movements between boundaries and across different levels of peripheral-core participation. But through this multi-membership and different ways of engaging with the world we are also shaping our trajectory of identity.

This transformation of engagement with the world is actually similar to some of the concepts encompassed in the citations by Engeström about the "riches of the connections of the individual with the world" (adopted from Leontjev) and the notions of conscious life goals and waves that returns to mold the individual. However, in Engeström's interpretation this seems to be connected to or dependent on the actual objective, expansive transformations of larger-scale system (as in the case with the Children's Campaign for Nuclear Disarmament). However I would argue that we can equally understand this as personally experienced or even imagined. Here I draw again on Wenger and inspiration from his articulation of a 'curriculum of meaningfulness' (Wenger, 2005, p. 45) where one of the elements is the 'experience of agency and power', through having made a personal difference somewhere and have an impact on the world that is experienced as personally significant. Engaging meaningfully with the world encompasses different modes of belonging and ways of identifying with a community or enterprise where especially the modes of belonging are interesting in relation to the argument I wish to propose:

> *1. "engagement* – active involvement in mutual processes of negotiation of meaning
> *2. imagination* – creating images of the world and seeing connections through time and space by extrapolating from our own experience
> *3. alignment* – coordinating our energy and activities in order to fit within broader structures and contribute to broader enterprises." (Wenger, 1998, p. 173-174)

While the first mode of belonging is through the direct and active involvement in negotiations of meaning the latter two modes of belonging are more indirect. Imagination is what enables us to bridge and transcend the immediacy of time and place, and it encompasses the ability to see something

'potential' or 'possible'. It is the ability to see ourselves as future parents, what we might be able to use physics for after school, the ability to understand an abstraction such as a map to be representing the sea or seeing oneself as belonging to a nation.

> "It is through imagination that we recognize our own experience as reflecting broader patterns, connections, and configurations. It is through imagination that we see our own practices as continuing histories that reach far into the past, and it is through imagination that we conceive of new developments, explore alternatives, and envision possible futures." (Wenger, 1998, p. 178)

Throughout the analysis, I have made several references to the use of imagination, or what I have termed anticipative work.

The notion of alignment concerns fitting into or seeing oneself as part of something bigger which one voluntarily and happily is a part of and contributes to e.g. being part of a great cause or the proud representative of a larger organisation (though alignment can equally be a subjection to external forces if there are no possibilities for negotiating the alignment).

Both imagination and alignment are ways of identifying with broader structures or enterprises and scaling our identities. I would argue that in understanding expansive learning and especially the notion of 'problem orientation', we should not only think about the transformative or expansive potential in terms of, whether they will actually result in 'wider cultural innovations'; but whether the learning experiences of the students are instrumental in creating identities and experiences of being producers of knowledge, rather than consumers, as to connect to an earlier citation from (Paavola et al., 2004). Learning is not only a matter of building skills or competences, but equally about becoming; it is a process of engaging with multiple, overlapping, conflicting communities of practices and domains of knowledge which requires negotiation of mutual relevance between various forms knowledgeability (Lave, 1996, Wenger, 1998, 2005).

Having the experience of being part of something bigger and aligning with a greater cause can equally and very profoundly change one's engagement with the world and one's identity, even though this might not have actually caused large scale transformations or 'wider cultural innovations'. In the analysis we saw how the problem was not as an abstract conceptual task, but something that involved them personally *and* connected them to the wider world. In this sense the whole process was equally an arena for negotiating identity and different modes of belonging to and aligning with the wider world. This is why I believe that it can be problematic relating the 'levels'

or 'modes of learning' too tightly with the impact on structure, rather than the experiences of agency and empowerment. It should be noted that the idea of collective expansion, in theory, is also related to the transformation of individual needs into collective waves of expansion that will return and mold, transform and empower the individual. However, such experiences seem to be relatively unexplored empirically within the framework of expansive learning, apart from through analyses of literary fiction (Engeström, 1987).

My main argument in this section is that we need a vocabulary to speak about 'knowledge creation' at a smaller level of scale and not overlooking more modest contributions of knowledge creation. Therefore, I have argued that we can talk about 'problem orientation' as a *form* or *type* of expansive learning (not being 'expansive learning' as such, but a form of expansive learning) which also includes a focus on the use and production of artefacts, as both the theory of Expansive Learning and the idea of knowledge creation focus on. I have argued that we should not 'measure' whether something is innovative or expansive only on basis of its structural impact. We need to include social theories of learning focusing on identity, as to understand how negotiating different modes of belonging to and aligning with the wider world can be very transformative, through experiencing agency and empowerment.

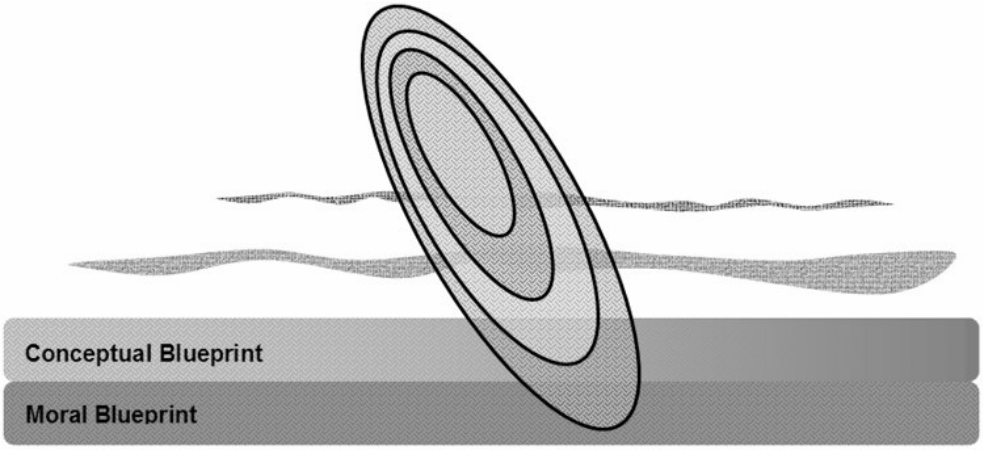
Critically investigating processes of patchworking

After this discussion of patchworking as possibly being expansive, I will return to the model of reweaving in relation to different levels, and discuss how we can understand different types or learning processes through the metaphor of patchworking. As I have already pointed out patchwork learning might not be a very creative, challenging or expansive process. Whether processes of patchwork learning are creative, challenging, critical processes of enquiry and knowledge creation or whether they are somewhat reproductive, uncritical processes of gluing together disparate or even contradictory chunks of well-known information without much reflection, is an empirical question. This needs to be critically investigated through analysing the actual process of the learning activity one aims to study (as I have done throughout this thesis).

However, on basis of the analysis of the case in this thesis I believe we can

elicit and draw out some ideas that can tell us something in general about creative and critical processes of patchworking. Some of this work has already begun through the discussion of expansive learning where the notion of 'problem orientation' as an expansive form of learning was suggested. However, I would like to stress that I do not consider 'problem orientation' a condition for talking about learning as patchworking. I consider 'problem orientation' and PBL-processes to be extremely important ways of engaging participants in learning and it is a mode of learning that will become increasingly important, due to our gradual movements into the knowledge society. However, this does not mean that this mode of learning or pedagogical design should be positioned as the only way of supporting, facilitating or working with creative, critical and knowledge producing learning processes. Much of their work during the cycles of stabilisation work and production did not encompass reweavings of the entire blueprint or the backbone threads; but as I have argued, these were equally creative and critical processes of reweaving where different patches and pieces were negotiated, discussed and reflected upon e.g. in relation to how they would support a narrative, a mood or serve as an argument for taxes in fighting poverty.

Therefore, the creative and critical dimension of knowledge creation should be sought out and analysed from actual empirical processes of patchworking, while taking into account the specificity of the setting. That a problem is given, rather than invented or created, does not mean that it cannot be a creative and critical process; rather this depends on how the relations between the layers (threads, blueprint) in the process are negotiated, discussed or reflected upon. Threads and the blueprints are flexible analytical categories and a backbone thread can equally be a task given by the teacher, as it can be an evolving problem.



The model aims at expressing that we can analytically look at reweaving processes, as involving different levels of depth. In this way the reweaving processes can be more or less profound, transformative and expansive depending on the layers they involve. Reweaving the entire conceptual blueprint because a new idea has spawned, or because a disruptive, contradictory piece has rendered some (or all) of the imagined solutions unviable is a more challenging process than fitting in corroborative evidence to an existing thread. Likewise, having to reweave and reorganise one's moral blueprint could be equalled to what Engeström/Bateson coins as radical individual transformation, whereas coming up with a new problem formulation is indeed hard conceptual work, but may not reorganise one's fundamental view of the world. However, this does not mean that processes where the entire blueprint is not reorganised cannot be creative, critical and reflexive processes, as I have argued in relation to their creative and reflexive work during cycles of stabilisation work and productive work.

The model is a conceptual tool to engage in actual empirical analysis of patchworking and reweaving processes. The aim is to analyse what happens when 'patches and pieces' – whether disruptive pieces, new ideas or corroborative pieces – are weaved into an existing patchwork; and if it causes the learners to reflect, rethink and reweave the different layers, because this gives us insight into whether the process is one of critical, reflexive inquiry and problem orientation/solution. This is equally true whether the reweaving process concerns the reweaving of the conceptual blueprint, or the negotiation and reflections on whether a picture portrays poverty and convey the right mood. Though the former is a more challenging and demanding proc-

ess, it does not diminish the importance of understanding and analysing, whether the latter is also a critical, reflexive process.

The model should not be understood as a hierarchical and vertical model where we should always aim at reaching the peaks (or the depths to follow the model) and only focus on expansive or radical transformations; we should equally look at the dynamics of the negotiation of meaning and relevance across the different levels, and understand the involvement and engagement of the learner in this process; how does the process speak to their identities and sense of being in the world, and how does it involve negotiations between different forms of knowledgeability (Lave, 1996, Wenger, 1998, 2005).

In understanding and critically investigating processes of patchworking, I will suggest some analytically oriented questions and guidelines that can serve as an entry path into working critically with processes of patchworking. These have been visible in the discussions throughout the analysis, but are also a result of reflecting on the analysis through describing in more detail the notion of patchworking on basis of the analysis:

- Focusing on the process and not only the product
- Analysing the development of the threads and how 'patches and pieces' weaved in; are they critically negotiated? Does this prompt reweaving of the patchwork and at what level? How are contradictory and disruptive pieces dealt with? How does it develop the thread?
- How does the process involve and engage the learner in negotiation of identity and various forms of knowledgeability?
- How is the organisation of work or collaboration orchestrated?
- How are the roles of technology in the entire process?

The first bullet highlights the importance of empirically investigating the actual processes and the actual work going into 'the final product'. This is for one thing because it is the process that gives us insight into the analytical questions above. However, we should also be aware that there might not always be such an easily identifiable and finite product, as in this case. But this does not render it obsolete or uninteresting to study the process and elicit the 'product' of the learning process in that way.

Focusing on the process and not only the product

The final presentation in this case is a quite impressive assemblage of many different arguments, concepts, media and communicative means. But the complex assemblage itself does not necessarily tell us much about the quality of the learning process or whether the participants have really engaged in critical and creative knowledge production. In fact Birgitte Holm Sørensen, who also attended the Power Users Event as a researcher, mentioned that she had seen numerous presentations during her many classroom observations. These were all very creative, beautifully performed, involving multiple media and modes of communication, but the relation to the problem, the subject matter, task or curriculum were at best invisible or unreflected (Holm Sørensen, 2005, Personal Communication). This is not to limit the scope of patchworking to young people's construction of school presentations, but as I shall return to in relation to the notion of Power Users it is quite critical that some important literacy skills are embedded in reflective processes.

Analysing the development of threads and how 'patches and pieces' are weaved in

We need to focus on the actual process to see how the different 'patches and pieces' are weaved into the patchwork, how they might develop the threads and cause reweavings of the patchwork and the blueprints at different levels. In the case of the Costa Rica Event we saw how the thread of education developed from very general conceptualisations into more refined and multifaceted understandings of the importance of education. Also, we saw how a seemingly small piece of information about corruption penetrated multiple levels, shook the topical thread of taxes and disturbed the backbone thread of their problem. This made them realign and reweave the conceptual blueprint to accommodate to and resolve this tension or double bind. Although it may not have changed their moral blueprint it at least affected and expanded their ideas and perspective of taxes, as the notion of taxes became a more contested solution and was continuously discussed and reflected upon. Another way of dealing with such a contradictory piece could have been to just ignore it, or state it as a fact or condition to be resolved (without suggesting how). In this way we can look at how the learners critically reflect on the information they find and how different 'patches and pieces' come to interact and are negotiated in relation to the threads and blueprints. For instance one can imagine cases where the threads and the conceptual blueprint never change and learners just find the patches and pieces that fit their already de-

cided threads and stable blueprint; thus possibly ignoring contradictory and disruptive pieces of information (as for instance expressed in an earlier citation (Jenkins et. al. 2006, p. 51)).

Such analyses do not need to take the form of a vertical ascension between different levels of learning (as e.g. Learning I, II and III, though it can also take that form), but aim at understanding, within the given setting and context, the dynamics and negotiations between the different layers in the model.

Involvement of the learner in negotiating identities and knowledgeabilities

Another important issue is the level of engagement and involvement of the participants. In this particular case we saw how they took ownership of the problem and the learning process. They increasingly developed an intrinsic motivation in relation to the resolution of the problem, rather than an extrinsic motivation forced upon them. In this way the project became almost a quest to them, and they related very personally and emotionally to e.g. the narrative of the young girl from the Intel Clubhouse having reshaped her life; or the indignation with trade agreements. Also, the facts, pictures and figures about poverty seemed to disturb and upset them, and became yet another springboard in this personal and collective quest.

Processes of patchworking can thus entail different experiences of engagement and involvement which also encompass experiences of agency and empowerment. Their personal involvement in this particular case certainly suggests that they aligned and felt part of a greater cause or quest than merely solving a particular task.

Even though they may not have radically changed or transformed their own moral blueprint it increasingly became a driving force in the process. The problem was not an external, abstract and detached task to be solved, but include the participants themselves in the problem space; a process also described by Engeström:

> "Whereas in Learning II the object is seen as a problem possessing its own objective dynamics outside the subject, in Learning III the object system is seen as containing the subject within it." (Engeström, 1987, p.151)

It was a process of boundary exploration and negotiation of different perspectives or knowledgabilites. This became visible through their discussions of whether something was valid and could be trusted, but also in their anticipatory and imaginative work of taking the perspectives of different

stakeholders (poor peasant, rich importers, large corporations and so forth). Furthermore, the different sources represented different knowledgeabilities, and also led to different perspectives on education e.g. the personal narrative of the young girl, the thoughts of the Intel Clubhouse manager and then the experts' statements and the statistics from the slides.

The notion of boundary exploration and crossing of boundaries is about looking analytically at how such encounters with other communities of practice, knowledgeabilities, perspectives and people shape the development of the threads and cause reweavings of the blueprints and threads. In this case they came in contact with the practices and knowledgeabilities of the world of research, but also engaged with people of different nationalities. Through these encounters they for one thing enhanced their knowledge and came in contact with practices and worlds they may not meet in their everyday life. But also it meant negotiating their playful teen identities, their group and national identity by weaving into the process notions of cultural sensitivity, negotiating ethnocentric discourses, and reconciling tensions between reservation towards US foreign policies and then the experiences of welcoming, helpful and nice people. In this case we saw glimpses of how different scales of identity interact and unfold in a learning process and how boundary exploration or crossing boundaries between different communities and knowledgeabilities transformed and were weaved into the process. However, it is difficult to say how experiences of interacting with a researcher, who is described as 'mega mega cool', or experiencing poverty first hand might in turn transform, affect or reshape the trajectories of their identities and their wider engagement with the world. This is also something I shall return to when discussing the analytical and methodological framework. For the moment being, I will limit myself to saying that it is a focal point of attention in working with learning as a process of patchworking to study how (and if at all) boundary explorations and different knowledgeabilites are negotiated into the patchwork, and how it might affect the dynamics between the different threads and blueprints (e.g. how a prominent thread may be buried affecting the conceptual blueprint). But even more importantly how the process of patchworking brings about and supports different experiences of agency and empowerment – even if this agency and empowerment is largely imagined; rather than resulting in objective, large-scale societal and cultural transformations.

The mastery of orchestrating and organising the work

As I have suggested, processes of patchworking can incorporate different

levels of control over the organisation of work and the orchestration of the different processes. In this particular case the young people are largely in control of all aspects of the work process, which means that they themselves need to negotiate and plan the sequential order of their work, when to engage in reweavings of the backbone threads, when to initiate the production of slides and so on. In this sense the learning process does not only encompass finding a solution to a problem, but equally it involves controlling and mastering the entire process of collaboration and patchworking e.g. foraging information, planning, distributing work and creating a sociable atmosphere.

In this sense we can look at to which degree the processes of patchworking incorporate the orchestration and organisation of work, collaboration and different forms of communication; and how the learners are capable of controlling and orchestrating such processes. Equally, we can look at, to which degree the learners are involved (or allowed to involve) in planning the work and engaged in the ongoing organisation of it.

This also encompasses studying how different ways of pedagogically organising, nurturing and designing such more or less open-ended processes of patchworking affect the learning process. As we saw from the analysis, there is a delicate and difficult balance between being supportive and facilitating, and then deriving the learner's of their ownership of the process. Therefore, in understanding learning as a process of patchworking it is important to incorporate not only how patchworks, patches and pieces, threads and blueprints are reweaved and created, but equally the whole orchestration and mastery of the entire process of patchworking is important. This also includes the roles of technology.

The roles of technology

In understanding the roles of technology in relation to processes of patchworking and reweaving, I suggested that we should focus on the inherent dynamics and relational nature between the technological artefacts and then how they are mobilised, made sense of, interacts with, are fused or weaved into the patchworking processes through complex negotiations and discussions. The 'patches and pieces' can be digital patches and pieces, as well as oral information. Likewise, different forms of knowledgeability is encountered across websites of different communities, through digital artefacts reifying the insights of researchers or the different forms of knowledge expressed in graphs, slides, pictures or video taped oral narratives. Here, it becomes important to focus on how these are weaved into, or cause reweavings of the patchwork.

The mastery of the collaboration and organisation of work is, as I have earlier pointed out, heavily interwoven with use of technology. From the analysis it is clear that descriptions such as 'searching for' or 'finding' information are not separate, generic and self-contained processes. They need to be made part of the flow of activities, set in relation to the wider task and stitched into the ongoing process of patchworking. In case of their first work meeting we saw how the different 'patches and pieces' they foraged were brought into their discussions, and how this initiated processes of reweaving where patchworks or clusters of ideas started to emerge. This also suggests that questions of how particular technologies or technological artefacts in general mediate or afford work might be too broad if we wish to understand notions of patchworking. One could for instance ask how the 'Tablet PCs' afford the learning process or how the word processor mediates their learning, but this lead to rather general answers that do not necessarily highlight how these technologies are creatively mobilised in specific settings, for specific purposes, and how the use of technology fuse with other skills, negotiations and processes in the creation or reweavings of patchworks. This is not to say that such questions are irrelevant at large; For instance I have argued that we should not overlook the unique affordances of the TabletPC (drawing on the screen, handwriting) as being very important in their creation of e.g. the tax-animation, and certainly this affordance affects and transforms their interactions with the technology, as it affords or constraints different types of actions and use.

However, for one thing, this particular affordance is mobilised and enacted in many different ways, for different purposes and as part of different flows of activity (e.g. the design and creation of a poor peasant, doodling, writing letters, playing games) which are part of different processes within the overall patchworking process (e.g. creating a sociable atmosphere or production of artefacts).

Equally, the documents play different roles as notes, interview guides, objects that can be exchanged or as dynamic spaces for negotiating a work plan and reification of their conceptual blueprint. In this sense the affordances and constraints are also mutable and transform relative to the flow of the activity. This I illustrated by pointing to how the role of the whiteboard as a mediational mean transform between the two cycles of remixing and patchworking, from being primarily imaginative resources, towards becoming concrete, physical resources in the processes of patchworking and reweaving. This view is similarly expressed by (Jones, Dirckinck-Holmfeld et al., 2006):

> "The view of affordance that we have begun to consider and would propose to the CSCL community is one that returns to a Gibsonian view and extends the ecological stance found in Gaver (1996): a view that treats affordance as a relational property. In this view, affordance is not simply a property of an artifact alone, but it is a 'real' property of the world in interaction. (Jones, Dirckinck-Holmfeld et al., 2006, p. 42)

Secondly, it is important to focus on how the technologies or technological artefacts fuse with and are made part of the process of creating and reweaving patchworks, through negotiations of meaning that draw on and simultaneously alter the threads and blueprints. This can be seen e.g. through how Diana's pictures, found through image search, are negotiated into the patchwork; or more profoundly how the slides as digital artefacts are negotiated into the patchwork, but simultaneously and very dynamically become instrumental in reweaving the conceptual blueprint of the entire presentation.

While the technologies are mutable and change as part of the flow of activities, especially some of the digital 'patches and pieces' (files, slides, pictures, pieces of text) are transformable and moldable. This we see with the pictures that are identified, chosen, de-saturated and resized or the slides which are grouped after possible relevance, moved around and embedded as part of a different narrative in the final presentation. These 'patches and pieces' enter chains of patchworking and reweaving through which they are altered, while also affect or transform the threads and blueprints to different degrees.

Thirdly, it is important to focus on how different types of skills and competences interact, intersect and merge – and how this becomes a part of the processes of patchworking and reweaving. I argued how the patchworking processes in the particular case were dependent on mastering the use of technology with a relatively high-level of technological skill, but simultaneously related to competences such as constructing a good narrative, organising, planning and orchestrating various modes of communication and multimodal forms of expression. Equally, we see how this relies on and interact with their technological skills, as to be able to employ technologies as *imaginative* and *concrete, physical resources*. This inversion even seems to suggest that we cannot effectively distinguish between 'technological skills' and 'non-technological' skills, as in processes of patchworking and reweavings they seem to melt together and form an inseparable unity.

In this sense, as I mentioned in the beginning of this section, we should not understand the technologies as separate entities, processes or layers. Rather we should study and focus on how the technologies and the processes of re-

weaving the different threads and blueprints mutually constitute and affect each other. We should look at how the technologies, technological artefacts and 'digital patches and pieces' are shaped by and shape the flow of activities, through complex negotiations and discussions and in concert with the components of the process of patchworking. It is through studying these interactions and relations that we can elicit to which degree these processes feature critical and reflexive reweavings of the patchwork, in relation to the use of technology.

Summing up and discussing the metaphor of learning as a process of patchworking

The notion of learning as a process of patchworking is not a theory of learning; rather it is a perspective or way of looking analytically at learning processes. It is a perspective that foregrounds the constructive and productive nature of learning processes where there is a more or less tangible outcome of the learning process. In this sense it resembles very much notions of learning such as expansive learning or the metaphor of knowledge creation in that it assumes there is some activity leading to some sort of outcome. However, I have argued that these notions encompass a tendency to focus too much on the societal and cultural impact or outcome of the learning processes and that we need to also understand more modest and small-scale contributions of learning or knowledge creation processes.

Therefore, for one thing, I have suggested that we can speak of 'problem orientation' as a form of expansive learning that might not entail larger cycles of societal or organisational transformation, but is not restricted to the solution of discrete, given problems, as it encompasses the continuous negotiation of the problem and the solution. Likewise, the instruments (theories, methods, methodologies) through which the problem is addressed are not given or fixed either; rather they are invented or emerge as needs for resolving the problem at hand. Also, I argued that we need to include the insight of social theories of learning where there is a stronger focus on development of identity and the negotiation of different forms of knowledgeability through boundary crossing and exploration. We need to understand how negotiating different modes of belonging to and aligning with the wider world can be very transformative, through the experience of agency and empowerment; even though this may not lead to wider cultural innovations or larger scale transformation of activity systems. In this sense the notion of patchworking aims at also encompassing and focusing on the smaller and more modest contributions of knowledge creation processes – also those that might not be so open-ended and involve problem orientation, as in this particular case.

Secondly, I have argued the processes of patchworking consist of continuous instances of reweaving the patchworks, the threads and the blueprints. The reweavings encompass unravelling the patchwork, inspecting the seams and reweaving the patchwork which to some degree resembles the notion of the expansive cycles. However the notion of reweaving a patchwork aims at

describing smaller, more humble cycles of idea generation through the creation and reweaving of smaller patchworks that may not lead to the formation of a new form of practice, or aim at resolving more fundamental problems or contradictions of such practices. I have argued that we can use the notion of reweavings as a flexible analytical tool in understanding different levels of depth in the learning and patchworking processes depending on which layers are affected by the reweaving processes. Is the reweaving process a matter of incorporating a piece of corroborative information as to develop and thicken an existing thread, or does it become a process of entirely reweaving the conceptual blueprint or reformulating the problem? In order to critically investigate processes of patchworking I have suggested for one thing that we should always focus on the process, rather than the product in isolation, and that we can look at different dimensions as analytical questions:

- Analysing the development of the threads and how 'patches and pieces' weaved in: Do the threads develop and change over time? Are 'patches and pieces' critically negotiated or simply added without reflection? Do the incorporation of 'patches and pieces' prompt development of the threads and reweavings of the patchwork and at what level? How are contradictory and disruptive pieces dealt with?
- How does the process involve and engage the learner in negotiation of identity and various forms of knowledgeability? How does this challenge the learners and prompt them to re-investigate their conceptual or moral blueprint? How does it involve and engage the learner by supporting experiences of agency and empowerment?
- How is the organisation of work or collaboration orchestrated? Does it incorporate the mastery of orchestrating and organising the work or the collaboration? To which degree are the learners involved or allowed to involve in planning and orchestrating the work and how do different degrees of ownership affect the learning process?
- How are the roles of technology in this process? How do the technologies or technological artefacts fuse with process of creating and reweaving patchworks and how does this alter the threads and blueprints? How do different types of skills and competences interact and merge to become a part of the processes of patchworking and reweaving? To which degree are the different affordances and constraints of different media and means critically reflected upon, and how does this affect the entire process of patchworking?

The notion of patchworking suggests that we look at learning processes as a way of constructing and weaving patchworks at different levels of scale. For one thing we can look at small processes of reweaving where a picture is negotiated into a presentation or where different ideas about taxes are discussed. However, we can equally understand the whole learning process as a process of patchworking where the learner(s) are constructing, planning and reweaving the larger patchworks in a dynamic interplay with the construction of multiple smaller patchworks. What guide this process are the different threads and blueprints which are themselves continuously constructed and reweaved to different degrees. The notion of patchworking focuses on how different 'patches and pieces' are foraged or produced, how they become instrumental in developing the different threads and blueprints and how they are weaved into the patchworks.

In this case I have identified some topical threads and some backbone threads. The latter are more persistent orientation devices in the process whereas the topical threads can be shorter-lived ideas and themes; but equally they can be more sturdy ideas or threads that develop and thicken throughout the entire process.

The conceptual blueprint is the emerging outline and overview of the relation between all of the different threads and the patches and pieces that are foraged or produced e.g. how does the topical thread of 'jobs' relate to the backbone thread of the problem and how is it related to the topical thread of taxes; or if the problem formulation changes, how does this affect the methodology and the final result. In this sense the conceptual blueprint is the representation of the entire problem space, how to work with it and present or produce the final results. Equally, I have argued that the patchworking process is guided or negotiated in relation to a moral blueprint which reflects the participants' more fundamental views of the world. The moral blueprint is part of the learners' identities, habitus or historical bodies and in this sense the moral blueprint is more stable and backgrounded, as it reflects their cultural background, habits, norms and beliefs. However, as a part of the process of patchworking the individual's moral blueprint can be negotiated and aligned with the other participants thereby stitching, creating or negotiating a shared or mutual moral blueprint.

Learning processes can entail different levels of control over the process, as I have argued by using the model (see Figure 3) which suggest different degrees of control of the problem, the work processes and the solution. In this particular case, I have argued that the young people are in control of all of

the three dimensions, and due to the indirect design of the event the process of patchworking takes the character of expansive 'problem orientation'. This means for one thing that the problem and the solution are open-ended and under continuous negotiation, but equally that they are in control of all aspects of the patchworking processes. This means the entire process takes on other qualitative dimensions, as they are not only going through a set of sequenced and pre-designed events, rather the whole process itself has to be continuously constructed and orchestrated including also the use of technology.

In this sense such processes of open ended, expansive problem orientation encompass not only solving a problem and coming up with the solution, but equally it involves mastery and control of the entire technology mediated activity or entire process of patchworking. Thus, processes of patchworking can bear resemblance to notions of knotworking, as for instance in this case where they are dispersed group coming together for a shorter period of time to engage with an open-ended task. The problem and the solution are not given and neither are the ways of working. These elements has to be identified, constructed on-the-spot and continuously negotiated. Therefore, as in this case, such processes encompass the ongoing coordination of the work process and the distribution of the tasks where there is a dynamic negotiation of horizontally distributed roles and responsibilities.

Mastering and orchestrating when and how to engage in the different processes of foraging, producing, planning, enter into cycles of stabilisation work and production and what mediational means to use, are conditions for engaging in such a complex process of patchworking. But also the increased mastery of expansive 'problem oriented' technology mediated processes of patchworking is a part of the learning process. We cannot only look at the conceptual development of the threads or the reweavings of the blueprints because in understanding processes of patchworking we also need to understand the mastery and orchestration of a complex of different processes, as I have addressed through looking at the interplay between the processes, cycles, threads and the use of technology.

Chapter 11: Critical discussion of youth, learning and technology

In this chapter I will discuss how the notion of patchworking and the results of this particular study can shed light on the relations between youth, technology and learning, and how this can inform our thinking about education in the knowledge society. This I will do through critically discussing the results of this study in relation to the notion of power users of technology, but also I will draw on the results of other studies of youth and technology, as to ground more firmly the discussions.

The background assumption in the 'power users of technology' project, as described, is that we can gain valuable knowledge about learning, problem solving and education by looking at how young 'power users of technology' engage with learning and technology. Furthermore, that those insights can be instrumental in creating new, innovative pedagogical practices and to better educate the youth for the knowledge society. The core assumptions are that a new generation of "Power Users of Technology" are emerging due to societal and especially technological changes, which have transformed their ways of learning and solving problems; much as it is also expressed through the use of other terms, such as the net-generation or digital natives. In this perspective youth and their special ways of learning are seen as a source for future innovations within education and the organisation of workplace learning, as their ways of learning and engaging with technologies has an immanent transformative potential that can inform and change our current educational practices; if given a voice.

While I certainly agree there is a great potential in understanding young 'power users of technology', I believe there are some unexplored assumptions and relations between the 'notion of technology use' or 'technological skills' and then the forms of expansive learning or 'new ways of learning and solving problems' which are prevalent in the descriptions of power users. I will argue that there is a problem in assuming that the intensive use, highly-developed technological skills or 'wired-ness' in themselves will generate the expansive and new ways of learning. To understand what the 'new ways of learning' might be and how this can or should inform education, we need to critically investigate the relations between intensive technology use and learning. This also encompass critically discussing the notion of an emerging generation of power users, as we need to better understand what might be special about 'power users' and their use of technology

in order to discuss implications for education in the knowledge society. Therefore, in the following, I shall return to some of the tensions that I initially explored in chapter 2, as these tensions can serve as guiding questions for exploring the relations between youth, technology and learning.

Exploring and critically questioning the notion of power users

What stands out from this particular study are the young people's abilities to utilise, appropriate, create, use, negotiate and employ ICT as an inseparable part of an open-ended, problem oriented, horizontal, self-organised learning process. This process of patchworking and knowledge creation aimed at resolving problems of a global magnitude, and they have been able to give a small, humble and very modest contribution to that. At the same time they have managed to create a profoundly cheerful, enjoyable atmosphere, while also creating and orchestrating a highly productive, efficient organisation of work. This seems to fit very well some of the definitions and descriptions of using, sharing, creating, producing, or changing information in creative and innovative ways.

From the analysis and the discussion of learning as a process of patchworking it is clear that what is of importance are not only their technological skills, their literacy or the depth of their expertise within one or more subject domains; but rather their abilities to orchestrate complex processes of patchworking where the technologies are made part of, or used to produce and reweave the different patchworks. Therefore, this case also raises some questions and tensions in relation to the metaphor of power users of technology. Here I will refer to Figure 1 which I introduced in chapter 2.

First of all we can ask: What are relations between the skills and their use of technology? Is it because of their use of technology that they have developed these skills of orchestrating complex processes; because from our interviews and work with them it was clear that they already had some experience working in this way from similar projects in school – although most often with less open ended problems. Also, as I argued in a previous section the indirect design or pedagogy had a role in enabling these processes to flourish, and the pedagogical practice of engaging with open ended problems (PBL or POPP) is not, as such, a new pedagogical practice (for these kids). This also seems to question if young people actually have other ways of learning and solving problems than former generations because of their intensified use of technology? Or whether these problem solving abilities are actually enabled by the design and affordances of the setting? The relations between these aspects are important to discuss in a little more depth, as

this is a precondition for talking about how the use of technology might in turn nurture 'power user' skills, and how we can employ technology as part of education.

In chapter 2 I also mentioned an oscillation between stressing the individual as the main vehicle and then characterisations of power users' prime capacities of being their relatedness and ability to engage in collective activities. While the young people in the case are indeed strong individuals, it also seems that their ability to collaborate, plan and organise as a collective is extremely important. This tension I shall return to later in this chapter.

Furthermore, it was not entirely clear, whether power users should be understood as a broad phenomenon within youth culture, due to the intensified use of technology within this age group, or whether power users are a smaller group of unique, highly-technologically skilled people within youth culture?

I will argue that we should be careful about delineating the notion of power users to a certain highly-technologically skilled group, but equally we should be careful about extrapolating and talking about a generation of 'power users'. It seems that when we start to critically examine generational metaphors, such as power users of technology, millennial generation or the net-generation that young people's engagement and identification with ICT vary a great deal. Some authors warn against talking about young people as a homogenous group or a generation of technologically literate and highly advanced learners, as this might ignore a much more complex and patterned picture of how youth engage with ICT (Facer et al., 2003; Livingstone, 2002b). However, there might also be a need to reframe or re-orient our views, and rather than discussing if there is indeed a net-generation or a generation of power users of technology, then instead focus on how we might support and nurture that such a generation will emerge.

Thus, the major task of this chapter is to better understand the relations between ICT, learning and youth. I shall start by examining the relations between technology and learning, through exploring and analysing some of the assumptions in the 'Power Users Project'. However, we also need to explore in some more depth and discuss in a wider context how youth engage in practices and activities with ICT, as this can give us a better foundation for understanding how to utilise and draw on some of the potentials of young people. Therefore, I will expand the discussion to draw upon some wider insights about youth, technology and learning that have crystallised from other research projects and studies, as to explore the notion of generational

metaphors. I will argue that there are indeed great potentials in understanding the interplay between youth and technology, but we should not assume that this potential will automatically or organically unfold and flourish.

This will lead to discussions of how we can nurture 'power users' and design for education that will both address the wider educational challenges of the knowledge society, while simultaneously utilising, challenging and developing the learning capabilities of young people. I shall argue that the specific learning design or the learning activity (PBL or POPP) is one important way of preparing students for the knowledge or learning society. I believe we can indeed learn a lot from studying and understanding young people and their use of technology. But the real question is not really *if* we can learn, rather the question is if we are also willing to act upon what we learn. This is a precondition for unfolding the potentials.

The problematic relation between technology and learning

In the following I will revisit and look critically into some of the ideas and conceptualisations of power users that have been part of the 'power users of technology' project, as they are a good entrance points into uncovering some tensions and assumptions that are inherent in the different descriptions, stipulations and definitions within the project (and they apply also to many other ways of discursively constructing youth as a 'special' generation). Especially, as I have mentioned there are some latent uncertainties and tensions in the relations between technology and learning which we need to explore. I will argue that we need to be careful assuming that high-level technological skills or frequent use can or will automatically translate into being a 'power user'.

I will elicit the problem by critically analysing some of the work that has been part of identifying and understanding power users, as I believe it reflects the tensions and difficulties that we had in the broader research group in understanding and conceptualising power users. In this sense the critique should not be read as a critique of the overall project, an individual paper or questionnaire, but as a way of conceptualising some problems and ambiguities that have been prevalent in our collective thinking about power users.

Tensions and contradictions

In chapter 2 I mentioned four categories of 'Power Users' suggested by (Ooijevaar & Kamstra, 2005) (technological power users, social power us-

ers, information power users and gamers). The four categories of 'power users' were initially proposed to the core research group and later reified in a questionnaire. The four categories spawned to some degree from the analysis of the questionnaire, but the categories themselves were also heavily reified in the questions:

Table 7.3: Special skills that could make one a Power Users

	Number of people	Percentage
I don't consider myself to be a Power User	18	7.2
My ability to find and distribute the information I need all over the world	40	15.9
My above average skills in playing video games	7	2.8
My efforts to connect people and communicate using ICT	42	16.7
My technological knowledge on programming and hardware	109	43.4
Other	35	13.9

Source: Power Users on Power Users, N=251

Figure 18: Table from (Ooijevaar and Kamstra, 2005, p. 28)

The questions were based on, or had some connection to, the definition from the earlier mentioned citation (Malyn-Smith, 2004) and in another question in the questionnaire the respondents are asked, whether they believe they are Power Users based on that very definition. But how this definition has been translated into these options for answering (or four types of use) was not quite clear, and only a brief account of this relation is given. On basis of the answers the authors write:

> "If one recalls the definition of a Power User, then the above mentioned skills of communication and the distribution of information are in accordance with this definition. However, the definition doesn't include technological knowledge on programming or hardware, even though this is, according to the respondents, considered to be the most important skill for a Power User. This might be something to be incorporated into the current definition." (Ooijevaar & Kamstra, 2005, p. 28)

That the respondents consider programming and knowledge of hardware as the prime skills of Power Users is not exactly surprising. The majority of people answering the questionnaire seemed to be already very technical users, such as programmers and people interested in hardware (most of the respondent came from forums where some of them were especially dealing with technical stuff, such as programming and troubleshooting hardware e.g. youngcoders.com, macteens.com). This is also reflected in the results where for instance 35% of the respondents report that they use Linux, and 71.3% report that they program software. These numbers are exceptionally high and not representative of youth, or the population in general (Facer et. al, 2003, p. 102-103).

The authors, however, also stress earlier in the paper that they find some of the other figures that represent a broader array, than the four types of use, to be more representative (these were: level of comfort in operating systems, installing software, playing games, use of software, writing software, browsing the internet, using e-mail, using search engines, downloading and chatting). In relation to each of these types of use the respondents were asked about frequency of use and the depth of their skills. The authors equally state that in the future more technologies should be included (mobile phones and other ICT-equipment) and suggest a sharpening of the definition:

> The definition of Power Users should be sharpened, so that it will be easier to recognize Power Users in the future. Until now, it is rather tautological to approach potential Power Users based on a definition we are not sure of whether it covers the complete meaning of Power Users. For suggestions in this matter, please refer to the comments in chapter 7. These comments raise the question of how detailed the definition should be in order to be able to identify who is a power user and who is not. Are children who are in general comfortable with computers Power Users? Or do you need to have knowledge of programming, website construction and other more advanced applications of computers and technology to be a power user? (Ooijevaar & Kamstra, 2005, p. 30)

As earlier mentioned, the four categories seem rather broad and there is a problem with the definitions being too closely tied to certain types of very general ICT-activities (which I believe is equally true for the longer list of uses). For one thing focusing on specific types or areas of use may potentially leave large user groups out of consideration e.g. those engaging activities such as fan-fiction, digital art, website creation, or flash-cartoon production. This could potentially blur and distort the much more varied use of ICT that exist among young people. However, it is also problematic to focus on specific types of use, for as I have pointed out in the analysis categories such as ‘finding information’ or ‘using powerpoint’ are not separate, generic and self-contained processes, but are part of a flow of activities and may be carried out in relation to wider processes of patchworking.

Even if we expand the number of ‘use categories’ there would still be a problem. There seems to be an underlying assumption in the questionnaire from Ooijevaar & Kamstra (2005) that the defining variables of power use lie in the frequency of use and the depth of people’s technological skills, whereas the ‘transformative’ potential of people’s activities as expressed in the citation from (Malyn-Smith, 2004) are left virtually unexplored and unexplained. At least this variable is left largely up to the respondents to explain through an open question of whether they believe they fit into the definition of power users. However, the relation between the transformative

capacities and the frequency of use/depth of skill in using various technologies or applications was not accounted for or explained. It seems the paper and questionnaire actually focuses very much on what *power users know*, rather than *what they do with what they know* without really exploring the connections between these two dimensions.

The transformative role of technology use?

The reason for doing this in the first place may however be rooted in some of the assumptions of the project itself. Passages such as: *"their long-term, intensive experiences with technology have changed them. They think, behave, and solve problems differently from us and from others who have not had this special relationship with technology"* or *"Their minds and their brains are developing in ways that most of us can't quite understand because we are not "wired" in the same ways that they have been"* (Malyn-Smith & Guilfoy, 2003, p. 4 & 6) seem to suggest, consciously or unconsciously, that it is the exposure, saturation or intensive use of technology itself that has generated the patterns or competences mentioned in the definitions and descriptions.

If this is correct, then it also seems reasonable to assume that people who have deep technological skills within a domain have indeed developed such skills and competences. But the question arising from this is whether we can actually assume that people having a high-level of technological skill, within a given domain, will also automatically be able to *produce artefacts and social relations;, breaking confines and transcending borders; creating, producing or changing information and engage in advanced problem formulation and solving*. For one thing, in terms of Engeström's and Bateson's levels of learning, this would constitute an almost magical transformation between the different levels of learning; a process where the gradual acquisition and refinements of skills would automatically and unproblematically entail more expansive modes of learning (from learning II to III). But as we can also see from the case in this thesis, the work processes of the young people encompass many other skills and competences than just technological ones. Mastering the entire process of patchworking equally includes the abilities to negotiate meaning, collaborate, plan, organise and formulate problems. This is also reflected in an article describing the potential of power users by Holm Sørensen (2005):

> "The Power Users have competences on a high level in using ICT. These competences contains not only technological skills and knowledge, but also communicative, collaborative and organisation skills and knowledge developed in the ICT ac-

tivities." (Holm Sørensen, 2005, p. 10)

The cited article was part of the Power Users research symposium in Costa Rica, but builds on long-term studies of young people and their use technology, both in school and in informal settings (Holm Sørensen, 2002a, 2002b; Holm Sørensen et al., 2002). We could argue that the these skills arise from and are results of the intensive use of technology, but on the other hand we could equally claim that people can attain high-level skills within many different areas of use, without simultaneously mastering communicative, collaborative, organisational skills or being agents of change and transformation. This is not to say that intensive use of technology cannot lead to this, but we should examine in more depth what this actually entails, and what are the conditions for this to happen. In exploring and analysing this I shall turn to other studies of youth and technology to identify what we actually do know about this subject. Furthermore, these broader findings also provide us with some valuable insights about the relations between home, school and the use of technology.

What do we actually know about youth and technology?

In this section I will draw on the insights and results of various long-term studies, literature reviews and review reports bringing together the knowledge of multiple studies. One reason for doing so is to go behind some of the assumptions in generational metaphors of young people, but also to show that the notion of use, access to ICT and the possibility of engaging in various fruitful learning processes are a very complex and contentious issue. Secondly, I draw out some observations that highlight the various interesting ways in which youth engage with computers, but equally how they value to work with ICT. These discussions are important to understand both the conditions, but also possibilities and potentials that young people's use of technology has. The main studies I draw on are represented in this list:

Long term studies of youth and technology:

Screenplay project (Facer et. al, 2003). 2-years research project running from 1998-2000 incorporating detailed questionnaires to 855 young people in West England and South Wales. Case studies of 18 young people's use of computers in the home over a period of 18 months. Group interviews with 48 young people describing themselves as low users of computers.

Children Growing up with Interactive Media and ICT in New Learning Environments project (Sørensen et al., 2002). Methods have especially been qualitative and based on participant observation (Sørensen, 2002a).

The project *Children Growing up with Interactive Media* took place from 1997 to 2002. The project studied children's use of ICT at home, at school, at recreation centres, at libraries and at computer cafés.

The other project *ICT and new Learning Environments* A research project focussed on the use of ICT in relation to learning, project work, space, and teacher and student positions. The project ran from 2002 to 2004.

Quantitative studies and large scale surveys:

Mediappro (Mediappro, 2006): Study aiming to explore how young people between the ages of 12-18, appropriate digital media, including networks and portable media, such as the Internet, mobile phones and video games. 9000 young people from Europe and Quebec participated in the questionnaire and 240 were interviewed.

Pew Internet Research (Lenhart & Madden, 2005; Lenhart, Madden & Hitlin, 2005): Pew Internet & American Life Project reports are based on findings from telephone survey of randomly generated samples of 1100 youth between 12-17 years of age.

Review reports and review of studies:

Review Reports from Futurelabs: The review reports are a number of literature reviews summarising and discussing the latest research within learning, youth and technology. The titles of the individual review reports are:

"14-19 and digital technologies - A review of research and projects" (Davies, Hayward, & Lukman, 2005)

"Literature review in informal learning with technology outside school" (Sefton-Green, 2004)

Review of studies of internet and youth by Sonia Livingstone: "Children's use of the internet: A review of the research literature" (Livingstone, 2002b) and "Young People and New Media" (Livingstone, 2002a)

White paper from the project "Building the New Field of Media and Learning": Confronting the Challenges of Participatory Culture: Media Education for the 21st Century " (Jenkins et al. 2006)

The list makes it easier to follow, whether references made in the texts are references to statistical, quantitative data or more case based qualitative studies. But equally, it shows the breadth and substance of the research

which have many overlapping conclusions in spite of the differences in methods and scope. I will draw out some of the commonalities, while also highlighting some of the differences that can be found across the studies. In the following I will outline the 'where', 'what' and 'why' of youth and technology (where do youth use ICT, what do they use it for, and why do they use it). I will avoid using too many numbers and statistics because the different numbers from large scale questionnaires and surveys are often very difficult to compare and analyse in relation to each other. There might be some years between them, and such time periods can have significant impact (for instance between 2000 and 2005 the number of teens playing online games in the US rose by 52%) and even within shorter time scales there can be significant fluctuations in e.g. broadband access, rather than modems (a factor which transforms the use and engagement with the internet). Also, the numbers often cloud that there can be very differentiated results between countries and regions and it is difficult to extrapolate numbers from a country to mean youth in general (access and use differ greatly between e.g. Greece and Estonia as there are quite some variance between the EU-countries (Mediappro, 2006)). Equally, in regards to use, there are differences in use relating to the age of the respondents (e.g, they change their use patterns from 10 to 16 years of age) (Facer et al. p. 26, Mediappro, 2006, p. 13). Finally, we should not forget that there are still a number of young people who are not riding the waves of the internet or having access to technology (this again differ very much from country to country) (Facer et al., 2003; Lenhart et al., 2005; Mediappro, 2006). Therefore, talking about young people in general terms or using 'generational metaphors' can be somewhat problematic.

Where do youth use internet and other technologies?

Some of the clear findings from the quantitative studies are that young people use the internet to a higher degree than the rest of the population, though of course these numbers should be taken with some caution, as the rest of the population covers a larger number of people and include people over 60 (who in general use the internet less frequently than other groups). In both Europe and US approximately 9 out 10 teens use the internet on a regular basis and are comfortable with it, whereas the numbers for the rest of the population lie around 45-55% (Lenhart et al, 2005; Mediappro, 2006).

An interesting (or disturbing) finding was that the prime site for technology and use of internet is at home, rather than in school:

> "Perhaps the most striking conclusion of the whole study is the marked gap between

> home and school use of the internet. This gap, across all the countries including Quebec, was evident in terms of the frequency of use, access, regulation, learning and skill development, and type of activity. The data indicates a great gulf opening up, in which all the functions important to young people exist outside school, as well as most of the learning (albeit self-teaching or peer learning), while schools restrict access, unnecessarily forbid certain practices, fail to understand the communicative function of the internet, and, worst of all, fail to teach the skills of information retrieval, search, site evaluation and creative production that are presumably most important to them" (Mediappro, 2006, p. 16)

The 'where' are even more differentiated places than just the categories of 'home' and 'school' (or libraries, youth clubs and so on). In schools the access can be for instance in the everyday class-room or in designated computer rooms only used for ICT-classes; but the 'where' can equally mean time periods in which computer or internet access is allowed or available, and as such the 'where' is intimately tied with policies, regulations, restrictions or possibilities. This has also very much to do with the activities or the 'what they use ICT for' as e.g. the Mediappro project shows:

> "[…] the prohibition of Internet use for communication (chatting, e-mail, instant messaging), and leisure uses such as games and music, is widespread in schools across all the countries in the project." (Mediappro, 2006, p. 14)

This also suggests that the self-selected learning and engagement with technology, which is often mentioned in relation to power users or the net-generation, may not only be self-selected, but due to the fact that experiments with and certain types of use of ICTs are structurally prohibited or at least less intensive outside the context of the home.

As there are many different 'where's' in the school this is equally true for the home-use of ICT. Having access to a computer can mean that young people have their own computer in their room or that they share a computer with the entire family, which also means there can be different 'where's' of accessing the internet. Furthermore, computer use can take place in more secluded or populated spaces, such as a small office or the living room of the family. So the location of the computer, number of users and where there is access to the internet can have an impact on types of use that will occur, and shape the activities of young people. For instance Livingstone (2002a) describe how patterns of use, access to and ownership of the technology is under transformation, as the technology becomes part of the 'bedroom culture' (the youth have access to the technology and media in their own bedroom) which to some degree lessens parental control. While schools have policies and regulations, this is to some extent the same for families, though this is better described as negotiations (Facer et al, 2003; Mediappro,

2006). In general the youth feel much freer to explore and use ICT at home, but the use of computers, and what is allowed or sanctioned, is a continuous negotiation incorporating family values and general attitudes to technology. The latter factors have an important impact on use, access and frequency for youth at home, as youth often align their use of technology with some of the values of the parent(s) or are affected by these; for instance encouraging or discouraging different kinds of use (Facer et al, 2003; Sefton-Green, 2004). But also parental attitude and parents' own experience with technology shape in positive or negative ways the learning activities of young people. While some parents have resources and knowledge to support educational, interesting and innovative ways of using the computer, other parents fall short of being able to support this.

In this sense statistical data on access to computers and general use categories, such as emailing and instant messaging might take different forms in relation to these factors, as it is phrased by Sefton-Green (2004), drawing on Facer et al. 2003 and Livingstone (2002a):

> "It is important to emphasise, however, that being able to access technology does not necessarily determine how that technology will then be used. Indeed, one of the defining features of research over the last few years has been to emphasise that technology 'itself' does not determine how it will be used, but rather, that ways of using the technology emerge through a complex interplay between children's expectations, family cultures and features of the technology. In order to understand this, we need to move beyond the statistical surveys that we have referenced so far, to the case studies of children's use of technology." (Sefton-Green, 2004, p. 21)

With this citation we can now move on to describe the 'what's' of young people use of technology.

What do they use it for?

As reflected in the citation from Sefton-Green (2004) statistical surveys may not give us knowledge of all the aspects of technology use, when it comes to how the technologies are actually taken into use. Often the range of different technologies and the activities young people engage in are different to map in detail trough surveys, and usually we become restricted to a number of broad categories, as I also mentioned in relation to the questionnaire by (Ooiejevaar & Kamstra, 2005). The Mediappro survey for instance includes email, instant messaging, information search and downloading, which are rather general labels or types of use. Although these categories can be even more detailed (Facer et al., 2003; Lenhart et al., 2005) they tell little about the variety of ways in which technologies are taken into use, about the practices they are embedded in and the purposes for using them.

> "While providing a useful context for discussions of children's computer use, however, these 'whole population' figures serve to mask major differences in patterns of use by individual children. We could in fact say that this method of quantifying behaviours serves to reinforce the impression we are trying to challenge, namely, that there is a 'typical' child computer user or a 'uniform' digital generation." (Facer et al., 2003, p. 27)

Also, the quantification of typical behaviours and types of use can unfold in discrepancies between survey studies and the more qualitatively oriented case studies. For instance, an interesting conclusion of the Mediappro study was that a relatively low number of youth engage in content creation or production of digital artefacts and furthermore that a small number (especially in Denmark) had heard of blogs or kept their own blog[24].

> "Creating their own content is much less widely-practised than forms of communication: for instance 18% of young people say that they have a personal site, and 18% a blog. A blog is quite popular in Belgium (38%) and in France (25%), while in some cases, young people seemed uncertain what a blog was (a third of the Danish sample, for instance)." (Mediappro, 2006, p. 12)

These numbers are somewhat different than those from an American Study (with American youth):

> More than half of all online teens who go online create content for the internet. Among internet-using teens, 57% (or 50% of ***all*** teens, roughly 12 million youth) are what might be called Content Creators. They report having done one or more of the following content- creating activities: create a blog; create a personal webpage; create a webpage for school, a friend, or an organization; share original content they created themselves online; or remix content found online into a new creation. (Lenhart & Madden, 2005, p. 1)

The numbers, however, for creating a blog or webpage are very much the same from the European and the American study. But the reasons for the overall numbers being much higher is the incorporation of 'sharing content they have created or remixing content found online into new creations'. This seems also more in line with some of the qualitative case studies which show that most or many children engage in the creation or production of various small presentations, productions, projects, home work, digital narratives and experiments. These might not always be shared on the internet or with friends, but live as small projects on the individual's computer (Holm Sørensen, 2002b, Facer et al, 2003). In this sense the notion of content creation or creative expression through ICT covers a wider range of different ways of playing and experimenting with the computers that are not easily captured in well-defined categories. This also leads Facer et al (2003) to conclude that such categorisation devices can often blur the actual interplay

and relations between the different categories:

> "The completion of a homework report, for example, may be written in one environment, information sought from another, then the images manipulated in a third, before being incorporated into the written text, and finally transformed within a desktop publishing environment. To attempt to discuss children's activities within discrete category boxes, then, seems increasingly inappropriate. […] It was clear, for example, that young people were almost never 'using a piece of software'; rather they were involved in a particular activity, such as games play, or writing a story, or designing a garden, or doing their homework. We never heard the children talking about doing 'word-processing' or 'desktop publishing' or 'making spreadsheets." (Facer et al, 2003, p. 106)

As I have pointed out in relation to the notion of patchworking, Facer et. al (2003) equally argue that children and youth are not engaging in different types of general use, rather they are engaging with a number of different activities that include multiple types of use, as visible from the citation above. Youth (or the population in general) are seldom engaged in 'using' spreadsheets or e-mailing, rather they are creating budgets, memberlists, schedules or writing letters, managing projects, maintaining relations with family members and so on. In short, people do not engage in general categories of use, they engage with purposeful activities and practices that incorporate different ways of using technology. Though, eliciting general types of use can provide a useful context for discussing youth and use of technology e.g. by avoiding extrapolation from small case studies reporting on activities that might not actually be very prevalent (such as the notions of exotic practices mentioned in Facer et al (2003)); we should keep in mind that the types of use are de-contextualised categories that represent engagement with more complex activities where the categories blur and loose their meaningfulness as structuring devices.

This resonates also very well with, what I have concluded about the use of technology in relation to this particular case. The young people are not 'using powerpoint' or 'searching for information' as such; rather they are creating a presentation or an animation and finding pictures as part of the overarching project of 'understanding and solving the problems of poverty'. As part of this overarching activity or practice they search for information or use PowerPoint; but as I pointed out earlier these different 'types of use' do not reflect *one* particular way of using technologies; rather the technologies and the activities interact and mutually affect each other in a variety of ways. Therefore, rather than framing and understanding the technologies as general types of use, such as 'information search', 'chatting' or 'using powerpoint' we also need to focus on the dynamics and the relations be-

tween the technologies (or types of use) and then how they are used as part of, interacts with and are weaved into the flow of *particular* activities or projects. This is equally important because the way that youth seem to learn about ICT is not through a focus on learning ICT for its own sake, as a 'set of de-contextualised skills', rather they learn about ICT through engaging in meaningful and authentic projects, activities, experiments or versatile processes of creating 'things', as I shall return to in the following section (Facer et al., 2003; Holm Sørensen, 2002bb; Sefton-Green, 2004). This brings us into the realm of 'why youth are using ICT' rather than focusing on the dimensions of 'what' they use it for. Because, for one thing, it seems that this actually covers a plethora of different uses that are hard to make a comprehensive list of. Secondly, because such a list might tell us very little about how the different types of use interact and play out in practice, or about the complex activities of which they are a part.

Why are youth using ICT?

There is no singular reason why youth use ICT, and the question is more of a reformulation or reframing of the 'what do they use ICTs for', as to divert from a focus on de-contextualised notions of types of use, and instead focus on the practices or activities in which the types of use are embedded. As argued in the former section youth most often do not engage with the technology in-and-off itself, but rather their use of ICTs revolve around many different practices and activities which are not themselves necessarily related to ICT, but can reflect other interests and doings (football, horses, roleplay, games or the like). The use of ICT is part of an ecology of everyday life where it plays out and is used in relation to many other activities in young people's lives. In this sense ICTs and online activities are intertwined and related to other doings, rather than being activities that are secluded from the rest of young people's lives:

> "In short, use of the Internet, like that of other media, offers a far-from-dramatic transformation of children's lives. Rather, it shapes and is shaped by the practices and routines of everyday life […]. As a consequence, media culture, youth culture, consumer culture are increasingly intertwined." (Livingstone, 2002b, p. 13)

This is not to say that ICTs and the internet are not different from other media. As also Livingstone writes, there are some special traits which are different than earlier media and technologies:

> "[…] the Internet encompasses, first, a varied set of activities, or media, including chat, email, websites, etc, and second, an all but unmeasurably diverse and constantly changing content. This makes the Internet equivalent not to television, or radio, or the computer, or letter writing, and so forth, but to all of these media, and

> their associated contents and modes of engagement, in combination. Indeed, it is the interrelations among these contents and activities which is most interesting, certainly to young people." (Livingstone, 2002b, p. 5)

And we should add to this, as a clarification, that the 'modes of engagement' equally encompass the production, creation of and play with such media; unlike traditional media, ICT and the internet enable youth to engage in a more 'interactive' relationship with the different media which clearly blurs the distinctions between consumers and producers (or producers and recipients) more than is the case with traditional one-to-many broadcasting, as also noted by Facer et al (2003), Holm Sørensen (2002b) and Jenkins et al (2006). The incorporation of the first citation from Livingstone, therefore, is not to downplay the role of technology in young people's life; For one thing it is to keep in mind that the activities youth engage in, frequency of use and the role ICT play in youth's lives are vastly different. Some engage heavily with ICT and it plays a major role in their construction of identity, and the activities they engage in (but so do many other activities), whereas others use it very little and almost reject it (Facer et al. 2003, p. 229). But secondly, I wish to point out that the use of ICT is exactly part of a wider ecology of everyday life and activities because this is a very crucial point in understanding youth's engagement and learning with and about technology, as I have also mentioned throughout the analysis.

From the case studies (or review of studies) of (Facer et al., 2003; Holm Sørensen, 2002a, 2002b; Jenkins et al., 2006; Sefton-Green, 2004) some commonalities and similarities in youth's use and learning of ICTs seem to emerge. Namely, that the use of ICTs seems to be intimately connected with self-driven, self-chosen meaningful and authentic activities that are associated with young people's identities and interests, which also resonate well with the analysis in this thesis. This crystallises in activities such as small projects, experiments, solving problems and engagement in experiments that often incorporate or draw on peer-networks, through which young people learn, from, teach and share their work with others. On basis of a number of case studies Holm Sørensen (2002a) identifies some common forms of practice, rather than more narrow types of use which youth seem to favour:

> "• Act, control and decide
> • Produce, create and experiment
> • Examine, explore and solve problems
> • Communicate, express, signal and discuss and use different media
> • Interpret oneself
> • Have social relations, acquire new social relations and be part of interpretative communities

• Collaborate and share knowledge" (Holm Sørensen, 2002a, p. 34 – My translation from Danish)

In (Holm Sørensen et. al, 2002) a wide range of activities and productions are analysed and the various authors argue how children and youth play with different media and technologies to express or interpret themselves through writing about, creating little presentations, animations or home-pages telling about their interest:

> "Artistic creative activities take place in homepage productions, where they use a lot of different programs, e.g. drawing and painting programs, music and sound programs and animations programs in connection to this. And in many cases they download still and moving images from the Internet to use in their creative work." (Holm Sørensen, 2005, p. 4)

As a natural part of, and a condition for, engaging with these activities (or what I think could very well be called patchworking processes) they learn about both how to use the technologies, but also about different affordances and constraints of combining different media and narrative forms. Equally, Facer et al. (2003) drawing on their case studies write:

> "In the home we saw that children control what it is they want to do on the computer: that their 'learning' is incidental, a by-product of their substantial activity; that they control their own time; that they use a wide range of learning resources (playful discovery, asking people, looking things up, using online support); that their expertise is often celebrated by family and peers; and that their learning involves 'depth' rather than 'breadth'." (Facer et al. 2003, p. 231)

This perspective is also noted and analysed by Holm Sørensen (2005):

> "For children, learning processes taking place in their spare time are very much based on shared activities. Social learning is important in children's spare-time culture. In school, learning is the *goal* of the activities that take place; in children's spare time; however, learning is for them a *means* to an end: play, learning computer games, chatting, making home pages." (Holm Sørensen, 2005, p. 5)

And Sefton-Green (2004) sums up some important traits of youth's informal engagement with ICT in the following way:

> "However the key to understanding informal learning is to fully acknowledge the necessary dialectical movement across, between and through the sites and kinds of learning available to children and young people today. This report has made the case that in their leisure, at play and in the home with their friends, young people can find in ICTs powerful, challenging and different ways of learning. The emphasis is on sharing, working together, and using a wide range of cultural references and knowledge. This mode of being emphasises the capacity to make, to author and to communicate." (Sefton-Green, 2004, p. 33)

Sefton-Green (2004) also highlights the role of different communities of

practice or peer-networks and suggests that:

> "• many young people are used to working within communities of practice, or communities of learning, in which they take on roles of teacher and learner and induct other individuals into their group activities
> • some young people are growing used to operating as equals within adult domains
> • some young people are actively teaching themselves a range of skills and competencies either as part of their peer group cultures, or as mediated by digital technologies
> • these modes of learning behaviour need to be recognised and further developed in schools and the curriculum." (Sefton-Green, 2004, p. 24)

The notion of different types of communities and networks are also explored by Holm Sørensen (2005) who distinguishes between: *learning hierarchies* (where younger children learn from the older children or beginners learn from the more experienced), *learning communities* (where the learning is a part of a communal activity and a joint enterprise) and *learning networks* (more loosely connected, fluid relations that can be invoked when needed). These bear close similarity with the notion of participatory culture which is also associated with apprenticeship learning (Jenkins et al. 2006).

All of these observations seem to suggest that the value of ICT lies not only in the learning of technological skills, rather it suggest that these are secondary or incidental outcomes of engaging with authentic, meaningful, social, collaborative and problem oriented patchworking processes or 'technology mediated activities' that are intimately connected to notions of participation in communities and development of identity. One might object and mention that such a claim would not explain, or even overlook, e.g. the very advanced technological skills that e.g. young coders or programmers develop. However, this is not the case; rather the argument would be that such skills are also developed through participation in communal 'technology mediated activities' where, however, the object of the activity is e.g. development of software, system administration or websites. This equally involves engaging in learning communities and taking on the identity of a techie, geek or 'computer nerd'. The latter are not necessarily derogatory terms; on the contrary, this is an identity or label that some highly technical users would happily subscribe to[25] (Facer et al., 2003; Nilsson, 2002; Ryberg & Dirckinck-Holmfeld, 2005). The point is that such highly developed technological skills do not arise in-and-off frequent technology use itself, but rather through participation in communities, ICT-mediated activities and alignment of one's identity with a broader culture of tech-savvy youth, whether through LAN-parties (computer gamers meeting physically in the same place (Bjørnstad & Ellingsen, 2002; Ryberg & Dirckinck-Holmfeld, 2005)),

through online support forums or communal development of open source software in open source communities (e.g. at http://sourceforge.net), as Trevor's personal story reflected. In this sense the ways of learning are not different than from other young people, but whereas for many young people ICT is a mean to express, explore, engage or learn about other interests; for the highly technologically oriented user both the means and object of interest is technology or ICT in itself, rather than horses, football or role playing (though these interest can equally be encompassed or be the very initiators or motivators for gaining the advanced skills in the first place; again the identities, modes of belonging and ways of participating in various communities are much more varied and broad than these categorical devices suggest).

These different ways of engaging with ICT resembles very much, what I have described through the metaphor of patchworking, both in the way in which different patches and pieces are assembled into little presentation of oneself, a homepage describing one's interests. But also in how these patchworking processes become more encompassing collective activities where they include orchestration and organisation of patchworking processes in collaboration with others or by drawing on their peers. In this sense the technologies fuse and merge into the flow of the activities and the complex mediated patchwork of technology use where they equally interact and intersect with other skills and literacies.

Discussing youth, learning and technology – Power Users or Empowering Users

From these discussions we can now return to some of the initial questions that were posed in the introduction to this chapter. First and foremost, I would like to return to the questions of the developmental relations between technology and learning and how these might transform each other.

The problem of equating depth of skill with expansive modes of learning

For one thing, I have argued that we should be careful about equating, consciously or implicit, a high-level of technological skills or frequent use with the ability to transform, create, produce or engage in complex processes of patchworking. If we want to nurture and understand skills such as: Application of knowledge in producing artefacts and social relations, creating, pro-

ducing or changing information or becoming agents of change and development in different environments – then it is important to look beyond the technological skills, frequency of use and competences within general or specific areas of use.

By 'technological skills' I am not only referring to skills such as programming, system administration or hardware maintenance; it is equally true for other technological skills, such as gaming or online communication, as mentioned by (Ooijevarr & Kamstra, 2005). We should not assume that people who are vivid chatters, forum posters or play Counter Strike seventeen hours a day will become 'power users' – unless of course we understand 'power users' as equalling high frequency of use and skill level within a specific domain. But such a definition would not necessarily shed light on the notions of change agents, application of knowledge and the transcendence of borders. The transformative or expansive potentials do not automatically flow from having, leveraging or supporting technological skills; but rather from engagement in various technology-enhanced patchworking activities. This is exactly what Engeström argues constitute the movement towards more expansive modes of learning; namely mastering the transformation from individual learning actions towards more communal processes of activity (Engeström, 1987). It is through such technology-mediated patchworking activities that we can understand how the technological skills, but also communicative, organisational and problem solving skills arise. Furthermore, it seems that in a broader view this is exactly how young people learn about technologies and the use of ICTs. Both through working individually and more collectively with small problems, experiments and productions while sharing these with friends or drawing on the various learning networks of peers, parents, sisters and so on (Facer et al., 2003; Holm Sørensen, 2002a, 2002b, 2005; Sefton-Green, 2004).

This also suggests that we should be careful about focusing on the unique individual or self-directed learner in isolation; but rather see such unique persons in relation to their mastery of engaging with social networks and collective modes of engagement. For one thing because what might make the person unique, could indeed be the ability to draw on and activate their communities or networks of resources, persons and various skills; or the ability to creatively stitch together the patches and pieces from others into new patchworks. This is not to strike an argument that individuals cannot learn by themselves, be unique or extensively creative, but that we should be aware of trying to extract the individual's capabilities, as these might be

fundamentally related to the mastery of the social. I believe Wenger describes this very well in accounting for his social theory of learning:

> "The negotiation of meaning is embedded in the practice of specific human communities. These communities and their practices provide material for our learning—language, artifacts, interpretation of the world, whether we are interacting with others or by ourselves […] It is important here to distinguish a social theory of learning from a theory of social learning. A social theory of learning claims that human learning is fundamentally social in the sense defined here, whether it takes place in social interactions, in a group, or by oneself. This theory therefore does not suggest that we learn better in groups or in other interactional contexts or that individual learning is somehow inferior or to be avoided." (Wenger, 2005, p. 15)

The two 'power users' (Trevor and Titilayo) mentioned in chapter 2 were good examples of being unique individuals, but had also become so through engaging with various communities and social activities. Equally, the young people in this case are clearly highly skilled at engaging in collaborative projects and planning, managing, organising and orchestrating such technology mediated patchworking activities.

The problem of 'new ways of learning'

As a second problem regarding the relations between technology and learning, I raised the question whether power users are in fact learning in new ways, or solving problems in a different way from others. Does the novel and creative 'power use' of technology qualitatively transform ways of learning? This indeed is a very tricky question and I will enter it through a citation from Facer et al. (2003) asking the same question in relation to youth's informal learning through technology mediated activities:

> "(…) we must ask if it is ICTs themselves that impose these distinctive ways of working; (…) In truth, however, it seems that many of these features are simply those associated with informal rather the formal learning. When we learn a new recipe, when we learn how to repair a broken window, or how to grow tomatoes, our learning has many of the same features that children describe in their learning with ICTs. It is the interest in the substantive topic that drives us forward, learning itself incidental; we use a wide variety of resources to help us learn; we have time to experiment; and our achievements, however modest, are celebrated by our family and friends. (…) Yet despite its importance, research and theorising on informal learning is substantially underdeveloped (…)" (Facer et al., 2003, p. 231)

They describe this in contrast with formal learning where the teacher chooses the activity and learning is the explicit purpose of the activities, as also earlier citations describe e.g. by Holm Sørensen (2005) who points out that in school, learning is the aim of the activities, whereas at home, learning is a mean that enable youth to play, experiment, build homepages and so

forth. This, however, also suggest a slightly different role where learning is a *condition* for entering meaningful activity, rather than just a by-product of the activity.

There are initially two things I would like to point out from the citation from Facer et al. (2003). First of all, I think there is a potential confusion between modes of learning and pedagogical setting. While I agree that informal learning can be said to be incidental, a by-product or not-intended; the 'informal' or incidental mode of learning is equally a part of 'formal' learning (it is what Engeström coins as a form of learning II where we acquire and unconsciously master the cultural habits and contexts by learning to 'do' school or how to 'make it' in work and school (Engeström, 1987)).

While formal education is often structured around a curriculum and clear goals, the learning which Facer et al (2003) term 'informal' (or interest driven) can equally unfold in formal settings. This for instance is the whole idea of PBL/POPP, as this pedagogy aims at drawing on students' interests and their own exploration, experimentation and continuous problematisation of a topic. Here, as also Holm Sørensen (2005) points out, learning becomes a condition for solving and working with the problem. Though, I agree we can distinguish between settings where learning is a goal in itself and where it is of a more incidental nature or a mean, there is a potential confusion between pedagogical setting and modes of learning in this citation. The experimental, interest-bound learning drawing on many different resources is not 'informal' learning, but another mode of learning which can equally take place within 'formal' learning, depending on the pedagogical design (this is exactly what will happen when the setting and pedagogy is changed, as pointed out by Holm Sørensen (2002a, 2005) and which I shall return to). This is just to add some clarification, as the authors' purpose is to bring into the formal system, the mode of learning that they attribute to the informal; but this would not then suddenly make the formal, informal. What the authors must mean is that what they coin 'informal' learning is a mode of learning which is more often employed or observed in informal settings, but not tied to this setting.

Secondly, I do not agree that research and theorising around, what they term 'informal' learning, is underdeveloped; rather I would say that much socio-cultural theorising about learning, such as apprentice-ship learning (Lave & Wenger, 1991; Nielsen & Kvale, 2002), communities of practice, social theories of learning, social practice theories (Chaiklin & Lave, 1996; Wenger, 1998, 2005), activity theory, developmental work research, devel-

opmental psychology (Engeström, 1987; Cole, 1996) are studying, theorising and pedagogically developing exactly this type of learning. This connection is also made by Holm Sørensen (2002b, 2005) who draws on amongst others on Lave & Wenger (1991), Wenger (1998) in studying children and youth's technology mediated practices.

While theories of apprenticeship learning or communities of practice might be of a newer date and have certainly shed a new light on workplace and school learning, the mode of learning is certainly not new; so is there anything that changes with the increasingly pervasive role of technology? Facer et al (2003) suggest that the speed, volume and flow of information as well as new modes of interactivity are specifics trait related to learning with computers and also mentions newer multimodal literacies which they, however, argue are largely absent from formal education. They suggest:

> "The reality of a world saturated by ICTs is that interactivity and the speed and volume of information flow fundamentally transform the content as well as the nature of teaching and learning in the first place. The context is different. What has to be learned, and how it has to be learned, is fundamentally changed." (Facer et al., 2003, p. 232)

This was also evident from the section where I discussed the challenges of the knowledge society and mentioned how we are increasingly challenged by the need to change from the acquisition of knowledge towards knowledge creation. But apart from the speed, volume and flow of information, new multimodal literacies and other modes of interactivity, I believe it is worth mentioning two other factors that constitute some changes in the contexts of learning for children and youth. For one thing youth have gained access to societally relevant and authentic tools of production. Secondly they have a wider access to practices and activities where these tools are used; both professionally and in amateur peer-networks which are populated by different knowledgeabilities, levels of expertise and experience (Holm Sørensen, 2002b; Jenkins et al., 2006; Russell et al., 2006; Ryberg, 2004; Ryberg & Dirckinck-Holmfeld, 2005; Sefton-Green, 2004).

In relation to the first we can point to that a wide range of productional tools are now available through the use of ICTs. ICTs contain possibilities for creating and producing a wide range of cultural artefacts such as texts, images/movies, sounds, web pages and software. But also through creatively remixing and sampling existing media content, and sharing the productions with other, which is what Seely-Brown refers to as 'remix culture' (Powell, 2005).

Earlier some of the tools of production and distribution were mainly reserved for larger enterprises that could afford expensive equipment and had access to channels of distribution (newspapers, tv-broadcasting and so forth). Both the tools and the channels of distribution are increasingly being decentralised and nowadays creating a small newspaper, music, videos or even tv-programmes do not necessarily require a centralized and large production or distribution apparatus; it can now be done from a home computer with access to the internet. People can produce blogs or podcasts which can at times compete with the attention of the established news media, and on youtube.com (or hundreds of other services) people can share homemade movies, remixes and video-diaries with others (equally many professionals and semi-professionals are using Myspace.com as a way of distributing and promoting their music). This is not to say that youth or children are wildly engaging in such activities, but as Lenhart & Madden (2005) and the case studies show, quite a lot of teens are actually engaging in some kind of content creation. Through such activities youth have the opportunity to engage in various communities and networks and draw on the knowledge of professionals, semi-professionals or amateurs. This is what Jenkins et al. (2006) term participatory culture:

> "A participatory culture is a culture with relatively low barriers to artistic expression and civic engagement, strong support for creating and sharing one's creations, and some type of informal mentorship whereby what is known by the most experienced is passed along to novices. A participatory culture is also one in which members believe their contributions matter, and feel some degree of social connection with one another (at the least they care what other people think about what they have created)." (Jenkins et al., 2006, p. 3)

In this sense the opportunities for engaging with real-world authentic activities, modes of production, problems and expertise have become vastly expanded; and so has the small-time home based experiments, productions and communal activities with peers. Here it is interesting to bring in an 'old' citation from Engeström (1987):

> No doubt the inner contradiction of school–going becomes increasingly aggravated as today's pupils are at an early age intensively drawn into the market as relatively independent consumers, even as producers of exchange values (as computer hackers, as sport stars and performers, etc.). When the pupils' direct participation in the societal production is intensified, the 'holding power' of the school is endangered. In this respect, school–going may well be approaching a crisis of new qualitative dimensions. Whether this will mean a breakthrough into learning activity in school – that remains to be seen. (Engeström, 1987, p. 104)

While this might not have happened on a larger-scale within the educational world, indications from the different qualitative case studies and quantitative surveys do show that such learning activities might be happening in the home and in other contexts outside schools; perhaps there is an increase in learning activities of a more expansive character where the youth increasingly engage in more creative, productive social activities and practices and thereby increasingly are becoming producers, as well as consumers. At least the studies and surveys could suggest that youth may increasingly be engaged in authentic, meaningful, collaborative and problem-oriented technology mediated patchworking activities that are intimately connected to notions of multimembership in various communities. This also provides more varied arenas for negotiating identity, modes of belonging and aligning with wider practices. In this sense youth may increasingly be mastering and engaging with complex technology-mediated patchworking activities which are actually more akin to work practices than school-practices, as also noted by (Holm Sørensen, 2005).

The transformation from primarily engaging in individual learning actions with the goal of acquiring the cultural given body of knowledge (curriculum) towards more authentic, collaborative, problem oriented, expansive learning activities does change what we learn, how we learn, and which capabilities we build. In this way the contexts, tools, arenas and circumstances for learning are under transformation which cause or demand us to focus on other aspects of learning, and nurture other skills than formerly.

This I have expressed through the metaphor of learning as patchworking which encompasses the mastery of complex, problem oriented and technology mediated activities involving the interplay between technological, communicative, collaborative and organisational skills; but also more humble and modest experiments, and small creative productions where different patches and pieces are assembled into new patchworks. While I shall not be so bold as to claim that the metaphor of patchworking is a historically new or culturally emerging form of learning, I believe the metaphor describes very well the kind of technology mediated activities at different levels of scale that (some) young people engage in. Furthermore, these modes of learning (and the particular case in this thesis) seem exactly to reflect the challenges of the knowledge society where there is an increased focus on notions such as knowledge creation, problem solving and collaborative learning. Therefore, supporting different modes of technology enhanced patchworking activities, such as expansive problem oriented processes of

patchworking, should be an important part of formal education, as I shall return to.

Is a new digital generation on the rise?

As the former sections show, there are indeed empirical evidence and indications showing that youth in many ways have better digital competences, are technologically more fluent than their parents' generation and more quickly adopt, appropriate and learn to use new technologies in creative and innovative ways. Also, this study and many others testify that we can gain valuable knowledge about learning, through studying young people's use of technology. It does seem quite evident that (some) young people's ways of learning outside the boundaries of the formal education system in many ways reflect the learning challenges of the knowledge society, as also noted by Facer et al. (2003):

> "That is what was so different in children's learning at home; their learning was authentic in that it was involved, albeit in different degrees, with knowledge creation. (…) We believe that the skills associated with knowledge creation are central to learning in the information age and this is the challenge that children who are already computer literate are posing for the education system" (Facer et al. 2003, p. 239 & 240)

However, there is equally empirical evidence showing that children and young people are using ICTs in many different ways, to various degrees, for widely different purposes and have very differentiated experiences, competences and varied access to ICTs and possibilities for using them. So, while we often speak of 'the digital divide' between developed and developing countries, there are equally digital divides within countries that largely follow (or extends?) traditional or existing socio-economical and cultural divides (Facer et al., 2003; Jenkins et al., 2006; Livingstone, 2002ab, 2002ba).

We should at least be critical of such overarching generational metaphors such as the net-generation, digital natives or power users of technology and reflexive of whom such terms will benefit or disadvantage. And we should be careful about assuming that skills, learning capabilities and social/cultural capital automatically emerge due to the intensive use of technology, which could overlook many of the other factors that seem to have an influence on the development of advanced mastery of technologically mediated patchworking activities. As I have argued such capabilities do not automatically flow from having, leveraging or supporting technological skills, but rather from engaging in technology mediated patchworking activities.

There is an inherent pitfall in such overarching generational metaphors; namely that we restrict ourselves to identifying and describing the skills and capabilities of young advanced users of technology; rather than critically investigating how these skills and capabilities have developed and emerged. While descriptions of what the net-generation or the digital natives are capable of are indeed interesting and necessary, we should not forget to critically investigate, how these have capabilities have come about and what the conditions are for those capabilities to unfold and develop. As I have argued, it is not the use of technology itself that generate change, but rather the way in which the technologies are used through engaging with a variety of activities.

In relation to this there seems to be some structural conditions or inequalities affecting both access to and the ways in which technologies are used. Secondly, as I shall elaborate more upon in the next section, through the self-guided peer-learning youth may not develop some important critical literacies or skills that are important. This highlights the role of educational institutions and schools, both in diminishing this divide, but also in providing youth with the necessary critical and reflexive skills.

However, schools and educational institutions (or maybe rather educational policies as Facer et al. (2003) argue) seem to have failed in providing fruitful, challenging and engaging learning environments incorporating ICTs and supporting the mentioned skills. From all of the studies there are evidence of a divide between the use of ICTs in home and at school, with the latter being the arena where technologies are used the least. Young people often learn how to use technologies through their informal peer-networks and through parents' engagement. So it is mostly through their leisure time activities that technology use really flourishes. But this is also a part of the problem of the 'digital divide', as e.g. parents have very different possibilities and preconditions for supporting, nurturing and helping in developing their children's capabilities with technology (not to mention economic costs of computers, internet access, software and so on). In this sense existing and well-known societal inequalities and differences in social, cultural and educational capital may very well be reproducing themselves into the digital realm, as also suggested by Jenkins et al (2006) in describing the participatory culture:

> "Historically, those youth who had access to books or classical recordings in their homes, whose parents took them to concerts or museums, or who engaged in dinner conversation developed, almost without conscious consideration, skills that helped them perform well in school. Those experiences, which were widespread among the

> middle class and rare among the working class, became a kind of class distinction, which shaped how teachers perceived students. These new forms of cultural participation may be playing a similar role. These activities shape what skills and knowledge students bring into the classroom, and in this fashion determine how teachers and peers perceive these students." (Jenkins et al, 2006, p.14)

Here it should be stressed that the 'Power Users Project' is actually very well aware of such inequalities and see the technology as a mean to bridge the gaps and inequalities (Malyn-Smith, 2004); but whether these new forms of ICT-mediated activities in the context and demands of the knowledge society can help in bridging such inequalities, or whether they will be amplified and aggravated is difficult to say.

These considerations suggest that we should be careful about presuming and anticipating that youth will develop skills and learning capabilities automatically due to intensive use of technology. While there are potentials we should be very observant that they are indeed *potentials* that need to be nurtured, supported and designed for. Therefore, there is a strong need not only to understand power users or young users of technology, but to support and empower them. Schools and other educational institutions are important arenas for this; both in encountering and diminishing the digital divides, but also in ensuring that youth gain critical literacies and reflexive skills in relation to the wider cultural impact of ICT and the internet (Facer et al. 2003, Jenkins et al. 2006). This requires, as I have earlier mentioned, that we reconcile the formal educational system (or the educational policies) with the insights we can gain from studying young people's use of technology; but equally that we incorporate the challenges of the knowledge society in these considerations.

The role of formal education in the knowledge society

While there have been huge investments in bringing ICTs into schools and educational institutions, it seems that educational institutions and schools have problems incorporating and making use of them within the existing educational practices, as it is clearly reflected in the results of the Mediappro project (2006) and mentioned in other studies (Facer et al., 2003; Holm Sørensen, 2005; Sefton-Green, 2004). It seems that many schools, educational institutions (or educational policies) have not been able to provide fruitful, engaging and challenging learning environments that are able to nurture, utilise, support and develop the capabilities and ways of learning

that the youth employ and engage in outside schools.

For one thing this is problematic in relation to diminishing the digital divide between the young people who have the access, support, conditions and abilities to engage in technology mediated patchworking activities. Secondly, even though it seems that young people are actually very good at learning by themselves, through peer-learning and other networks when engaging in technology mediated activities, there are some important skills which are not necessarily made part of their learning activities. These are often learned through formal schooling. Facer et. al. (2003) point to skills of critical reflexivity or 'critical literacies':

> "By using the computer at home, children may well be developing new and more elaborate forms of literacy; they are developing 'implicit' understandings of how and why and when to combine resources, and of the strengths and drawbacks of particular tools. What they may not be developing, however, are the 'critical literacies' that enable them to see these resources as socially and culturally specific products." (Facer et al, 2003, p. 236)

And findings from the Mediappro (2006) project show that the young people themselves stress the need to obtain critical skills in relation to especially information search and internet use:

> "While their experiences of the Internet in school are largely disappointing and constrained, they consider that the school should be an important resource and one that they need. The majority of the young people think it is important or very important that the school teach them how to find useful sites (52%), and to help them evaluate the information they find on websites (42%) of them think it is important, 20% think it is very important). The school should also provide better access to the Internet (39% important, 29% very important) and teach the young people how to quickly find information on the Internet." (Mediappro, 2006, p. 14)

Furthermore, in relation to engaging with project-based activities in schools, Holm Sørensen writes:

> "The children must learn some meta-cognitive strategies, where the questions they have to ask in relation to their learning are: What is it I am doing, why, how does it work and could it be done differently. The children must learn to develop reflexive skills, where they reflect on themselves and the process they are engaged in." (Holm Sørensen, 2002a, p. 38 – My translation from Danish)

While their engagements with technology mediated learning activities at home provide them with many skills and tools for mastering processes of technology mediated patchworking activities, schools and formal education have a very important role in nurturing and developing both the critical skills; but also in further developing the youth's mastery of patchworking activities and engaging youth with other practices and knowledgeabilities

than they would themselves engage in. For instance Facer et al. (2003) mention that practices related to numeracy in out-of-school learning are few and far between.

But what are the reasons that many young people engage so vividly and eagerly with technology mediated activities outside school, while finding the use of technology in schools 'largely disappointing and constrained'? Obviously, the constraints, regulations and policies of some schools play a role, but equally we can find an answer in the tendency for educational systems to provide primarily development of technological skills, rather than providing engagement with technology mediated learning activities. Facer et al. (2003) point out that formal ICT-activities (or training) are often dictated by the curriculum, with a focus on developing de-contextualised skills where learning to use a specific application and its functionality becomes *the* goal of learning, without being embedded in or connected to meaningful activities and practices. This stands in sharp contrast to the youth's out-of-school experiences where the use of and learning about technology is a condition for or by-product of engaging in meaningful, authentic activities.

Likewise, Holm Sørensen (2002a) points out that there is a gap between engaging with the experimental, playful, explorative, collaborative productions and creations that youth experience at home and then the traditional didactics of the classroom, where the classroom teaching is organised in clearly defined time-slots, the teacher is the active part directing the interactions and communicating the knowledge and information to be acquired by the students. While youth favour acting, producing, creating, collaborating, exploring and controlling the processes, the settings in schools are often quite the opposite of that (and as we saw in the analysis, when we derived them of ownership of the process, this quickly changed the setting and their engagement and motivation). In this way, it seems that the problem lies in the entire assemblage of traditional classroom didactics, curriculum orientation, time-slotting and power relations between students and teachers in terms of who control the processes. Said in a somewhat simplified way, it is the industrial model of education that has a hard time incorporating and accommodating to the modes of learning of the knowledge society.

Therefore, it seems that to address both the challenges of the knowledge society and to capitalise on the capabilities of young people, the educational institutions and school (or maybe rather educational policies) have to change. As I have earlier argued, the knowledge society challenge the idea that the primary goal of schools and education is the mass production of

skills where students are provided with a large, stable body of knowledge which they can then apply and draw on for the entirety of their life. This is an ideal that many authors attribute to the school of the industrial age and as tightly related to the acquisition metaphor (Facer et al., 2003; Holm Sørensen, 2005; Paavola et al., 2004; Wenger, 2005). In contrast the school of the knowledge society need to focus more on models or modes of learning that that favour critical thinking, problem formulation and solving and the ability of transforming information into new knowledge. These needs for transformation were cogently summarised in one of the earlier citations from the World Bank:

> "The learning process now needs to be increasingly based on the capacity to find and access knowledge and to apply it in problem solving. Learning to learn, learning to transform information into new knowledge, and learning to translate new knowledge into applications become more important than memorizing specific information. In this new paradigm, primacy is given to analytical skills; that is, to the ability to seek and find information, crystallize issues, formulate testable hypotheses, marshal and evaluate evidence, and solve problems. The new competencies that employers value in the knowledge economy have to do with oral and written communications, teamwork, peer teaching, creativity, envisioning skills, resourcefulness, and the ability to adjust to change." (The World Bank, 2002, p. 29-30)

Some of these transformation and changes encompass that schools and educational institutions need to move from supporting the development of technological skills towards supporting technology mediated activities. However, this also encompasses a movement towards more technology enhanced problem-oriented, project based activities in schools, and a transformation from being primarily knowledge-reproducing towards becoming knowledge-creating communities, as it has also been suggested by many other authors (L. Dirckinck-Holmfeld, 2002; Engeström, 1987, 2005; Facer et al., 2003; Holm Sørensen, 2005; Jenkins et al., 2006; Paavola et al., 2004).

Such transformations are difficult, demanding and require major changes at many different levels of scale and involve multiple actors. However, some experiments with these types of transformations have already been carried out. Especially, within higher education, there are several universities who have already or are incorporating more problem oriented and project based pedagogies; for instance in Denmark, Aalborg and Roskilde University have been based on this pedagogy since their foundation in the seventies. Equally, smaller cycles of change and transformation have been undertaken by researchers in trying to restructure classroom teaching from knowledge-reproduction towards models of knowledge creation (Engeström, 2005, p. 381). At a larger level of scale such changes have been undertaken in the

project 'ICT in new learning environments' – a project supported by the Danish Ministry of education and running from 2002-2004:

> "The *ICT in New Learning Environments* project shows that students bring their informal learning forms into the school context. This happens particularly when the school has undergone physical alterations and when it's organisation of learning and teaching are also restructured, with project-based learning becoming an important part of the school work and with the media available in the learning environment." (Holm Sørensen, 2005, p. 1)

On basis of this and other projects the researchers argue that we can create schools which better accommodate to the potentials and ICT-capabilities of youth, but also to the requirements of the knowledge society. This has equally been explored through developmental experiments that involved altering the physical environment of the school; the organisation of learning and teaching (towards more project based and problem based learning); changing the power relations between pupils and teachers, and even dissolving to some degree the segmentation into classes based on difference in age (Holm Sørensen, 2002a, 2001; Holm Sørensen & Audon, 2004; Holm Sørensen, Audon, & Olesen, 2001; Holm Sørensen et al., 2002).

Such major transformations are not likely to happen over night or quickly spread throughout the entire educational system[26]. A stepping stone or smaller cycles of transformation (than e.g. represented by the complete reorganisation and transformation of the educational environment of the developmental and experimental school) could be to think in terms of supporting, nurturing and designing different kinds of learning opportunities, through various problem or project-oriented patchworking activities. In relation to this we can employ notions such as indirect design or a meso-level approach to pedagogical design as useful, heuristic concepts (Goodyear, 2001, Jones, Dirckinck-Holmfeld et al., 2006). From this pedagogical perspective the focus is on designing organisational forms, learning spaces and tasks, rather than controlling and designing in detail the activities students should engage with. For instance, as I have argued, we 'indirectly' designed the particular learning opportunities and setting in this case through providing and nurturing a learning environment, a social ecology and a technological infrastructure. Equally, the model representing various distributions of control over the 'organisation of work', 'the problem' and 'the solution' could serve as a heuristic tool in supporting and designing different types of technology-mediated patchworking activities.

In any case the various results and findings from several studies, including the humble contributions of this thesis, seem to point to that in order to util-

ise the potential of youth and their capabilities with ICT and the challenges of the knowledge society, we do need to change our perspective on teaching and learning in schools. If we want to nurture, support and develop skills and capacities, such as being able to transform, create and produce knowledge and various knowledge artefacts, it is important to understand that these capacities do not flow automatically from the intensive use of technology or by leveraging and building de-contextualised technological skills; rather these capacities are enabled by engagement with various types of technology enhanced processes of patchworking. Therefore, we need to support, nurture and design for engagement with authentic, meaningful, collaborative technology mediated activities that provide more varied arenas for negotiating identity, knowledgeabilites, modes of belonging and alignment with societally relevant and cultural practices.

I have suggested the metaphor of understanding learning as a process of patchworking which focuses on various forms of knowledge creation and engagement with more or less open-ended learning processes, encompassing different levels of control over the 'problem', 'the solution' and the 'organisation of work'. The various forms span from supporting and nurturing the mastery of complex, problem oriented and technology mediated activities involving the intersection and fusing of technological, communicative, collaborative and organisational skills; to the smaller and more playful experiments, productions and creations where different patches and pieces are assembled into new patchworks (and also I have suggested how we can critically investigate such learning processes).

Such changes and transformations are important in preparing students for the knowledge society and empowering them through utilising and drawing on the potentials youth have. As I argued in the beginning of this chapter, we can indeed learn a lot from studying and understanding young people and their use of technology. However, as I also wrote, the real question is not really *if* we can learn, rather the question is if we are also willing to act upon what we learn – this is a precondition for unfolding the possible potentials, as Facer et al. (2003) write:

> "But we would suggest that these changes are unlikely to come about until schools and policy makers recognise the limitations of much current practice in schools; limitations which derive at least in part from our centrally driven curriculum and assessment systems." (Facer et al. 2003, p. 237)

The responsibility for unfolding these potential relies not only on researchers, teachers, schools or educational institutions, but equally (or even more

so) on policy makers. Here, lies a challenge which includes also researchers within education and learning. For while the challenges of the knowledge society and notions of knowledge creation, creativity and innovation seem to be well represented in policy papers and governmental visions for their respective countries, there seems to be a simultaneous and almost contradictory trend with an increased political focus on measurement, management and assessment of student's skills, through increased curriculum control and standardised testing. However, as I have earlier argued, open-ended, explorative, problem-oriented processes of knowledge creation, where neither the problem, nor the solution are pre-given are harder to assess and measure, than are processes, where there is already a well-defined body of knowledge the learner must acquire. As also Facer et al. (2003) point to, an important condition for the transformation of schools and educational institutions into knowledge creating, rather than knowledge reproducing communities rely also on a political recognition of the limitations of a centralised curriculum and standardised testing in the knowledge society. However, there is equally a common challenge for researchers, teachers, companies and governmental bodies in developing alternative and new ways of assessing, valuing, nurturing and supporting processes of knowledge creation and technology mediated processes of patchworking.

Chapter 12: Reflecting on the analytical framework

In this chapter I will return to reflect on the analytical framework and the analytical concepts that have been applied in this thesis. In doing so, I will situate the framework and concepts within a wider context as I believe they reflect some broader changes or developments within socio-cultural theories of learning. In chapter 3, I argued that there might be an increasing need to study learning that does not occur within or as part of a stable practice or system of activity, and I suggested that the unit of analysis was on the move within socio-cultural theories of learning. This is an argument that I will elaborate on in this chapter, as it creates a backdrop for discussing the potential usefulness of studying some instances of learning as processes of patchworking. Furthermore it serves as a background for reflecting on the analytical framework and the analytical concepts which I shall return to after the broader discussions of the recent developments within socio-cultural theories of learning.

The unit of analysis on the move (but not on the run)

In this section I will expand on the notions that were presented in chapter 3, as to argue that the unit of analysis seems to be on the move within socio-cultural theories of learning. This I initially argued with departure in Engeström's concept of knotworking and also recent developments within the theory of 'Communities of Practice'; or what Wenger more broadly calls a 'social theory of learning' (Wenger, 2005). In relation to the latter I argued that we could see a slight change of analytical focus from more stable communities of practice, as the main unit of analysis, towards an increased focus on boundary crossing, multi-membership and individual's movements between multiple different, overlapping communities of practice. Through these engagements our identities become unique intersections of complex trajectories of participation (Wenger, 1998, 2005). As I have earlier mentioned, the interplay between identity and larger learning system and the interaction, bridging, scaling and crossing that happens between these two entities have become focal points in the recent developments of a social theory of learning. Therefore, some of the important concepts of a social theory of learning are notions of brokering, boundary crossing, and the movement be-

tween peripheral or core engagement in various communities spanning different levels of scale. These developments do not dismiss or make obsolete the studies of more sturdy, recurring, stable communities of practice or activity systems, but it turns our attention towards learning that happens in-between, outside and not directly embedded in these more structured settings.

This is also very clearly articulated by Engeström et al. (1999) in criticising the too strong focus on temporally and spatially stable work practices and arguing for the need to focus on the processes of knotworking. As earlier mentioned, the notion of knotworking is connected to what Engeström argues is a historically new and emerging type of work called co-configuration. I shall not go into a more detailed description of co-configuration work or in any way argue, whether this is indeed a historically new and emerging type of work. However, what it does point to is the more fleeting and unstable type of work that requires interaction across boundaries by forming provisional teams, groups or other more temporary constellations that draw on the experiences and knowledge from different professions. Engeström concludes that studies of work and learning increasingly need to focus more on these unstable configurations:

> "Activity-theoretical studies of work and communication have thus far mainly dealt with development and learning within well-bounded singular activity systems. If knotworking is indeed a historically significant new way of organizing work, associated with the rise of co-configuration, activity theory must expand its methodological repertoire to cope with the challenge." (Engeström et al., 1999, p. 372)

> "Knotworking poses qualitatively new challenges to work communities and researchers. The relatively stable standard procedures of cooperative continuous improvement are not sufficient in conditions of knotworking. Rapid negotiation and improvization with constantly changing configurations of partners gain central importance. On the other hand, these quick, pulsating negotiations have to be embedded in a radically extended time perspective - the entire life trajectory of the product or service." (Engeström, 2000, p. 973)

In this way both Wenger and Engeström stress how the knowledge and experience of such horizontal moves and loosely tied knots must be re-embedded and re-negotiated into the activity systems, communities of practice or larger-scale learning systems. Here the individual or smaller collectives of actors and different types of artefacts that are the outcomes of the processes seem to be important in brokering, transferring and re-appropriating the experiences into the sturdier, historical, communal constellations. This is also explored by (Kanstrup, 2005; Konkola, Tuomi-Gröhn, Lambert, & Ludvigsen, 2007) in analysing notions of developmental

transfer between activity systems, through the notions of brokers and boundary crossing.

These more unstable configurations have also been pointed out by proponents within the field of networked learning who argue for a more dispersed and relational view of the unit of analysis. Networked learning in a sense have two different meanings; one the one hand it can be interpreted very broadly as another way of talking about 'online learning', but there are some more profound theoretical and methodological assumptions associated with the term. The latter understanding of the metaphor of networked learning has especially come to live through the work represented by groups of researchers associated with The Centre for Studies of Advanced Learning Technology (CSALT) programme which is located at the Department of Educational Research at Lancaster University. This group work with the following definition of networked learning cited from (Jones & Esnault, 2004).

> "Networked learning is learning in which information and communication technology (C&IT) is used to promote connections: between one learner and other learners, between learners and tutors; between a learning community and its learning resources." (Jones & Esnault, 2004, p. 317)

> "Networked learning focuses on the connections between learners, learners and tutors and between learners and the resources they make use of in their learning. This approach to learning suggests *a relational view* in which learning takes place in relation to others and also in relation to an array of learning resources (Jones 2004, Jones and Esnault 2004). This view of networked learning has been explicitly applied to networked management learning employing a dialogic approach (Hodgson and Watland 2004). (…) Networked learning understood in this way doesn't privilege any particular types of relationships, either between people or between people and resources. As such it differs from two of the more popular approaches applied to the use of computers and digital networks in education, communities of practice (CoPs) and computer supported collaborative learning (CSCL)." (Jones, Ferreday, & Hodgson, 2006, p.1)

From especially the second citation one can read that networked learning goes beyond merely being a term to denote 'online learning' or 'e-learning', but also encompasses some theoretical assumptions. However, networked learning is not a homogenous theoretical framework, but rather an umbrella term for a variety of theoretical entrance points and analytical ways of engaging with instances of networked learning. In general, however, it is fair to say that networked learning falls largely within the broader landscape of socio-cultural theories of learning and adopts methods and methodologies from critical discourse analysis and dialogical approaches. Furthermore, there is quite an inspiration from different theories of networks, social net-

work analysis and actor-network theory (Jones, 2004; Jones, Dirckinck-Holmfeld et al., 2006; Jones, Ferreday et al., 2006; Bruno Latour, 2005).

Authors within the field of networked learning have criticised notions such as Communities of Practice, but also the strong focus on 'collaborative learning' within CSCL. The critique has for one thing concerned notions of harmony and homogeneity, which have often been outcomes of many interpretations and practical applications of Communities of Practice (L. Dirckinck-Holmfeld et al., 2007 Forthcoming; Hodgson & Reynolds, 2002; Jones, Dirckinck-Holmfeld et al., 2006a). Secondly, some authors have voiced a concern that CSCL and the theory of Communities of Practice is focusing too much on networks composed of strong ties and overlooking the value of weak ties (Jones, 2004; Jones, Ferreday et al., 2006; Ryberg & Larsen, 2006). In terms of networks a Community of Practice can be described as a network composed of strong ties between the participants (Jones & Esnault, 2004; Jones, Ferreday et al., 2006; Wenger, 1998). From the metaphor of networks one can question whether tightly knitted and coherent communities composed of strong ties are actually the most dominant type of social organisation in comparison with more loosely defined networks composed of weak ties[27]. The differences between a networked view and e.g. Communities of Practice have been articulated in the following way:

> Communities of Practice are characterized by three related structural properties—a shared enterprise, mutual engagement, and a shared repertoire (Wenger, 1998, p. 72)—while networks are characterized as interconnected nodes (Castells, 1996/2000), or the connections between learners, learners and tutors, and between a learning community and its resources (Jones, 2004b, p. 1). As such, networked learning is concerned with establishing connections and relationships whereas a learning environment based on Communities of Practice is concerned with the establishment of a shared practice. (Jones, Dirckinck-Holmfeld et al., 2006, p. 46)

I do agree that this has been an outcome of much pedagogical application of the ideas of communities of practice (L. Dirckinck-Holmfeld, Sorensen, Ryberg, & Buus, 2004), but I believe it is important to stress that ideas such as boundary crossing and brokering have always been central to the theory of Communities of Practice. However, the latter concepts are not those that have been most widely adopted by the broader research environment, which an earlier citation from Wenger (2005) underlines and as it is also articulated by Jones, Dirckinck-Holmfeld et al. (2006).

> "European research and practice has been heavily influenced by Communities of Practice thinking, and other learning environments for professionals have built more explicitly on ideas of Communities of Practice and the pedagogical principles of collaborative learning. This trend is evident, for instance, in the form of problem and

> project-based learning: encouraging and expecting students to work together and to rely on interdependencies among students" (Jones, Dirckinck-Holmfeld et al., 2006, p. 46)

There has been a strong focus on designing for somewhat little islands where researchers and practitioners have explored various ways of designing Communities of Practice or proposing this metaphor as an organising principle for courses, master programmes or as underlying metaphors for how to design for space and place in networked environments (Ponti & Ryberg, 2004, Ryberg & Ponti, 2005). Within the broad field of online learning, as argued in the citation above, there has been a focus on how to design for 'shared practices' and strong relations between participants (Dirckinck-Holmfeld, Sorensen et. al, 2004) where especially concepts such as establishing mutual engagement, shared repertoires and joint enterprises have been foregrounded. This in turn has left notions of brokering, multi-membership and boundary crossing less explored and has granted analytical and practical primacy to the 'inwards' dynamics of a community; rather than exploring the 'outwards' movements, inspirations, boundary crossing and the potential 'patches and pieces' entering the community from outside (e.g. through brokers as explored by (Kanstrup, 2005). However, I think this is exactly what the development of Wenger's theory is aiming to address. As I have touched upon, and which should also be visible from the citations in this chapter, the recent research proposal of Wenger illustrates a slight move away from situating communities of practice, as the prime unit of analysis towards the analytical focus becoming people's movement between Communities of Practices and larger-scale systems. Here the focus becomes how identity is developed through participation, immersion or withdrawal from Communities of Practice, by persons' multi-membership and boundary participation in different communities and larger-scale systems over time (Wenger, 2005). In my interpretation this resembles the networked view, as it is presented within networked learning, as the focus is eschewed from a particular community towards trajectories, connections and relations across different practices and the interactions with larger-scale learning system.

This also connects to one of the central notions within some articulations of networked learning, namely the notion of 'networked individualism' adopted from Castells (2001). This concept actually very much reflects some trends that also Wenger highlights under the heading "The individualization of trajectories of identity"

> "[…] in a complex society, the issue of identity becomes more individual because each person becomes a unique intersection of forms of participation. Because our set

> of multimembership is so unique, because the social contexts in which we define our identities are so diverse, we do not have companions who share our trajectory. […] While the anachronistic "universal knower" à la Leonardo da Vinci is replaced by teams and communities of "partial knowers," we also see individual identity becoming a "project" that occupies center stage in society." (Wenger, 2005, p. 35)
>
> "An individualized sense of trajectory becomes increasingly driven by a developmental thrust: community participation is less determined by geographical collocation or institutional affiliation than by our interest and potentially our learning needs. Technology and globalization contribute to this trend. Our identities determine which communities we belong to and are in turn defined by these forms of intentional, learning-driven (multi)membership." (Wenger, 2005, p. 35-36)

This reflects also the tension that is apparent in the term 'networked individualism'; namely that the sociological category of individualisation which means that it is increasingly our individual preferences, affinities and orientations that shape our lives and not family traditions, cultural heritage or the geographically determined community, is also enacted on the internet. As Castells frames it: *the internet is the material support for 'networked individualism'* (Castells, 2001, p. 129). But while witnessing an intensified personalisation and individualisation, we are at the same time increasingly dependent on, connected to and mutually reliant on each other, we are all 'partial knowers'. In this sense our individuality is carried out as a relational, networked performance dependent on others (Ryberg & Larsen, 2006)[28].

What I argue is that the analytical perspective seems to move towards an increased focus on boundary crossing and less stable entities or constellations of practices. This is visible both in activity theory, the recent developments of a 'social theory of learning' and articulated through the metaphor of networked learning. It seems evident that socio-cultural learning theories are increasingly becoming interested in learning that happens not only in discrete contexts, such as a school class, a work place or an organisational unit, but rather in the learning that happens across and between these constellations. In all the examples there is an increased focus on terms such as relations, movement, interaction, boundary, instability, trajectories and network/knotwork, rather than the more stable entities such as activity systems and communities of practice or social practice which seem to be increasingly 'backgrounded' in favour of the less stable configurations and social forms of organisation. Not that the latter concepts disappear, as the knowledge and learning must be re-embedded and re-negotiated into the activity systems, communities of practice or larger-scale learning systems. This is something which is also relevant to reflect upon in relation to this study and the analytical framework.

Returning to the analytical framework and concepts

In this section I will reflect on the analytical framework and concepts that have spawned from this thesis and how they might be instrumental in meeting some (but certainly not all) of the challenges to socio-cultural learning theories, as outlined in the former sections. In relation to this I will also reflect on the short-comings of this kind of analysis; or rather the specific study in this thesis.

The overall scope of the analytical framework and concepts has been to shed light on what I have called processes of patchworking. As outlined in the introductory chapter, chapter 3 and the former sections processes of patchworking can be likened to and is inspired by the notions of knotworking, but also the wider theoretical and methodological developments that have been outlined in the former sections.

As have been laid out in the preceding chapters, the main concern for this kind of analysis was to understand how a relatively short-term, intensive learning process unfolded and developed through a series of overlapping, unstable activities. This I have argued, represents a dual focus, as for one thing, there is an analytical focus on how ideas change, develop, matures or deteriorate, but also a focus on how the entire process is managed and orchestrated. In such unstable settings of patchworking the analytical purpose becomes to understand how this order and structure is dynamically negotiated and produced by the participants. Rather than dissecting and laying bare the interactional structures of a recurrent practice, the aim has been to follow and account for the development and change of threads across different unstable activities.

In addressing this I have, for one thing, argued for a level of analytical zoom and approach to the analysis and collected data material which lie in-between general ethnographical accounts and then more detailed micro-analysis where the focus is often on eliciting the interactional structures of recurrent practices. I have argued that the chosen analytical zoom level is appropriate when studying development and change across unstable settings with different, irregular events because it is important to understand the overall composition, orchestration and flow of the unstable and changing process. Secondly, I have argued that the analytical concepts of cycles, threads and processes could be instrumental in accomplishing this.

However, as part of the discussions in chapter 3, I raised some questions

that relate both to the analytical approach, the analytical concepts and the findings or observations; namely whether this type of analysis can render larger cultural and societal discourses visible and empirically inspectable (as e.g. (Arnseth & Ludvigsen, 2006) argue is a challenge to socio-cultural analyses of learning)? Equally, I opened questions whether the analytical notions and observations can actually shed light on how knowledge travels between different communities and if we can analytically discern, and empirically ground, how identity can bridge different levels of scale?

In relation to how 'knowledge' travels and transforms between different levels of scale, and how learning happens through engagement with different communities, practices and activities, I believe it is fair to say (on basis of the analysis) that this can fruitfully be accounted for from this approach to the analysis. I might not have shown the genesis and development of all the threads, different ideas, 'patches and pieces', pictures, pieces of animation, discussions of music and so forth, but I would argue that I have several places in the analysis shown how different 'patches and pieces', whether these are 'facts found on the internet', a picture portraying poverty, PowerPoint slides from researchers or expert statements are weaved into the patchwork, through complex negotiations and multiple reweavings (and I have suggested a model for how to critically approach these processes of reweaving). Also, I have shown how this patchwork incorporates different knowledgeabilities and perspectives that have come from the different sites of engagement.

In the same vein, I believe on basis of the analysis that I have given at least a glimpse into notions such as the scaling of identity, though this has not been a main focus of analysis. For instance, I have pointed to how they are both playful teens and global citizens, but also how their reflections on being Danes in an international context affects and transforms their way of presenting, acting, framing the problem space and the solutions. Equally, I have argued how the problem space become something with which they engage very emotionally and vivid, as almost a moral obligation, and how their stitching of a moral blueprint become part of the knowledge production process. The latter, I have argued, we can see the genesis of already during their first work meeting on the 27th of July where they align to each other through a playful brainstorming by drawing on both local and more global discourses, thereby laying open their 'political identities' to each other. This also points to that we can identify wider socio-cultural discourses and investigate how they are interpreted, transformed, contested or aligned with and weaved into the patchwork; and, as just mentioned, I have suggested that we

can critically investigate and query into how this might more or less affect the different threads and blueprints – and how contradictory or disruptive patches and pieces are dealt with. Thus, I would argue that I have analytically shown and empirically grounded how 'patches and pieces' of knowledge can travel between different contexts and become transformed, appropriated and weaved into different patchworks. Also, I have shown glimpses of e.g. how identity can scale and wider socio-cultural discourses can become part of processes of patchworking from analysing this specific, unstable event and process of patchworking.

However, here we also arrive at one of the shortcomings of this study and the temporal delineation of focusing on this specific short-term event. While I have shown how the young people orchestrate a complex process of patchworking and manage to bring together various patches and pieces into a final coherent patchwork, this does not shed light on whether this 'knowledge' will actually live on and become itself a patchwork or 'patches and pieces that will be applied in other setting – or maybe shape and transform other activities. Neither, can this study in-and-off itself tell us how this might have transformed or changed their being in the world; Nor how their engagement with different contexts, practices and knowledgeabilities they came in contact with (through meeting us, the other researchers and the clubhouses representatives) might shape their trajectory of identity in a longer-term perspective.

This I would argue is due to the temporal extension and delineation of data collection, rather than the analytical concepts. Therefore, an interesting future challenge and opportunity in developing this framework will be to explore what happens when the 'patches and pieces' of knowledge cross other boundaries and need to be embedded, for instance, in more sturdy systems of activity, communities of practice or other more stable settings. This might in itself create a new unstable period of patchworking.

Also, we can identify a challenge and opportunity in understanding from where e.g. skills of mastering complex processes of patchworking have emerged and how they have developed. Finally, as I mentioned in chapter 3, the temporal unit of analysis in studying processes of patchworking might also be extended, as to incorporate lengthier periods of time. Though this might affect the level of zoom one can apply, the metaphor of patchworking and the analytical concepts might still be useful. However, let me briefly return to reflect on the analytical concepts and relate them to these questions and challenges.

Cycles, Processes and threads

When discussing Figure 14 in chapter 10, where I illustrated and discussed the relations between cycles, processes and threads, I stressed that this was a way of illustrating the relations in this particular case, and these these relations might look very different in other cases and contexts. As I also described in chapter 4 the different analytical concepts are open, flexible analytical categories, rather than tied to the particular cycles, processes or threads that I have identified in this study.

Cycles are merely an analytical entrance path into identifying some of the overarching structures of an event or a series of events. They represent an overall rhythm or composition of such a series of events and can be understood as different types of overall activities that have certain relations to each other. In this case I have identified two overarching cycles where the shifts between them are 'organic' in the sense that the shifts arise from a need or a suddenly occurring event. However, cycles are not fixed categories that are tied to the two cycles identified in this case. We could also work with cycles that are more 'recurrent' or 'mechanical', by which I mean something reoccurring on specific times or as part of specific activities (or intermixtures between such cycles). Likewise, we could study cycles occurring over extended periods of time, though as mentioned, this might change the level of zoom applied in the analysis.

Processes are open, flexible analytical categories as well. They are ways of looking analytically at how the entire process of patchworking is accomplished. Therefore, other studies and contexts might identify overlapping, but also completely different processes, by which people orchestrate their work. Some of the processes that I have identified might be more or less generic for e.g. collaborative group work (such as planning work, foraging and gathering information) and, as I earlier mentioned, other studies of collaborative work have identified similar processes (e.g. in relation to creating a sociable and funny atmosphere). As such the processes are about understanding how a particular process of patchworking unfolds and is orchestrated, but also about understanding the interplay between processes and cycles. This might, for one thing, give us some general knowledge and insights into e.g. collaborative group work (as this is the activity in this study), but also how such (and other types of processes) of patchworking can be nurtured and (technologically) supported. Such investigations would, however, require more than just one study, as to understand how different orchestrations of processes and cycles might be more or less successful ways of or-

ganising the work.

Furthermore, in relation to different types of processes an interesting question would be how (and where) the mastery of such processes emerge and develop, and if they 'transfer' into, or are transformed, in other contexts. The young people in this case master these complex processes, but how these capabilities have come about is not visible from the case at hand. As mentioned in the previous chapter the productive, experimental, creative activities children and youth engage in out-of-school might be a ground where such capabilities emerge and develop; but how would those capabilities transform, develop and (hopefully improve) through being enacted within formal education? For, as I have also suggested, this may equally have been an arena in which these capabilities have developed.

Like the two other analytical concepts, the threads are also open and flexible analytical tools. I have identified two types of threads in this study (backbone and topical threads) which would certainly look different in other cases because the 'content' of threads is not predetermined. They can be very short-lived ideas, as well as more sturdy entities such as a problem formulation, but they relate to the 'subject', 'topic', 'activity' or 'problem space' that is being studied. In this way the threads are more ephemeral and mutable, whereas processes and cycles may have more generic traits. This, however, does not preclude that threads can become even sturdier entities. A fruitful area of analysis might be how such threads or patchworks of crystallised arguments live on and become employed in other contexts as arguments and ideas; or how they become central parts of a person's identity and social actions.

This thesis cannot ground or demonstrate how the different 'patches and pieces' of corruption and distrust, disturbing facts about poverty or the personal narrative from a young girl changing her trajectory in life, might have lived on through the young people; or how they may have been transformed and employed in other presentations, discussions or processes of patchworking. However, following such movements and transformations of threads, patchworks and 'patches and pieces' after intense learning experiences and processes of patchworking, would be an exciting area for future studies.

But while 'the research must go on' this thesis will soon have to end. In the following and final chapter I will briefly discuss the main outcomes of the study and conclude the thesis.

Chapter 13: Final remarks

Something old, something new
Something borrowed, something blue
And a silver sixpence in her shoe.

The old saying and wedding tradition cited above captures well the essence of metaphorically understanding learning as a process of patchworking. The metaphor of patchworking, that I have argued for and developed throughout this thesis, aims at highlighting how learning processes and processes of knowledge creation consist in stitching and weaving together different 'patches and pieces' into something new. These 'patches and pieces' may not in themselves all be new, but can be old, borrowed and of a widely different fabric; yet in their combination they form a new patchwork. A process of patchworking is the activity of planning, stitching together, creating, reweaving, foraging 'patches and pieces' and transforming these into new patchworks.

As such, the metaphor of patchworking is a perspective that foregrounds the constructive, creative and productive aspects of learning processes. In this way it resembles notions such as expansive learning or the metaphor of knowledge creation, but as I have argued, these perspectives focus very much on the societal and cultural impact or outcome of the learning processes, whereas the notion of patchworking also recognises more modest and small contributions as instances of knowledge creation. In relation to this I have argued that youth may increasingly be engaging in technology mediated processes of patchworking where they produce, share and create different media and digital artefacts, and participate in various types of practices, communities and peer-networks. Even though these processes of patchworking may not necessarily lead to large-scale cultural transformations we need to take into account how experiences of agency and empowerment, through participation in such meaningful, real-world, authentic, collaborative activities can be very transformative. Especially as they provide the experiences and identities of being knowledge creators, rather than only consumers of knowledge. However, these activities happen largely outside the context of schools and educational institutions, and it is primarily through the informal use of technology that youth gain access to these experiences of agency, identities and modes of production, participation and engagement.

The notion of patchworking as a metaphor for learning has emerged from studying eight young people's collaborative work, their use of technology

and engagement with the open-ended problem of 'how to use technology to reduce poverty in the world'. Neither the problem, nor the solutions were given or fixed, which meant that the problem and the wide range of possible solutions had to be continuously formulated, negotiated, created and re-framed, as their work progressed. Furthermore, they were expected to manage and control this entire learning and work process largely by themselves. In this setting, and within a relatively short and intense period of time, they managed to forage, pull together, create, negotiate and transform a number of different resources or 'patches and pieces' into a final patchwork. The different patches and pieces encompassed both different digital media, such as pictures, music and animation, but equally different ideas, perspectives and arguments that represented different knowledgeabilities. Some of these were foraged and gathered from searching the web, while others emerged through dialogues and interviews with different resource persons representing different communities, practices and forms of knowing. These patches and pieces were stitched together into a heavily multimodal presentation that addressed, discussed, analysed and suggested some solutions to the problem they had worked with. However, throughout the thesis I have argued that it is not the final patchwork, its multimodality or the final assemblage of various patches and pieces that should be made the object of study in-and-off itself; rather it is the process of patchworking that we critically need to engage with.

In addressing this I have argued for an analytical framework and some analytical concepts to understand how such short-term, intensive process of patchworking unfolds and develops through a series of unstable activities and settings. The analytical approach encompass a dual focus as it aims at eliciting how ideas change, develop, thicken or dissolve, but equally it focuses on how the entire process is managed and orchestrated. To address this I have argued that it is important to gain an overview of the entire event chosen for analysis while also engaging in more detailed analysis of selected moments, as to corroborate and ground the analysis in the empirical data. Therefore, I have worked with a level of analytical zoom and approach to the analysis which lie in-between ethnographical narrative accounts and then more detailed analysis of transcribed excerpts of their interaction. This analytical focus partly emerged from the nature of the case and the empirical data, but also resonate a general movement within socio-cultural theories of learning. Within this theoretical landscape the analytical focus seems to be moving from a focus on learning that happens in relatively stable contexts with recurrent practices towards an increased focus on unstable, continu-

ously changing settings, movement across boundaries and interactions or transfer between activity systems.

In working with this double focus I have employed the analytical concepts of cycles, threads and processes to analyse how the threads developed and to understand how they orchestrated and managed their work. On basis of the analysis of their process, I have further refined and developed these notions, where I have especially argued that we should focus on processes of "re-weaving the patchworks" (see Figure 15 and Figure 16), and I have suggested some analytical foci in order to understand processes of patchworking:

- Analysing the development of the threads and how 'patches and pieces' weaved in
- How does the process involve and engage the learner in negotiation of identity and various forms of knowledgeability?
- How is the organisation of work or collaboration orchestrated?
- How are the roles of technology in this process?

These analytical foci both reflect and extend the analysis. In engaging with these I have stressed the importance of focusing on the entire process of patchworking and not just the product; but equally that we need to ground and corroborate our analytical observations in empirical data, as I have done throughout the analysis.

The first point reflects that we should investigate how the threads develop and change over time and if 'patches and pieces' are critically negotiated into the patchwork or simply added without reflection? In relation to this I have argued that we should look at how threads, patchworks or patches and pieces enter into processes of reweaving (see Figure 15); and I have suggested that we can analytically study if this prompts development of the threads and re-weavings of the patchwork at different levels, as I have expressed in Figure 16. In this way we can look at if the learners critically reflect on the patches and pieces they find, or if they are gluing together disparate and even contradictory pieces by only incorporating patches and pieces that fit their already decided blueprint; thus possibly ignoring contradictory and disruptive pieces of information that might change or cause reweavings of their conceptual or moral blueprint.

The second point encompasses the notion that we should not only look at whether the actual outcome of a process of patchworking has wider cultural

value or initiate the transformation of large scale activities. This was related to the argument that notions such as expansive learning and the metaphor of knowledge creation focuses too much on the societal or organisational impact of the learning processes. I stressed that we need to understand smaller and more modest contributions of learning or knowledge creation processes as well. The notion of patchworking and reweaving patchworks aims at describing processes at different levels of scale spanning from negotiating a picture into a slideshow to more problem-oriented, collaborative processes where the learners are in control of the problem, the solution and the work process. I have argued that we can understand problem orientation as *a form* of expansive learning. This form of expansive learning may not entail larger cycles of societal or organisational transformation, but neither is it restricted to the solution of discrete, given problems because it involves the continuous negotiation of the problem and the solution. In relation to this I suggested that we need to involve the insights of social theories of learning and notions of identity. I argued that we need to understand if the learning processes support or enable experiences of agency, empowerment and personal involvement. This is because such experiences can be equally transformative, though they may not translate into actual, objective transformations of cultural practices. In this vein we need to understand how experiences of boundary exploration may involve the negotiation of different forms of knowledge, but also how such encounters may challenge the learners and prompt them to negotiate their identities and re-investigate their conceptual and moral blueprints.

The third point reflects questions of whether the process incorporates the mastery of orchestrating and organising the work, and to which degree the learners are in control of the processes – or allowed to be in control of these. In understanding especially problem oriented or project based processes of learning it is important to understand the learners' capabilities of orchestrating and mastering such work and collaboration processes. These capabilities are both conditions for engaging with such processes of patchworking, but equally they are a part of the learning process. When the learning process is not only about finding a solution to a problem, but also involves the control and mastery of the entire process of patchworking, then we need to analyse and understand how this is accomplished; and we need to understand the learners' capabilities of planning, distributing and managing such processes. Herein lies also a challenge in studying and understanding how different ways of pedagogically supporting, nurturing, designing and facilitating such more or less open ended projects affect the work processes. This is because,

as I have shown, there is a fine line and delicate balance between facilitating and supporting and then deriving the learner's of the ownership of the process.

The fourth point reflects that technology mediated processes of patchworking are not only about the level or depth of technological skills; rather it covers the abilities to utilise technologies as a part of a process or flow of activities. This means that we cannot segregate and look at technological skills in isolation, but need to understand how the various 'skills' are employed as part of particular activities. In relation to e.g. information search I have pointed out that this does not only involve the ability to 'find information', but equally how or whether these resources, ideas and materials are critically negotiated into the patchwork. This involves a focus on how the technologies or technological artefacts fuse with the processes of creating and reweaving patchworks, and how this might alter the threads and blueprints. Equally, we need to investigate how different types of digital and regular skills and competences interact and merge in the processes. Technology mediated processes of patchworking are for one thing dependent on mastering the technologies with a relatively high level of skill, but equally the processes are related to capabilities such as organising, planning, communicating, constructing a good narrative and orchestrating multimodal forms of expression. The merging of the two domains suggests that it might not be feasible to distinguish between these skills or capabilities because in processes of patchworking they merge and form an inseparable unity. Searching for information is not only about being able to use a search engine, but equally encompass assessing, discussing and critically judging the validity of the source and weaving it into the patchwork. Likewise, as we also saw in the case, creating a presentation is not only about assembling an impressive amount of different media, but equally about communicating and presenting a narrative and overall argument. Therefore, understanding and analysing such technology mediated processes of patchworking encompass a focus on how (or if) the affordances and constraints of different media, technologies and means are critically reflected upon as part of the process.

I have argued that it is important to understand, critically investigate and nurture such processes of patchworking. The movement from an industrial society towards the knowledge and information society means that we need to move beyond thinking of learning as the acquisition of a stable body of knowledge and skills, towards focusing on modes of learning that favour critical thinking, problem orientation and nurture the abilities to analyse, transform and create new knowledge. This also means that schools, educa-

tional institutions and educational polices need to change from focusing mainly on the acquisition of a large, stable body of knowledge and skills, towards focusing on modes of learning that favour critical thinking, problem-orientation and the abilities of transforming information and creating new knowledge. Major transformations such as completely re-organising and transforming the entire educational environment (as it has been done with some developmental and experimental school) are demanding and involve multiple actors at different levels. However, I have argued that smaller cycles of transformation could consist in supporting, nurturing and designing different kinds of learning opportunities, through various problem or project-oriented patchworking activities. In relation to this we can employ notions such as indirect design and the model representing various distributions of control over the 'organisation of work', 'the problem' and 'the solution' (see Figure 3). These could serve as heuristic tools in supporting and designing different types of technology-mediated patchworking activities.

Supporting and nurturing such learning processes is a challenge for the formal educational system and while schools and institutions have been slow to pick up this challenge, some young people are developing these skills and capacities outside the context of school, through their engagement in various informal technology mediated activities and communities. Some youth are part of the digital participatory culture where they share, create and remix content and engage in authentic, meaningful, collaborative patchworking activities which have given rise to metaphors such as power users, digital natives or the net-generation. As this and other studies suggest, we can indeed learn much from studying how these young people engage with complex, collaborative creation of various media and knowledge artefacts that can feed into the future design of education.

However, such generational and overarching metaphors can also cloud that the experiences, competences, access to and ways of using the technologies vary greatly among youth. Many young people may not be developing the necessary critical and reflexive skills through their use of technology in informal contexts. We should be careful about assuming that skills, learning capabilities, critical literacies and social/cultural capital automatically emerge due to intensive use of technology in itself. While some youth manage to build important skills and literacies through their informal use of technology, other groups of youth may fall short of developing these capacities on their own; and it seems that these gaps in experiences and competences may largely be following existing socio-economical and cultural di-

vides.

Therefore, it is increasingly important for schools and educational institutions to support and nurture critical, problem-oriented, technology mediated processes of patchworking, and to transform the focus from knowledge acquisition towards knowledge creation. For one thing to address the challenges of the knowledge society, but equally because the schools and educational institutions play a pivotal role in bridging the gaps in the experiences and capabilities of young people, and to ensure that all youth develop critical, reflective skills.

This, however, is not a challenge that rests on the shoulders of the schools and educational institutions alone, but equally, or even more so, on policy makers. The latter need to recognise that the transformation from knowledge acquisition towards nurturing knowledge creation also means critically revising the current notions of curriculum control and assessment systems which are directed towards fact-based learning and the acquisition of a stable body of knowledge. However, this poses a societal challenge for researchers, parents, teachers, companies, visionaries, governmental bodies and many others in finding new and alternative ways of assessing, nurturing and supporting knowledge creation and technology enhanced processes of patchworking.

In this endeavour ambitious long-term research projects, such as the 'Power Users of Technology' project and similar initiatives can play an important role in exploring, understanding and shaping these challenges and transformations. Hopefully, also the humble and modest contribution of this thesis can be one out of many 'patches and pieces' contributing to the reweavings and transformations of the larger societal patchwork.

List of appendices

In this section you will find a list of the different appendices and the material in the appendices. All of the appendices have been put on the accompanying DVD which is only available for the PhD committee members. However, some of the appendices and material (for instance appendix A) will be made publicly available from the website:

http://www.ell.aau.dk/PhD-Dissertation-on-Power-User.429.0.html

Appendix A – Description of Presentation

A1 – Description of Presentation

Appendix B – Research Design, Articles and Work Documents

B1 - Ryberg & Dirckinck-Holmfeld, 2005

B2 - Dirckinck-Holmfeld & Ryberg, 2005

B3 - Ryberg, 2004

B4 - Research design - Nordic Team

B5 - Research Group - Research Challenges for the Costa Rica Symposium

B6 - PU Research Group - Research Questions

B7 - Susan Yoon, 2005 - Questions for Power Users

B8 – PU Research Group – Interview Guide

Appendix C – Overview of Costa Rica Summit – Program, Schedule

C1 – Expanded schedule

C2 – Power User and Registrant Schedule

C3 - Millennium Goals and Youth Challenges

Appendix D – Empirical Material – Files, Notes, Pictures

D1 – Notes from 4 person group

D2 – Notes from 2 person group

D3 – Funny drawing

D4 – Rhyming files

D5 – Modified slideshow

D6 – Full Slideshow from Mauricio

D7 – Their Interview Guide

D8 – The final work plan

Appendix E – Files from their presentation

E1 – Main PowerPoint presentation

E2 – Interview clips shown during presentation

E3 – Music file from the presentation

E4 – Slideshow with pictures

E5 – Handwritten notes for the presentation

Appendix F – Original Video Material

Excerpt 1 – DVD2 – Title 1: (00.42.58 – 00.45.33)

Excerpt 2 – DVD2 – Title 2: (00.21.37 – 00.23.20)

Excerpt 3 – DVD3 – Title 1: (00:04:21 – 00:05:52)

Excerpt 4 – DVD3 – Title 1: (00:08:00 – 00:08:39)

Excerpt 5 – DVD3 – Title 1 (00.08.53 – 00.09.08)

Excerpt 6 – DVD3 – Title 2 (00.03.08 – 00.18.50)

Excerpt 7 – DVD3 – Title 2: (00.52.47 – 00.53.57)

Excerpt 8 – DVD4 – Title 3: (00.09.40 – 00.11.58)

Excerpt 9 – DVD4 – Title 3: (00.54.02 – 00.56.23)

Excerpt 10 - DVD3 – Title 1: (00.10.56 – 00.12.37)

Excerpt 11 – DVD6 – Title 3: (00.00.25 – 00.22.28) (The final presentation)

Appendix G – Original Danish Video Transcripts

G1 – Excerpt 1

G2 – Excerpt 2

G3 – Excerpt 3

G4 – Excerpt 4

G5 – Excerpt 5

G6 – Excerpt 6

G7 – Excerpt 7

G8 – Excerpt 8

G9 – Excerpt 9

G10 – Excerpt 10

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Notes

[1] The term ‘remix culture’, John Seely Brown and other, attribute to Lawrence Lessig (the founder of creative commons). He employs the term as both a description and ideal for how the digital culture has altered and should alter notions of intellectual copyrights.

[2] Here I would like to mention that this perspective has had a developmental trajectory of its own and is in itself a ‘patchwork’, as I have explained in the section “Foreword and Acknowledgements”.

[3] Please note, that I do not mean “geek” in a derogatory sense; rather I understand this as a self-descriptor of a community of people who take a bit of humorous pride in being geeks. This can for an example be seen on the site www.thinkgeek.com where one can buy geek merchandise e.g. t-shirts with leet-texts, such as ‘h4x0r’ ‘31337’, generic geeky texts as: ‘No I will not fix your computer’, ‘There is no place like 127.0.0.1’ or clocks that display the time in binary code (if you do not understand any of this, you are clearly not in the geek segment; probably you are left stumbled and think OMG).

[4] This is certainly not to say that being a good programmer precludes this; the Open Source movement clearly testifies the opposite.

[5] Various articulations of subtle differences between these fields have been made, as e.g. is exemplified in (Dillenbourg, Baker, Blaye, & O'Malley, 1995) distinguishing between ‘socio-cultural’ and a ‘shared cognition approach’ to distinguish between theories having a Vygotskian heritage (Rogoff, Wertsch, Engeström) and then theories of ‘situated cognition’ encompassing (Lave, Suchman, Lave & Wenger). Others again (Moore & Rocklin, 1998) explore differences between ‘distributed cognition’ and ‘situated cognition’ and discuss how they vary in their focus on ‘cognitive processes’ and ‘social practice’. In this sense, there are different ways of distinguishing between these approaches.

[6] One might even add that this example (which is originally from the sixties) is in itself a small cultural-historical relic, as eighteen would probably be too late to worry nowadays :-)

[7] I simply do not know why. The meeting rooms were provided by LearningTimes in Collaboration with Macromedia Breeze and for a long period the recordings of the meetings were available online. However, they suddenly disappeared, which may have been to save disc space on a server or maybe due to a server crash. Nevertheless, they were no longer available.

[8] If you want to read more about Transana please refer to: http://www.transana.org/ (last accessed 15.08.2007)

[9] There is, however, a disruption in this order! On DVD3 – Title 1 at (00.10.55) we suddenly jump to the last days work – the other DVDs and titles apart from this one are chronologically correct.

[10] http://www.govisitcostarica.com/region/city.asp?cID=177 (last visited 15.08.2007)

[11] http://en.wikipedia.org/wiki/Cahuita_National_Park (last visited 15.08.2007)

[12] Due to time pressure the CINPE researchers had little time to help us find some people and therefore Lone suggested in a mail, whom they could interview. I had earlier tried to identify some possible people to interview through our CINPE-contacts, but they were very busy at the time. So we were not sure who the interviewees were either and Lone was not yet there. So we had only general descriptions to work from.

[13] Mogens Glistrup consequently use the Danish term 'Muhammedaner' instead of the Danish 'Muslim'. Muhammedaner is an old Danish term (maybe like Moslem); The term Muhammedaner is now considered a derogatory term, which is why Mogens Glistrup uses it.

[14] Whether he has actually said that I have not been able to confirm, but it is not unlikely. He has been convicted several times for racism and has himself said "Of course I am a racist – all good Danes are. Either you're a racist or else you're a traitor"

[15] In the very technical sense of the word actually! A hub in computer network terms are characterised by being a shared medium for multiple connections, but only one source can transmit at a time – this is in turn is different from switches that allows multiple flows of transmission simultaneously

[16] I am not sure, what she actually means and I ask her about it during the session. It has something to do with finding their perspective, what they then need to do and what they still do not know. It seems it might be a method or way of working, which she has used in school, but it is difficult to tell. However, it does seem it is a method that she has used earlier and would like to apply as a way of dealing with the uncertainty she experiences.

[17] And just as a small note. John Cleese actually guest-starred in an episode, as one of the returning characters called Peter Schmeichel (a parody of a former Danish national football goal-keeper). However, he refused to hold a racket, as he thought that was too silly…and if he thinks so…it probably is true.

[18] Reifuncation is of course a pun on the term reification from (Wenger, 1998) – (a reipuncation perhaps). But I believe it is a perfectly cromulent word that in many ways embiggen the meaning of reification.

[19] This might seem like a trivial or worthless observation, but on a semi-personal note this little glimpse of young people coming together across nations, in a world that seems increasingly hostile and populated on a macro-level with discourses on terrorists, fundamentalists, crusaders and so on, I do believe we should not disregard such stories and identities in a global learning economy.

[20] There is wider debate and controversy, whether slides randomly mutate over time, or whether slides have components that are too complex and will leave immutable traces of its hypothesised intelligent creator. While I shall not claim to resolve this debate, I do think the young people's process reflects that complexity can actually arise from components that are not themselves as complex as the system they subsequently, randomly form. Besides, substituting a principle of uncertainty with an even more speculative or magic explanation seems rather foolish.

[21] For more information about Kaleidoscope please see: http://www.noe-kaleidoscope.org/pub/ For more information about the JEIRP and ERT please refer to:
http://www.ell.aau.dk/Kaleidoscope.48.0.html

[22] Here I am not suggesting that either Guribye (2005) or Gutwin, Stark and Greenberg (1995) are analytically overlooking this.

[23] For instance it seems hard to analyse online roleplaying, social networking or chatting from the perspective of 'collective objects' that are transformed into 'outcomes'. The object might be termed 'having a good time' but what is the outcome or product of such endeavours. At least other theories seem to have better analytical tools for understanding such 'leisure' or 'enjoyable' play activities (Ryberg, 2003, Ryberg, 2004, Ryberg & Dirckinck-Holmfeld, 2005)

[24] In relation to blogging and online creation of content the numbers from Mediappro on the Danish youth surprise me a bit, but this may have to do with interpretation or the framing of the questions (only 7.1% have a blog). I find it somewhat strange the numbers are so relatively low. For instance it

has been estimated that app. 70-80% of Danish youth have an online profile on Arto.dk. Arto.dk is an online social networking site that is very popular among youth between 12-17 years of age (Larsen, 2005). There are no academic surveys or questionnaires laying bare the exact number of users on this service, but there are almost 600.000 profiles on the page and the majority of the users are between 12-17 (Larsen, 2005) (and the youth population of Denmark is 425.064 (Mediappro, 2006)). A profile is much like having one's own website, as it features some light HTML-editing and web-editing. Many of the profiles are examples of creative content creation, where different fonts, pictures, scripts and colours are used to create interesting profiles for one self or others. Furthermore youth upload pictures, videos and combine the use with SMS and MMS as part of using the site (Larsen, 2005; Ryberg & Larsen, 2006). An interesting thing to note is that this service has featured blogs for many years, however, only recently these have been called blogs, rather than 'diaries' (Danish: dagbog) – all users of Arto.dk have a blog or diary available. All of this could suggest that the framing and wording of such questions might yield results that do not represent in full the online activities youth engage in. Though, 70-80% of youth population maintaining, regularly updating and using their profile on arto.dk (or alternatives!) might be too high, 18% (or 7.1%) would definitely be too low (but of course this is also a matter of definition whether a profile featuring editing and creation of sub-pages should count as having a website or blog – in either case there is a large area of Danish youth online activities that are left out. And there are no numbers or questions about social networking sites)

[25] And just as a note, this is an identity which is quite familiar to me. I have worked with web-page creation since 1997, worked as a small-time programmer, I am active in online technical support forums; I am usually called upon by friends, family and colleagues to resolve computer problems and jokes like "There's no place like 127.0.0.1" makes me laugh. Equally sites like thinkgeek.com and slashdot.com (news for nerds) testify that this identity marker *can* be worn with pride.

[26] It should be noted that the school where these changes were implemented was already a developmental and experimental school that is a part of a larger project called 'SKUB' which is a school development project aimed at experimenting with future-oriented pedagogic design (skub means 'push' in Danish).

[27] For the sake of simplicity let us assume that strong ties are e.g. frequent interactions around a shared task or for an example relatively close bonds in terms of acquaintance (friends, colleagues, peers) but the notions of ties and what constitute weak or strong ties are more complex and should be resolved empirically (Ryberg & Larsen, 2006)

[28] Simultaneously with the emergence of this analytical move we have also seen the emergence (or explosion) of a web trend commonly referred to as Web 2.0 or social software/social media. The "upgrade" from 1.0 to 2.0, is not an upgrade of the technological infrastructure of the web, but rather refers to the dawn and especially the popularisation of a wide range of web-based services and "applications" such as Wikis, Blogs, Podcasts, RSS feeds, social networking services like MySpace.com, LinkedIn.com and Hi5.com. Equally with the many crossovers where people share bookmarks, references, videos, pictures, presentations or whatever on del.icio.us, youtube.com, flickr.com, citeulike.com with a dispersed network of friends and strangers. Many of the tools and services within web 2.0 are essentially about making visible and public one's individualised trajectory of identity as a diverse complex of multimembership and modes of belonging to various fleeting communities. This embodies and radicalises the trend of 'networked individualism', as the 'networked individualism' becomes even more networked and individualist, through becoming a constellation and bricolage of connections, relations to other people, artefacts, domains and resources.