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From cinema education to the omnipresence of digital screens.

Challenging the assumptions in view of educational experiences

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Voorwoord

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General introduction

In December 1983 the company Apple launched a television commercial during the American Super Bowl¹. Situated at the beginning of the 1980s, this commercial and the product it advertised, the Macintosh computer, were both launched on the eve of the screen related society we are now part of. In this commercial a young, blond woman armed with a sledge hammer is running through a setting full of police forces and surveillance screens. The masses, dressed in grey clothing and with shaved heads, are marching in file and taking their seats obediently in front of a big singular cinema screen onto which images are shown of a person who gives the audience an ideological message². The young woman enters the cinema auditorium still being chased by police forces. However, they cannot prevent that she slings the sledgehammer towards the screen. When it hits the screen, a white flash and wind rush over the audience, who open their mouths and seem to inhale the air and light coming from the screen, giving the impression that the woman's hammer liberated them. Then follows the text "On January 24th, Apple Computer will introduce Macintosh. And you will see why 1984 won't be like '1984'".

It goes without saying that this popular commercial has a political connotation. Looking at this commercial on YouTube, we can read comments which acknowledge the relevance of its content for contemporary screen reality. Of course, it explicitly refers to George Orwell's novel *1984*, in which a control society uses technology as propaganda and for surveillance. This is represented in the commercial by the cinema screen that seems to brainwash the masses, whose gaze is uniform, without expression but clearly absorbed by the moving pictures. The additional terror in the novel *1984* is that video surveillance and other techniques control the masses. These devices, which the commercial briefly shows at the beginning, are used to detect anti-governmental actions. However, they also scan for ways of living which do not coincide with the idea of the state. Apple's point of view, when it launched the Macintosh PC in that same year, was that if technology is under control of governmental policy, the fiction of *1984* could become reality. The masses could indeed be subjected to a tyrannical government which instrumentalizes screens for propaganda and surveillance. Therefore this commercial powerfully suggests that the use of technology can be manipulative and dangerous.

¹ See Apple add "1984", http://www.youtube.com/watch?v=g_d5R6il0II, 1'00".

² The full speech goes as follows: "Today, we celebrate the first glorious anniversary of the Information Purification Directives. We have created, for the first time in all history, a garden of pure ideology—where each worker may bloom, secure from the pests purveying contradictory truths. Our Unification of Thoughts is more powerful a weapon than any fleet or army on earth. We are one people, with one will, one resolve, one cause. Our enemies shall talk themselves to death, and we will bury them with their own confusion. We *shall* prevail!" Retrieved from Wikipedia on 26/08/2015.



However, the voiceover of this commercial suggests that the Macintosh PC creates the possibility of a screen society that is open, tolerant and colorful, in short, anything but *1984*. This positive interpretation of a screen-orientated society comes to the fore mainly because of the presence of the young, blond woman dressed in a flashy outfit, confidently running towards the cinema screen³. Armed with a sledgehammer, she represents a free thinking individual who has a will of her own, in contrast to the masses who are captivated by the screen and its propaganda effect. Slinging the hammer at the screen, she consciously rebels against the totalitarian regime. She stands up from the masses, this way breaking free from what seems to be a manipulative use of screen technology. What Apple hints at is that precisely the experience of the Macintosh PC allows the individual to think about how technology should be used, how we should and should not live in a society which, technologically speaking, is screen-orientated. Having shattered the screen, the woman does not ban technology, which would be ridiculous as the commercial promotes the use of a personal computer. Rather does she represent an emancipated individual who, in interaction with screen related technology, can think for him or herself and act accordingly. This in contrast to the masses, who she seems to liberate from this passive, almost zombie-like state the cinema screen - which was instrumentalized by the regime - produced in their minds. The blond woman armed with a sledge hammer could be metonymic for an empowered, *educated* person who is capable of giving meaning to the screen related reality we are living in. But if so, how should we understand this? What does it mean, today, to say vis-à-vis digital technology that one is educated? Or to put it differently, how does our society conceive the role of education in a world more and more saturated with screen devices?

Education in an age of screens

To be clear, when I refer to education it is in the broad sense of raising children at home and in schools. It thus encompasses experiences in which an older generation relates to the next generation, either in the life-world, where parents or guardians supervise their children, or when those children are regarded as pupils and students under the guidance of teachers and in the presence of peers. To research the question what education in an age of screens could consist of, this study will focus on the figure of the *screenager*. Online dictionaries explain that “screenager” is an informal word referring to teenagers and twenty year olds growing up surrounded with screens. The screenager is perceived as someone who can quickly adapt to digital technology and who has highly developed computer skills. In that line of thought, the young blond woman could be considered as such⁴. In this PhD dissertation, however, the screenager is not just a *teenager* interacting with the screens of laptops, smartphones, TV-sets, tablet-PCs and so on, but more broadly, *us*, the different generations living in an *age of screens*. Not just young people and

³ Image on the previous page retrieved from <http://mentalfloss.com/article/29867/how-apples-1984-ad-was-almost-canceled> on 26/06/2015.

⁴ However, definitions and interpretations of the word also have a psychological connotation. “Screenager” is the title of a song of the British rock band Muse. The first two phrases of the song problematize the teenager growing up with screens. “Who’s so phony and always surrounded? Stop your screaming, no one can hear”. According to this interpretation of the word, teenagers and twenty year olds nowadays feel unhappy and lonely as a consequence of the continuous presence of digital technology. Information retrieved from <http://dictionary.reference.com/browse/screenager>, <https://nl.wikipedia.org/wiki/Screenager> and <http://www.azlyrics.com/lyrics/muse/screenager.html> on 27/06/2015.

children, but everybody gives meaning to the world in relation to screens, by connecting to the Internet and social media and by up- and downloading different representations of reality by means of these objects.

It goes without saying that in relation to education a lot of research has already been published regarding digital technology, the increasing digitization of societies and the impact of the latest technological changes on how we (should) organize education. Most of these studies are predominantly instrumental in the sense that both education and digital technology are researched in relation to a particular, desired goal. To illustrate this I will shortly describe three examples which will be studied thoroughly in the third part of this PhD dissertation. For now I want to bring them to the fore as a matter of clarification.

The first example is research that investigates how the use of the personal digital device of the learner could be integrated in education. BYOD or “Bring Your Own Device” is a pedagogy that incorporates technology which belongs to the individual. However, BYOD is not only about bringing the personal device inside the classroom, but also allows education to take place outside the classroom. For example, with a smartphone the pupil visits a local fish market to investigate the anatomy of the fish (Song, 2014). A second example is research that develops the “flipped classroom” (Kim et al, 2014). This concept refers to theory and practices which try to change the traditional, teacher-centered classroom experience which is organized in such a way that children sit in rows facing the teacher. In the flipped classroom, however, student-centered and screen-centered activities take place that “flip” activities related to learning and education. For example, homework is not done at home, but in class. Or, the lecture of a teacher does not take place in the classroom, but elsewhere, as a video-representation that can be watched on a computer screen. To be clear, these practices are not just about flipping specific activities, but also try to adapt education as a consequence of the increasing digitization of society and the changes this brings about.

The third example, research that develops and applies *self-regulated learning*, illustrates that educators not only experiment with digital technology, but that they look for an overall theory as well which allows to conceptualize a general response vis-à-vis the digitization of society. In general, self-regulated learning implies that instead of focusing on the acquisition of knowledge by means of teacher-centered activities, pupils and students should rather be able to manage their individual learning process independently (Dettori & Persica, 2011). A good example is the PhD dissertation by Anneline Devolder, who not only constructs a theory about self-regulated learning, she also develops, tests and evaluates a computer based learning environment for primary school children. This digital environment combines the acquisition of specific knowledge and skills related to specific content with assisting or scaffolding children in developing skills that help them self-regulate the learning process (Devolder, 2014). Self-regulated learning is a general response to help the subject cope with what is nowadays referred to as *the Knowledge Society*, a world surrounded

and driven by digital, networked technology which produces enormous amounts of data, quick changes in organizations and an increasing individualization (VLOR, 2003, Devolder, 2014).

In short, these kind of studies first and foremost take an instrumental stance. Education is interpreted as something which will help the new generation to cope with the transformation of society as a consequence of the digitization. Within this tradition of research the PhD dissertation *Identification and assessment of digital competences in primary schools* by Koen Aesaert is also a good example (Aesaert, 2015). Digital technology is interpreted as something which either can help to achieve this or that learning goal, or as something in relation to which a child should acquire particular competences. By means of empirical research the question is being asked what the productive value could be of a particular educational method or technological device. These studies therefore give the reader insights into the potential strengths and weaknesses of today's digital technologies or elucidate how learning and education can successfully produce the competences that are needed to cope with the digitization of society. In relation to the image of the Apple commercial it could be argued that this research is about empowering children and youngsters so that instead of belonging to the grey masses incapable of actively responding to the digitization of society, education develops "the girl with the hammer" inside each of them.

This PhD dissertation, however, will not adopt this instrumental stance, neither give a normative opinion beforehand regarding what education is or should be. In relation to education in an age of screens, I will study what it is that technology makes the screenager do. This is in line with Joris Vlieghe's point of view that technology is not only an instrument that can be fabricated and used to reach a particular objective that has been defined beforehand. "They are not merely having an instrumental significance, but rather play a constitutive role: they are not only things we use, but also things that form us, and decide on who we are and what we can do and think" (Vlieghe, 2015a, p. 7). So instead of asking what competences the screenager needs to acquire to cope with a society saturated by screens or instead of studying in what way screens could help accomplishing *this* or *that* particular learning objective, I first and foremost want to better understand what it is that screens make us do. What becomes (im-)possible because of them? This study therefore researches how technology's essence or materiality co-constructs meaning to our experiences.

In *The materiality of learning* Estrid Sørensen claims that educators mainly deal with technology in such a way "that if technologies do not achieve what is desired, then these technologies are of no interest, and consequently further inquiry is irrelevant" (Sørensen, 2009, p. 7). In contrast to this point of view Sørensen argues for research in which the question is asked "how specific technologies contribute to practice without focusing on what we would like them to do" (Sørensen, 2009, p. 7). She adds to this that because of such a kind of research we can become aware "that even when technologies do support our educational aims, they also always produce other effects" (Sørensen, 2009, p. 7). However, "researchers first consider how children learn and develop and what characterizes good interaction, and only after that they ask how technology can be applied to

create these conditions” (Sørensen, 2009, p. 7). She therefore concludes that focus in educational research should lie more on the materiality itself. In line with this point of view, I will predominantly study the materiality of the screen. I will not give an idea beforehand what education is or should be about, but I will discuss its potential and importance while studying the specificity of technology and in what way this technology co-constructs our being in the world. I therefore *postpone* a conceptualization of what it means to be an empowered screenager or “girl with the hammer”.

A research ethos as a methodology⁵

To further clarify this technocentric stance, I would like to make a distinction between two kinds of researchers, between someone who exposes him- or herself to the nature of a thing and someone for whom knowledge and expertise are the starting points for research. I will first elaborate on the latter kind of researcher, who should be associated with the kind of studies I gave three examples of above. I will then give an account of an alternative researcher in order to show the motivation behind this study. In his article “Statistics and the Inference to the Best Explanation. Living without Complexity?” Paul Smeyers writes about the police detective and the similarities with academic research (2010). He shows how in our society gathering knowledge and following a specific method are important for the discovery of truth, of that which is hidden to us, with as a goal solving a specific problem. According to Smeyers this shows that our western society has a tradition of knowing, a specific relation with truth which can be traced back to the Enlightenment.

As a result, the ideals of objectivity [...] and rationality that, since the Enlightenment, have characterized our understanding of reality may be seen as indicative of an unwillingness to live with complexity. Humans not only long for knowledge (to know how things are, for instance ‘Is this a tenor characterizing a particular voice?’ or ‘How long will I be in the traffic jam - incidentally, knowledge of that does not shorten the time?’), they also seem to have an insatiable need to gain control over the world.

(Smeyers, 2010, p. 175)

Consequently, as we can read in this quote, for Smeyers it is in actual research about the intrinsic need of man to “bring some order to the chaos” (Smeyers, 2010, p. 163). The researcher acts upon and reflects about the world in a specific way, which shows great resemblance to Gilles Deleuze’s reading of film characters that appear respectively in the documentary, the western, the psycho-social film, the film noir and the historical film. What do I mean by this? Deleuze discusses these characters in his study *The Movement-Image*, in the chapter on the action-image in the large form (Deleuze, 1986[1983], p. 141-159). In the Realism of American cinema and its international followers, milieux and modes of behaviour govern the different characters (Deleuze, 1986, p. 141). The Eskimo in *Nanook of the North* (Flaherty, us, 1922), the cowboy in *The Man Who Shot Liberty*

⁵ This part of the introduction is based on the text “What does it mean to be a human researcher?” (Decoster & Vansielegheem, 2014b).

Valance (Ford, us, 1962), the criminal in Hawks' *Scarface* (Hawks, us, 1932), the Black or the White in *Street Scene* (Vidor, us, 1931) and Abraham Lincoln in *Young Mr. Lincoln* (Ford, us, 1939) are all characters that are acted upon by their milieu, to which they have to respond in a specific way. It could be argued that the figure of the academic researcher, like those characters, is acted upon by a milieu as well. The field of education, for example, throws the question at the researcher what it means to be educated as a challenge in relation to which he or she has to respond in a specific way:

The milieu and its forces incurve on themselves, they act on the character, throw him a challenge, and constitute a situation in which he is caught. The character reacts in his turn [...] so as to respond to the situation, to modify the milieu or his relation with the milieu, with the situation, with other characters. He must acquire a new mode of being (habitus) or raise his mode of being to the demands of the milieu and of the situation. Out of this emerges a restored or modified situation, a new situation.

(Deleuze, 1986, p. 141-142)

The dynamics described in this quote are part of what Deleuze describes as an SAS' structure: a Situation requires Action which leads to a new, restored Situation. "A great 'global mission', SAS', is divided into successive and continuous 'local missions' (s1, a1, s2, a2, s3 ...)" (Deleuze, 1986, p. 157). Like the different kind of roads the Eskimo, the cowboy, the criminal ... have to remake according to the specific laws their worlds oppose on them, the successful researcher within the field of education ultimately becomes capable of actions that turn him or her into the truthful (wo-)man. To develop, for example, competences with which the twenty-first century screenager will be able to survive the digital world. Or, to experiment with successful practices which ask the screenager to bring the own device to the classroom. The roots of the willingness to constantly remake this road can be traced back to the seventeenth and eighteenth century, and, as Smeyers argues, we can conceive it as a result of the Enlightenment. In the field of education this researcher actively influences this milieu to concretely help emancipating the individual.

This study, however, presents a different researcher whose starting pointing is not so much a particular tradition of knowledge or expertise in relation to which a particular road would be the evident result. Rather, what guides this research is a particular ethos which I will now elaborate on. To be clear, the researcher coming to the fore in this study is not someone who tries to disrupt a cyclic order of knowledge and techniques and methods, or who chooses to stop relating to them. Neither is it a researcher who attacks the position of the researcher as depicted above, who acts according to the SAS' structure. We are not talking about some kind of anarchistic academic rebel. In the film *L'Humanité* (1999) by the French director Bruno Dumont, the character Pharaon (Emmanuel Schotté) gives a portrait of a somewhat strange police detective who does not coincide with the classic image of what a police detective is supposed to do. Obviously out of tune with what is expected, Pharaon can be interpreted as a *forger*, an important character in the Deleuze's philosophical study on cinema. With the forger, "the truthful man dies, every model of truth

collapses” (Deleuze, 1989[1985], p. 131). To be clear, Deleuze uses the forger not as a con-man, who, in American cinema for example, successfully rips-off millions of dollars, as Leonardo DiCaprio’s character Frank Abagnale Junior in the film *Catch me if you can* (Spielberg, us, 2002). This character, at a very young age, successfully makes people believe he is a pilot, doctor and legal prosecutor, this way earning a lot of money and getting himself in a lot of trouble. The road the con-man always has to remake, in *The Movement-Image*, is one where he deceives everyone until the climax towards the end of the film, where his road usually reaches a dead end when he encounters the truthful character of the police detective.

Deleuze, however, uses the character of the forger in a different way, in the sense that he “assumes an unlimited figure which permeates the whole film” and “provokes undecidable alternatives and inexplicable differences between the true and the false” (Deleuze, 1989, p. 132). Applied to the figure of the researcher the forger accordingly should not be understood as someone who tries to trick his or her colleagues or deceive the reader. Neither is this an ego-centric person, locked up in him- or herself, like a daydreamer with an interior gaze. Hence the position of the researcher in this study is not characterized by a self-centered pre-occupation with the meaning of education according to the own, subjective opinion. Rather, concerned about and curious with the present and responding to a particularity of the world, this research is about making something visible about screen technology and education, which would otherwise perhaps fall into oblivion. The ethos that guides this research *forges* education by re-thinking and re-imagining what education could consist of in relation to the specificity of the world. I wish to contribute to this idea by asking the technocentric question what it is that screen technology makes us do and by explicitly avoiding a techno deterministic point of view which instrumentalizes both education and technology.

In line with the research developed by Jan Masschelein and Maarten Simons and Nancy Vansieleghem’s study on Philosophy for Children, a particular way of dealing with the present will be articulated and put into practice (Masschelein & Simons, 2008, p. 7-22, Vansieleghem, 2010a, p. 9-24). Drawing on what the French philosopher Michel Foucault calls an *ontology of the present*, these researchers respond to what they call our willingness to take certain things for granted (Vansieleghem, 2010a, p. 8). Vansieleghem tries to respond to this willingness by putting forward a philosophical attitude of curiosity and concern:

It is a particular philosophical attitude in relation to the present or the current (educational) affairs, that isn't aiming at solutions for a problem at hand, but which is bent on giving a place to current events from within the way things are problematized, to re-problematize this order.

(Vansieleghem, 2010a, p. 11, free translation)

The point of departure, Vansieleghem argues, “[...] is not that we have to look at the present as necessary and universal” (Vansieleghem, 2010a, p. 13, free translation). Accordingly, it is not about

a quest for the truth, but about becoming alienated to that which we silently have considered as the truth. An alienation or displacement of that which we always had to/wanted to think. Or to put it differently, the aim of this study is to break free from that which we are supposed to think, feel or see. Important here is that this does not mean that all of a sudden we (should) have an opinion about everything, but that what we think and say, is displaced from its taken-for-granted position.

(Vansieleghem, 2010a, p. 13, free translation)

Re-discussing the Apple commercial, it can be argued that it is metonymic for how we, both in modern and in postmodern times, stand in the light of the Enlightenment⁶. We have the willingness to look at ourselves in a specific way and accordingly instrumentalize education and technology so that rationality and science empower us and the generations of newcomers for whom we organize education. Having elaborated upon a particular ethos, the researcher who coincides with this PhD dissertation accordingly is not proposing to be *against* standing in any light, which would result in an *antipedagogy*. In fact, this idea on emancipation surfaced in the 1960s and 1970s, and consisted of practices in which there was a non-interference on behalf the child, which was not to be educated at all. This antipedagogy restricted itself to describing and criticizing traditional forms of education, which is of course also a specific intervention (Zalewska).

Accordingly this research is not *against* progression, for example in the form of individualized, student- and screen-centered education. Rather, the point of departure of this study is an ethos of both care and curiosity, in which progression is conceived as a double-edged sword. In his reflections about the Frankfurt School Masschelein argues that the contribution of critical studies that pose questions about the way our society perceives progression and rationality is very important (Masschelein, 2005, p. 109). Or to put it differently, stepping into a light that makes us look at ourselves in a particular way can blind us to the extent that we do not see the shadows anymore that any light inevitably produces. However, to be clear, no trenches are being dug to divide the position of the researcher from “them” and “their research”, that is, the research tradition that instrumentalizes (digital) technology and education. In contrast, although instrumental research is not taken for granted in this study, I want to contribute to a different way of speaking about education which is in line with Vansieleghem, in which we find a language in between us (Vansieleghem, 2010a, p. 21), to discuss the role of education in an age of screens beyond a particular instrumental interpretation. Namely, I want to discuss education as something else than a field or milieu with particular laws, which ask that we act time and again according to a particular SAS’ structure.

⁶ In this PhD dissertation the distinction will be made between a modern and a postmodern society. In line with the French philosopher Jean-François Lyotard the modern society is characterized by a particular relationship with knowledge and truth influenced by the Enlightenment period of the eighteenth century. From the 1950s onwards, however, our society is characterized by a fundamentally different relationship with knowledge and Enlightenment principles, which is why Lyotard conceives the contemporary society as post-modern. See chapter one of the third part of this study for more details.

The task at hand could entail that we unmask the language with which we think, situate this language within the power discourse in which it operates and ask ourselves what the shadows of the light consist of. The studies by Masschelein and Simons (2008) and Vansieleghem (2010a) respond to this by showing the dominant discourse and mapping the willingness with which our society organizes education. Consequently these studies show how progress can make us forget or leave aside ways of looking at education that can be relevant. My research, however, although inspired by this way of looking at education and society, does something else. A way of thinking about research and education came about while reading thinkers like Gilles Deleuze, Walter Benjamin and the anthropologist André Leroi-Gourhan. What they have in common is that they pose the technocentric question what it means to think as a consequence of the materiality of technology. What happens to thought, Benjamin asks, when it thinks in relation to photography and cinema, these industrial, mechanical arts? Likewise, Deleuze, in his cinema studies asks this question vis-à-vis the *automaton* cinema according to him is. In relation to cinema, thought cannot think whatever it wants, he argues. In contrast, the aspects of *movement* and *time* push thought automatically into an experience in which it is forced to think “cinematographically” (Deleuze, 1986, p. 2 & Deleuze, 1989[1985], p. 156). In the second and the fourth part of this PhD dissertation I will address this more in depth.

As a creative and positive act, this research asks what it means to be shaped by technology. This technocentric question literally refers to the Dutch word “*vorming*”. “*Vorm*” in English literally means “form” or “shape”. Accordingly, we could ask the question how technology forms or shapes us, how the *Bild* of cinema *builds* us, for example. In line with the abovementioned ethos, this study will predominantly deal with the digital screen, for the straightforward reason that today precisely this tool is shaping us. In daily life, smartphones accompany us almost everywhere we are. What I explore is how can we have attention for and be aware of what screens make us do. From an ethos characterized by both curiosity and care I want to understand *who we are* and *how come* we look at ourselves in this or that particular way, *as a consequence of the presence of screens*. What is more, by researching how technology shapes us and what we do and don’t do in relation to it, I want to discuss the way we conceive education. Accordingly, as the French film director Robert Bresson puts it, in relation to technology and the way it shapes us, I will try to think about what it is I see, instead of seeing what I am already thinking beforehand (Bresson, 1975). In what follows this particular ethos will guide the crossroads where screen technology and education meet.

Outlines of this research

In the first part of this PhD dissertation, I will particularly focus on the moment our society brought the child into the classroom. I will offer a case-study of the classroom technology of Joseph Lancaster, who at the beginning of the nineteenth century hammered a billboard into the ground next to his father’s house, promising free education for all. Discussing his technology, I will not problematize this pedagogy, neither sum up the strengths and weaknesses of what happened in those classrooms. Rather, Lancaster’s pedagogy is interesting because he allowed technology to be

in charge. This means that he showed that technology's materiality has a particular potential in *itself*. In the classroom, where the student withdrew from the outside world, Lancaster's technology created an efficient and effective system that guaranteed the pupil's attention. Because of this "automatic learning process" particular knowledge became public to anyone who entered a Lancasterian classroom. Particularly the way cardboards and slates were used is interesting to study, because the effect these materials produced in terms of attention, I will argue, is also generated by the cinema screen and the digital screen.

In the second part of the PhD dissertation I will further explore what Lancaster's system made us aware of, namely that technology can run in and by itself. In the first chapter I will oppose Lancaster automatic learning machine to a different "automatic" experience, which can be found in the cinema theory of Hugo Münsterberg (1916). I will research how vis-à-vis the cinema screen automatic movement produces automatisms in the mind and what the mode of attention of the cinema spectator accordingly could consist of. This way, the concept of attention, which already came to the fore in the previous part, will remain important. In the second chapter we will see how educators, from the twentieth century onwards, used the cinema screen to generate educational experiences. In this second case-study we will see that by using the cinema screen in the classroom, in contrast to Lancaster's case, a particular way of bringing the world to the child became possible. We will also study how educators respond to the automatic experience cinema produces. I will argue that educational reform tamed rather than affirmed the materiality of cinema. I will conclude this second part by referring to the theories of Walter Benjamin and Gilles Deleuze, which will be studied elaborately in the fourth part of this PhD dissertation, where I will describe what a "cinematographic" consciousness could consist of.

In the third part I will investigate in more detail the impact of the digital screen for learning and education. Therefore I will first of all (1) investigate what the digital screen makes the screenager do. I will zoom in on different specificities of the screen and how they have an impact on the level of the individual and the society. Or to put it differently, I will hold a specific characteristic of the digital screen into the light, so that we can see it. (2) Secondly, I will describe in relation to each specificity how educational innovation affirms the screen. I will describe how innovators embrace the particular characteristic of the screen as enlightening for the way we teach and learn. (3) Finally, I will discuss each time how this affirmation of a specific characteristic of the screen repositions the way our society thinks about and concretely organizes education. What are the consequences of the way education is pushed into the light of the screen? Asking students to look at and interact with screens, what kind of screenager does education possibly create?

I will develop this threefold movement three times, accordingly constructing three chapters. In the first chapter, (1) I will consider that screen technology helps legitimizing a shift towards what is generally acknowledged as a computerized knowledge society. (2) This transformation of society, in terms of innovation, leads into a different meaning of education, (3) which implies a fundamental

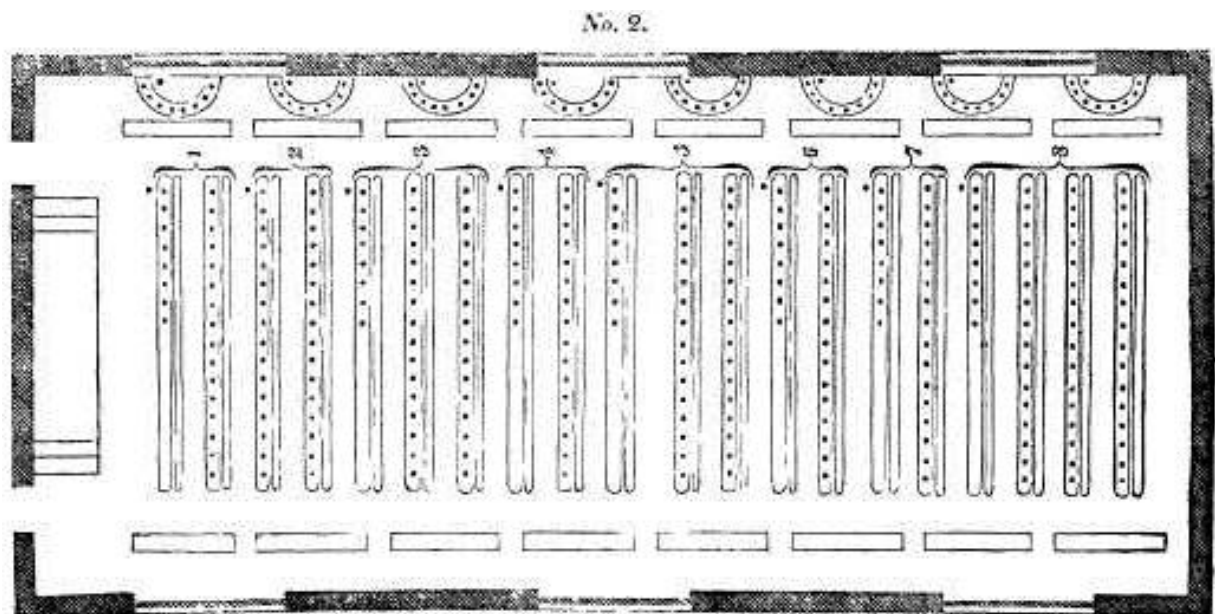
repositioning of the figure of the student. In the second chapter (1) I will argue that the digital screen is “always on” and turns the screenager into an interactive multitasker. (2) In terms of innovation, this leads into blurring the line between the living environment or daily life on the one hand, and education on the other hand. (3) This implies a fundamental repositioning of the role of the classroom. In the third chapter, finally, (1) I will propose that the screen is a self-referential object. (2) In terms of innovation, this leads into self-regulated learning by means of the screen, (3) which implies a fundamental repositioning of the figure of the teacher.

In the fourth and final part I will study three characteristics of the screen that have not been addressed in the previous parts, at least not directly. In the first chapter authors will come to the fore who, in my opinion, are inspirational to see both the screen and education differently than the way they come to the fore in the first, second and the third part of this PhD dissertation. Philosophers like Bernard Stiegler, Jean-Luc Nancy, Walter Benjamin and Gilles Deleuze will be discussed alongside with the anthropologist André Leroi-Gourhan. I will study the importance of a particular kind of ethos or willingness that I find inspirational in relation to the intersection between technology and education. In the first chapter, I will propose that a particular way of relating to technology can create a particular ethos or attitude. In the second chapter of this part, I will discuss the role of education in an age of screens. I will respectively discuss the figure of the student, the role of the classroom and the figure of the teacher to rethink the role of education in an age of screens.

Part 1

Bringing the child into the classroom

Keeping the world outside



Ground plan of a Lancasterian classroom. Illustration retrieved from Lancaster, 1821, p. 50.

You could not *not* learn in Lancasterian Schools

A case-study on automatic learning and attention in nineteenth century classrooms

In this first part I will study the classroom technology of Lancasterian schools. This educational system, developed by Joseph Lancaster (1778-1839), was put into practice predominantly in early nineteenth-century England and America, but it also appeared in other parts of the world such as France and Belgium (Depaepe, 1998, p. 71), Denmark, Sweden, Spain, Italy, Russia, Africa and Latin America (Kaestle, 1973, p. 31-33). It was one of the first systematic approaches to organize education on a mass scale and it was characterized by important architectural, psychological, disciplinary and technological elements. Lancaster is a good example of someone who literally brought children into the classroom, at first spontaneously, by hammering a board into the ground next to his father's house, onto which could be read that he promised free education for all. Gradually, however, he developed a pedagogy that could be applied on a large scale as a universal method. Lancaster discussed his theory and the immediate realization of it at length in *The British System of Education* (1810), but also in different versions of his book *Improvements in Education, as it Respects the Industrious Classes of the Community* (1803) and texts written to promote his theory to public figures, like *Outlines of a Plan for Educating Ten Thousand Poor Children* (1806), addressed to the king of Great Britain, George III. In these texts we can find concrete descriptions of Lancaster's *Monitorial School Movement*, which, as we will see, functioned as a kind of peer learning system avant-la-lettre.

To be clear, I am not interested in Lancaster's system merely from a historic point of view, but to study the way the technology was used and what became (im-)possible because of this. Lancaster's pedagogy shows technology can generate a particular kind of effect. As we will see in the first chapter, Lancaster's technology produced that the attention of the pupils was caught in a systematized way. In the second chapter we will see that the role of the teacher and the monitors or peers that controlled or operated the technology was crucial to guarantee this. The contribution of their actions, however, should be interpreted as prolonging the role of the technology Lancaster implemented. In the third chapter, finally, we will contemplate about the consequences of the nature of attention produced by the technology of a Lancasterian classroom. The impact of the way technology was used entailed that pupils could not *not* learn the learning objectives that were set out for them. This because the nature of attention on behalf of the pupils received a particular quality that *automatically* made them learn what Lancaster wanted them to learn. This case study, in other words, shows that technology, in and by itself, can generate a particular mode of attention. The quality or nature of attention as it comes to the fore in this part will be studied further on this PhD dissertation, respectively vis-à-vis the cinema screen and the digital screen.

Chapter One

Technology systematically catches attention

1. Lancaster's Monitorial System

When, at the turn of the nineteenth century, Lancaster decided to educate the poor for free in a part of the house of his father, soon three hundred children occupied his classroom (Kaestle, 1973, p. 3). To be able to cope with large groups of pupils, as he used the principle of education for all, it was practically impossible to stick to the general method of teaching before 1800, in which the village schoolmaster calls “one or several pupils to his desk to hear individual, memorized recitations” (Saettler, 2004, p. 32). Content wise, pupils had to prove that they mastered the three R's: Reading, Writing and Arithmetic. In that sense Lancasterian schools did not differ much from the traditional schools of that time. The difference, so it seems, lies in the fact that Lancaster's system used technology in a radically new way.

Let us, first of all, look at the ground plan of a Lancasterian classroom as depicted on page 23. There are two doors, to the far left, where the teacher's desk is situated. From there, the teacher could survey everything that goes on in the classroom. In the middle we see twenty different rows where pupils from different levels were seated. Each dot represents a pupil. To the left and right of where the pupils sat and close to the walls, we see sixteen reading stations around which eight to ten individuals could stand in a semi-circle. According to Lancaster's plan, different learning activities took place simultaneously, leaving none of the three hundred to four hundred pupils idle⁷. Of course, one teacher all by him- or herself could not deal with such large number of pupils in this way. Therefore Lancaster developed a “Monitorial System”, a kind of peer-tutoring system in which certain carefully selected boys or girls were appointed as monitors. These monitors' function was to “make knowledge circulate among students, that is, keeping the system running” (Mesquita, 2012, p. 671). I will specifically address the crucial role of these monitors in the second chapter, and limit myself in this chapter as much as possible to describing the experiences produced by the materials Lancaster used, who aimed at “simplifying and accelerating the acquisition of knowledge” (Murphy, 1817, p. 10).

Lancaster realized a particular kind of Enlightenment project with the optimism characteristic of that time; through scientific knowledge the (educational) experience can be controlled and manipulated and thus a particular desired outcome can more or less be guaranteed. To be more specific, by using technology, he aimed at systematizing *the act of catching the attention of pupils*. I will study this further below, but for now it is important to know that the concept of attention as

⁷ Lancaster boasted one teacher could easily teach one thousand pupils, in reality approximately three hundred to four hundred occupied a Lancasterian classroom.

it appears in Lancaster's texts, is quite similar to how teacher handbooks of the nineteenth century write about it. For example, in *The Teacher's Handbook of Psychology* (1897) of the American psychologist James Sully, attention is defined as "that reaction which serves to make a sensation a prominent and for the moment a supreme element in the stream of consciousness" (Sully, 1897, p. 135). As we will now see, it seems that Lancaster's technology operated in such a way that attention as it is described by Sully was generated automatically.

2. The cardboard or pasteboard and the slates. "One book will serve instead of Six Hundred Books"

Aiming at simplifying and accelerating the acquisition of knowledge, Lancaster did not only question the fact that one teacher taught his or her pupils individually, but also that every pupil had an individual study book.

It will be remembered, that the usual mode of teaching requires every boy to have a book: yet each boy can only read or spell one lesson at a time in that book. Now, all the other parts of the book are in wear, and liable to be *thumbed* to pieces, and, whilst the boy is learning a lesson on one part of the book, the other parts are at that time useless. Whereas, if a spelling book contains twenty or thirty different lessons, and it were possible for thirty scholars to read the thirty lessons in that book, it would be equivalent to thirty books for its utility.

(Lancaster, 1810, p. 12-13)

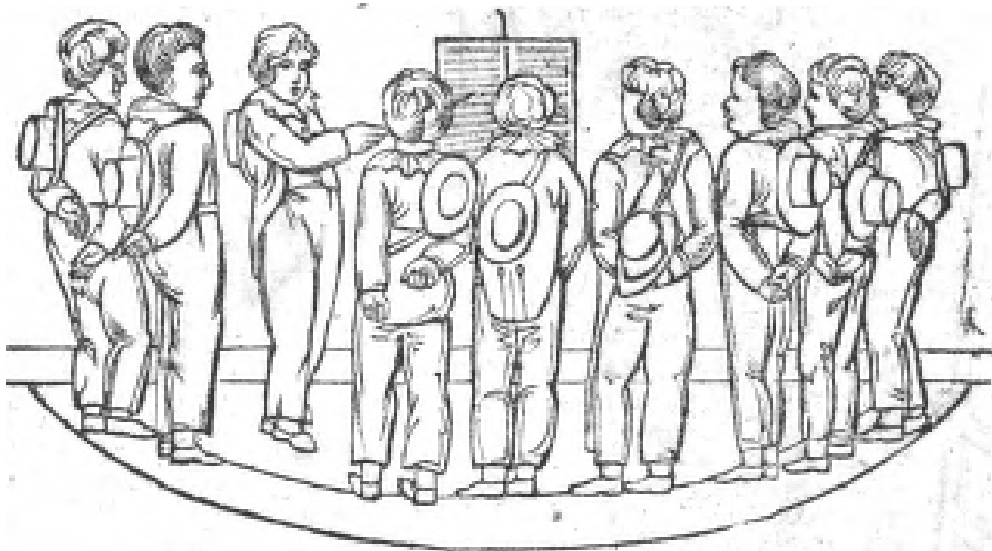
In this quote Lancaster interprets the individual study book in terms of efficiency. Basically he argues that the individual book can only show one pupil one page at a time. Therefore he argued to print each page of the book three times its size and to paste the different parts on what he called a pasteboard or cardboard, "suspended by a string, to a nail in the wall, or other convenient place" (Lancaster, 1810, p. 13). In terms of efficiency, he argued, it was much cheaper to produce and use these cardboards instead of individual books. But it is clear that he not only used the cardboards because they are cheap. Pupils stood in groups of eight to ten in a semi-circle at designated places called "reading stations". There, one page was read and studied by multiple pupils at once. For example, when learning the skill of reading, a monitor would point at a word on the cardboard, which the pupils had to be able to read aloud. The following quote describes a particular kind of group activity of which we see an illustration on the next page⁸.

The first boy then repeats the word pointed to, letter by letter, in each syllable, and then pronounces the word; this is *the common practice in day schools*, and is found on repeated trials the quickest and best. If he commits any mistake, the next boy is required to rectify it without being told what the mistake is. If the second boy cannot correct the first, the third

⁸ Illustration retrieved from Lancaster, 1821, p. 51.

or fourth may: in which case, the boy who corrects the mistake, takes precedence of him who committed it [...] At the same time the monitor is not permitted to teach the boys in his draft how to correct, unless they should all be equally ignorant, and then it becomes his duty to do it.

(Lancaster, 1810, p. 14)

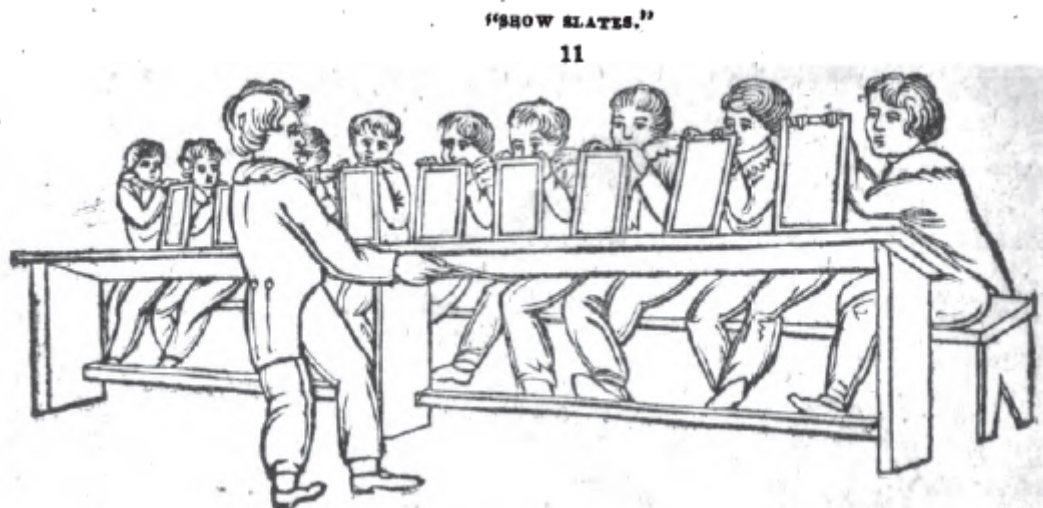


The monitor points at a word. The first pupil, being the best at the specific skill, always answered first. The monitor, however, was explicitly forbidden to teach when this pupil made a mistake, and had to ask the second best pupil to give the right answer. Then the third, the fourth, and so on, until the right answer was given. This way pupils were each other's competitors as at any time a pupil either could surpass in rank the person next to him, or lose the current position and descend in line. The monitor was thus following up and controlling this process of reading in group, but - and this is very important to take into consideration - was neither teaching, neither being absent from the process, making sure every pupil's mind was not fleeing to *somewhere else* than the knowledge on the cardboards:

[...] if the monitor detects any boy looking about him instead of looking at the lesson, he immediately requires him to perform, a part of the lesson which he was inattentive to: he usually performs it ill; and thus his negligence is followed with immediate punishment, by his losing precedence in his class.

(Lancaster, 1810, p. 15)

Basically in each of the three skills taught at Lancasterian schools, the pupil was required to reach a higher level. Each of the three R's approximately had eight levels of ascending complexity and pupils with the same level were grouped together accordingly. One individual could thus be in level three for writing, level five for arithmetic and level four for reading. Additionally, in each level the learner was also motivated to surpass peers in rank. In each level of the skills it was visually clear who was the best pupil at a specific moment. This individual, however, could at any time lose this position of being the best. "Thus, in fact, the boys teach themselves, and in *this* instance, it is the duty of the principal monitor, no so much to teach them, as to see that they teach each other" (Lancaster, 1821, p.16). Lancaster's choice in this quote for the word "teaching" might be misleading, as pupils did not explain subject matter to each other, rather did they show each other the right answer. By replacing the individual study books by "one book", the cardboard, it was possible to put this principle into practice.



A complementary activity was the use of slates, in which basically the way of relating to the tool and thus to each other was the same as with the cardboard. Here every pupil had his or her own slate as depicted in the illustration above⁹. The pupil continuously had to write the words down the monitor pronounced. By means of these drilling exercises a monitor could immediately verify if the group he or she was in charge of could reproduce the required answer. At the command of "Show Slates" the learner acted accordingly and proved that a specific desired outcome had been realised. This outcome was directly evaluated and ranked in relation to the performance of peers. As with the cardboard, the relation of the individual to the slate had immediate consequences, because when the right answer was not reproduced, the pupil was immediately surpassed by other, lower ranked individuals that had written down the right answer.

⁹ Illustration retrieved from Lancaster, 1821, p. 28.

When teaching arithmetic, the monitor dictated sums like “9 and 1 are 10”, “9 and 2 are 11” and so on. Pupils listened to the monitor and wrote down the spoken numbers and words. These drilling practices also provoked learning by imitation. “9 and 1 are 10” had to be written down over and over again.

It is true, the class are told all they are to do, but in doing what they are bidden, they acquire a ready knowledge of the figures, whilst they are insensibly led into the habit of giving attention to their work. By making the figures so many times over, they unavoidably attain freedom in their formation, and it is the best step that can possibly be taken to facilitate their improvement, for the next stage of arithmetical progress.

(Lancaster, 1821, p. 18)

3. Catching attention

In this system of education there was a constant production of attention. The pupil always had to be ready to utter the desired word or letter in relation to the cardboard. He or she also had to write down over and over again the right words on the individual slate and prove this by showing the slate to the monitor. On the whole, Lancaster seems to have created a primitive psychological system that standardized the classroom experience and standardized the experience of the slates and cardboards. Knowledge was important, but equally important was the fact that when it appeared, it demonstrated (lack of) attention.

“[E]very boy’s attention to his lesson may be seen on his slate” (Lancaster, 1810, p. 11). With every word, the individual literally drew his or her attention, time and again. One hundred times, every morning. The words were not empty, on the contrary, but did not receive their meaning in relation to what they might refer to. The words “Long Live the King”, for example, might together refer to a patriotic feeling, but in this system this was not necessarily the case. Rather did the combination of these four words, when produced correctly by the pupil, indicate that the individual drew his or her attention on the slate. It might thus be concluded that the slates and cardboards, making each boy or girl produce 20,000 words a year, simultaneously produced attention by catching it incessantly.

Each boy can spell 100 words in a morning: if 100 scholars do this 200 mornings yearly, the following will be the total of their efforts towards improvement:

100 words

200 mornings

20,000 words each boy per ann. 100 boys

2,000,000 Total words spelt by 100 boys, per ann.

(Lancaster, 1803, p. 58)

We started researching how technology operates in Lancaster's system by studying the way he thought about the individual study book. First of all, he evaluated its materiality from a financial perspective. What is more, according to Lancaster its effectiveness was rather limited as only one page at a time could be studied by only one pupil. But also and more importantly, its ability to catch the attention of a pupil was at best coincidental. In that function he interpreted it as an inefficient and costly tool. Lancaster was clearly convinced that the individual book could not guarantee the undivided attention of pupils in relation to the subject matter the book produced. Consequently he replaced this material by the cardboards and slates in relation to which the pupils had to react in standardized ways. Moreover, pupils could not even pretend to be active, as their attention or lack of it was literally drawn on the slates or orally produced when standing at a reading station. It thus becomes clear that in this system there was absolute control over each individual's attention. As a consequence a pupil, when relating to the cardboards and slates, could not *not* perceive the subject matter.

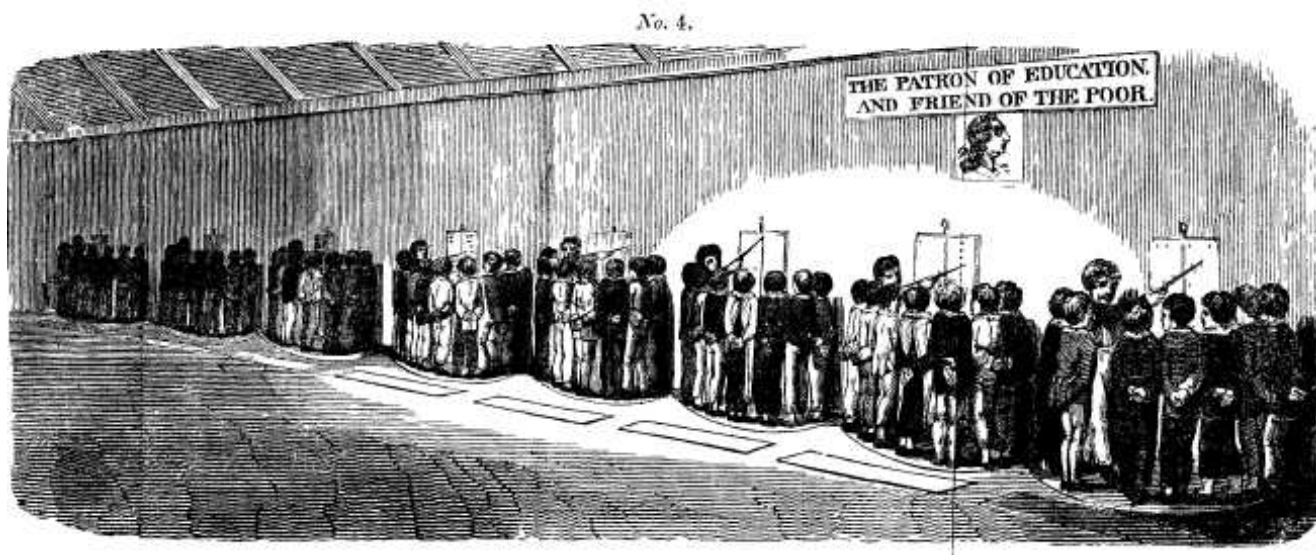
Chapter Two

The role of the teacher and the monitors

In the first chapter I described the slates and cardboards of Lancaster's system and how they caught the pupil's attention in relation to the knowledge they presented. Although I already described the role of the monitors, I will now focus explicitly on the crucial part they played alongside the figure of the teacher. I will argue that their role consisted of prolonging what it is the cardboards and slates did, namely catching the attention of each individual. In this regard it is important to note that while problematizing the materiality of the individual study book the way he did, Lancaster also criticized the figure of the village schoolmaster. The nature of his criticism helps us to better understand how the cardboards and slates operated in his pedagogy and how we should understand the role of the monitors as prolonging their function. In the 1810 version of *The British System of Education*, he discussed attention in relation to the picture below. Here, his method was used inappropriately, as "listlessness and inattention" was omnipresent; "every eye seems turned from the lesson" (Lancaster, 1810, p. 65). This, according to Lancaster, in contrast to the situation in the second picture¹⁰, "where every eye is fixed upon it" (Lancaster, 1810, p. 65).



¹⁰ Both illustrations retrieved from Lancaster, 1810.



What is more, discussing the first picture, Lancaster refers to the action of the boys that are sitting in the back as representing the common way of teaching in the schools of his time, and he states there is no guarantee whatsoever that the boys are learning.

If twenty boys would each have a book: and, one at a time, would read or spell to their teacher, while the other nineteen were looking at their books, or about them, as they pleased: or, if their eyes are riveted on their books, by terror and coercion, we cannot be sure that their attention is engaged, as appearances seem to indicate.

(Lancaster, 1810, p. 10)

According to Lancaster, the traditional system in which a schoolmaster taught pupils individually, could not guarantee the individual's attention, whereas the cardboard, when experienced according to his method, produced continuous and undivided attention. How could he make this claim about his tools? Only because in this system the monitor constantly had to see to it that a whole group remained attentive to what was presented on the cardboard. Yet, it is important to stress that in doing this the monitor did not teach the group anything.

'What letter is that?' If [the pupil] tell[s] readily what letter it is, all is well, and he retains his place in the class: but if he fail[s], then he forfeits it, together with his number and ticket, to the next boy below him who answers the question aright.

(Lancaster, 1810, p. 8)

In relation to activities on the individual slate, the monitor's task was quite similar. He or she had to pronounce knowledge, check whether the reproduction of that knowledge on the slates was correct, and, when a mistake was made, change the ranking of the pupils. Lancaster described

monitors as auxiliaries, not as personalities with subjective authority and flair. Neither the teacher, nor the monitors were ever described by him in a way that they should scare the children into obedience, for example. In fact, attention could not be ensured by means of fear. To conceptualize the figure of the teacher in charge of all the monitors, Lancaster refers in his texts to the figure of the military officer, to which he attributes an impersonal authority:

In the army, authority is vested in the system, more than the person; the *station*, more than the man, commands obedience, and the subordinate officer, is as readily obeyed as his principal.

(Lancaster, 1821, p. 7)

And:

Personal obedience will not be found transferable, and this is the case with a master, whose authority is wholly concentrated in himself, instead of being systematically diffused over the school, and capable of delegation, without diminution, to any agent.

(Lancaster, 1821, p. 9)

In this quote we can read that a teacher could not be self-centered. Rather, the teacher had to perform his or her role like an *operative* (Mesquita, 2012, p. 667). It should be noted that at that time this concept referred to a factory worker. What the teacher operated, so it seems, was the program that was written beforehand, consisting of three subject matters, each having different levels of difficulty. This interpretation of how a human with a pedagogical role should behave was directly diffused into the Monitorial System, down to the last monitor. The monitors were successful precisely when they limited themselves to guaranteeing that the standardized procedures would not slow down or come to a halt. Consider how teachers needed “a knowledge of the theory of the system; secondly a social, firm, kind manner of acting upon it, [...]; thirdly a practical acquaintance with the system, so as to have all its parts ready at the moment of application” (Lancaster, 1821, p. 9). Consider the way he described how the teacher and monitors had to use objects such as a clock, whistle, bell or an object he called “telegraph”. This was a very simple command system, a wooden frame in which six squares could pivot. Simple commands, Lancaster argued, accompanied by the ringing of a small bell, seemed trivial, but were very important. When *F* appeared on the display, “the whole school face the master” (Lancaster, 1821, p. 10). Other commands the telegraph produced are:

<i>T.S.</i>	<i>Turn Slates</i>
<i>S.S.</i>	<i>Show Slates</i>
<i>C.S</i>	<i>Clean Slates</i>
<i>S.S.C</i>	<i>Show Slates Clean</i>
<i>L.D.S.</i>	<i>Lay Down Slates</i>

C.

Commence

H.D.

Hands Down

These commands seem to have installed discipline. But apart from that it can be argued that they helped to depersonalize the teacher into this neutral operative:

The master should be a silent by-stander and inspector. What a master says should be done; but if he teaches on this system, he will find the authority is not personal, - that when the pupils, as well as the schoolmaster, understand how to act and learn on this system, the system, not the master's vague, discretionary, uncertain judgment, will be in practice. A command will be obeyed by any boy, because it is a command, and the whole school will obey the common, known commands of the school, from being merely known as such, let who will give them. In a common school the authority of the master is personal, and the rod is his sceptre. His absence is the immediate signal for confusion and riot; and in his absence, his assistants will rarely be minded. But in a school properly regulated and conducted on my plan, when the master leaves school, the business will go on as well in his absence as in his presence, because the authority is not personal.

(Lancaster, In: Salmon, 1904, p. 8)

In this quote we can read that when the teacher had set in motion the Monitorial System, he or she could almost be considered as redundant. Regarding the subjectivity of the village schoolmaster, Lancaster said that "if a telegraph could have brains, or communicate intellect, too much could not be said of its importance" (Lancaster, 1821, p. 10). He seems to be suggesting here that if a telegraph could do more than give simple commands such as "Show Slates", similarly the classroom technology could run all by itself and automatically. Interestingly, this description of a telegraph with brains is almost a description of computer technology and its soft- and hardware. The schoolmaster *as a person* was clearly to be reduced to that aspect of a human being that produced the proper commands according to the program. This is in line with what Foucault writes about systems of education of that time. The traditional system in which the schoolmaster gave individual lessons to one pupil with as a result that other pupils remained idle and unattended to, gradually disappeared. Instead, education was organized in a different constellation, group activities replaced experiences of individual study, as Lancaster's system clearly illustrates. The space where learning took place functioned like a learning machine (Foucault, 1989[1975], p. 204).

Lancaster's major problem (which made him dream about a telegraph with brains) was that the technology at hand - the cardboards and slates - in themselves could not guarantee the constant production of attention, which kept the whole system running. Therefore, the role of the monitors was crucial. They filled in the gaps where the technology at hand by itself could not guarantee attention. Not by teaching, but by detecting lack of attention and, like a neutral agent, by responding immediately and systematically to how their peers behaved in relation to the cardboards

and slates. As a consequence, only because of their presence, attention could be caught. *Monitor*, interestingly, is actually a word that also refers to the object we currently identify as *screen*. Lancaster's combination of cardboards and slates on the one hand, and the monitors performing the role he had given to them on the other hand, it can be argued, together systematically produced an effect similar to the way the cinema screen or the digital screen, when switched on, draw our attention. Is it not so, that when they produce images we cannot *not* look at them, unless we deliberately make it a principle to close our eyes or turn our head away from the screen? In the next chapter I will elaborate more on the nature of attention produced by the cardboards and slates the way they functioned under the supervision of the monitors. However, I will also describe technology in a broader sense, that is, I will study the overall experience of Lancaster's teaching machine, which formed or shaped the pupil the moment the classroom was entered. In the first chapter, we limited our study of technology to the slates and cardboards, the tools onto which knowledge was presented. Studying the role of the teacher and monitor, who were operatives of the system, it becomes clear that they performed a technological role.

Chapter Three

Automatic learning: Towards a particular mode of attention

The underlying vision of drilling exercises in which collectively slates are being wiped clean only to spell yet another word on it, or group activities at the reading stations in relation to the cardboards is that children have “an almost irresistible propensity to action” that, “if properly controlled by suitable employment, will become a valuable auxiliary to the master; but, if neglected, will be apt to degenerate into rebellion” (Lancaster, 1805, p. 31). Although Lancaster never quotes scientific work of that time, Paul Saettler, a historian of American educational technology, suggests that he was influenced by John Locke’s theory of learning (Saettler, 2004, p. 33). The British philosopher, coincidentally or not, introduced the idea that a newborn child was like a blank *slate*, or, as he wrote, “white paper, void of all characters, without any ideas” (Locke, 1836, p. 51). The child, according to Locke’s psychology, knows only from *experience* and thus a teacher should organize specific experiences that train the sensations in a desirable way. James Sully, a nineteenth century psychologist, devoted an entire chapter on the subject of attention. In his teacher’s handbook on psychology we can see a direct influence of Locke’s theory.

All intellectual guidance of the young implies that the educator has acquired a certain hold on the child’s attention. Instruction, [...] whether by the presentation of external objects for the child’s inspection or verbal information, clearly involves at every stage an appeal to the attention, and depends for its success on the effectiveness of this appeal. [...] To know how to exercise the attention, how to call forth its full activity, is thus the first condition of success in education.

(Sully, 1897, p. 162)

Attention is

essentially a narrowing or concentrating of consciousness, that is a converging of mental light on the central of ‘focal’ part of the field of vision, and a correlative darkening of all the ‘marginal’ portion.

(Sully, 1897, p. 140)

Inattention, in contrast to that, is not total absence of attention, but “mental energy diverted into wrong directions” (Sully, 1897, p. 141). So to have attention for something means that the consciousness of a person mentally zooms in on a specific detail in order to have a sharp image of that detail, this way necessarily blurring everything else. Accordingly a pupil who *has* attention, for example in relation to the sums being dictated by a monitor, pushes other thoughts to the background or cannot even think about them. Inattention as conceived by Sully, on the other hand,

is not a total absence of attention but rather a state of mind in which consciousness is badly focused, like when an individual is looking out of the window while daydreaming, an experience in which, according to Sully, multiple thoughts float chaotically through the mind.

Lancaster's technology, it seems, caught attention the way Sully conceives it. And this so that he could have complete control over what he called the individuals' propensity to action. His system put into practice that on a mass scale every individual's attention was continuously guaranteed once that individual had entered the classroom. Quietness was being installed, not by means of terror, but because no form of idleness remained undetected. Also, any form of idleness or inattention had its price. His system was comprised of human movements in which each individual had the desire to climb upward in every subject matter, to compete with peers and to surpass them or to receive awards as Lancaster gave medals and prizes to the best achievers. Not only did each individual have a certain level in respectively reading, writing and arithmetic. According to their capacities in each of the three subject matters they were also ranked in relation to peers who had the same level. This pedagogy produces what Foucault describes as "cellular power": the multiple can be categorized and mapped into smaller groups, but in every group the individual has a unique place (the singular). "It allows both the characterization of the individual as individual, and the ordering of a given multiplicity" (Foucault, 1977[1975], p. 149). The way he used the concept of attention, it seems, achieved the result that in a system of mass education with classrooms of more than three hundred pupils, there was a concrete pedagogy vis-à-vis the individual, which incessantly caught attention by means of technology. The concrete experience of both the cardboards and the slates clearly put this kind of pedagogy into practice. This way the pupil in Lancaster's system, as Mesquita rightly argues, is

he who objectified in quantifiable data all his mental activity while in school - who confined such mental activity to endless mechanical exercises and who made all of this in such a quick pace as allowed by the 'human mechanism' to which he belonged.

(Mesquita, 2012, p. 668)

Accordingly, the concrete materiality of Lancaster's technology had a particular effect on the individual, it shaped or formed the pupil. The word "technology" should be conceived here as Saettler refers to it in his introduction of *The Evolution of American Educational Technology*. It is not just the hardware or machine, the object that is used, but the whole system, and the theory concerning the purpose and effect of the material (Saettler, 2004, p. 4). His system, with at its core the technology of the cardboards and slates, but more broadly the whole mechanism of whistles and telegraphs and ways to get up and sit down and move from this to that position, functioned as an *automaton*. The word automaton stands for "automatic device" and seems to originate from the seventeenth century. Definitions refer to a mechanical figure constructed to act as if by its own motive power; a robot. In his study, the French psychiatrist and philosopher Pierre Janet explains the French word "*automatisme*" by referring to a mechanical doll, which moves in and by itself, in

contrast to a manual pump that receives its movement from a force outside the object (Janet, 1889, p. 21). Like a clock with a mechanism, the inner working of the automaton has a fixed number of possibilities. When operating, the clock works in such a way that every state it is in is the result of the way the device was programmed when being assembled.

Lancaster's system can easily be conceived in this way and thus as an automaton. Consider how discipline functioned as a crucial element in the light of the activities in relation to the cardboard and slates. It had another purpose than installing a moral gyroscope; it was part of a pedagogy that systematized the act of catching the attention of the pupil. Discipline was very important as one of the maxims was "a place for every thing, and every thing in its place" (Lancaster, 1810, p. 3). Consequently he gave very detailed instructions, for example related to what pupils had to do with their hats. They had to sling them across their shoulders, "as a soldier would sling his knapsack" (Lancaster, 1810, p. 2). Yet, the motivation he gives why children should hang their hats soldier-like over their shoulders is quite elucidating and shows that discipline was not at all a goal in itself, but part of a production-machine:

It prevents the necessity of going to put hats on the nails or shelves, and again going to get them thence, before the children leave school. These are great advantages - as, with eight hundred boys in school, they save sixteen hundred motions [...].

(Lancaster, 1810, p. 2)

Lancaster openly borrowed disciplinary actions from the military, but used them to create a specific experience. Maybe the way pupils entered the classroom, put their hats on their shoulders and walked in lines towards their work stations, each movement the result of a command, not only saved motions, but prepared them for the drilling exercises to come, they channelled the mental capacities and made pupils willing to write word after word on their slates, or answer mechanically when asked what knowledge was on the cardboard when they were called upon. As Foucault writes, in schools like those of Lancaster there was no unproductive time in between two learning experiences (Foucault, 1989, p. 223). Lancaster described at length a whole choreography of concrete movements with which the pupil had to walk from the cardboards to the individual slate, or vice versa. The body posture and movements seem to have prolonged the mental attitude that was required of the individual in relation to the cardboard, so that when relating to the slates in a subsequent exercise, there was a continuation of a similar kind of productivity. The propensity to action of the child was not so much molded into obedience as a kind of moral objective in itself. Rather, obedience and discipline were part of a system that continuously channelled this propensity of the child to action.

In relation to and as a consequence of the way the classroom technology was used, it can be argued that a specific form of *automatic learning* was realized. What do I mean by this? Attention was achieved because a monitor simply pointed with a finger to a word and asked "what word is that?".

The body and the words of the monitor continuously prolonged the attention of the child in relation to the cardboards and slates. In and by themselves these objects were not strong enough to draw attention, but together with the monitor, they *guaranteed* attention, the pupil could not *not* relate to them and thus could not *not* relate to the representation of the world that Lancaster offered. This is an important experience of technology, of what it can do to a person. Further in this study the cinema screen and digital screen will be studied vis-à-vis their potential to guarantee attention *in and by themselves* as it can be hypothesized that in contrast to the cardboards and slates, they do not require a human agent or monitor to catch attention.

The cardboards and slates, together with the monitor, systematically maximized the attention of the pupils. This means that a child could not but stay attentive to the lesson, as his or her lack of attention was immediately visible and had negative consequences for the individual trajectory. Lack of attention, detected by the monitors, did not result for example in punishment or encouragement to concentrate. Rather, it simply realized in a matter of fact way that a pupil descended in rank or remained stuck in a specific level instead of climbing upwards within the eight levels which comprised each of the three subject matters that were being taught. The complexity of Lancaster's system makes it difficult to compare it with automata like the clock or the mechanical doll. It seems that it functioned like a computer system *avant-la-lettre*, which, by means of codes, set in motion a whole process of different operations, which ran simultaneously in such a way that the system did not crash, a reason for which the classroom was probably such an enormous space, as at any given time, three to four hundred pupils had to operate together in different subsystems of the learning machine.

Keeping in mind how Sully interpreted both attention and inattention, we see that inattention stands for a mental state in which the individual is distracted, in which multiple thoughts float chaotically through the mind. The person is not "out", unconscious or asleep, but rather distracted like a daydreamer. Attention on the other hand, is a mental focus on one aspect of reality, because of which, necessarily, attention for everything else disappears. Hugo Münsterberg, a German-American psychologist who wrote a psychological study on cinema in 1916, also writes about attention in this way:

While the attended impression becomes more vivid, all the other impressions become less vivid, less clear, less distinct, less detailed. They fade away. We no longer notice them. They have no hold on our mind, they disappear. If we are fully absorbed in our book, we do not hear at all what is said around us and we do not see the room; we forget everything. Our attention to the page of the book brings with it our lack of attention to everything else.

(Münsterberg, 2008[1916], p. 19)

It seems that Lancaster's pedagogy, because of the way his monitors continuously made the pupil relate to the cardboards and slates, brought the individual into a mental state that coincides

neither with attention nor inattention as mentioned in the above, precisely because he pushed attention through an automaton-experience. The pupil was relating robot-like to the knowledge, automatically, ready to give the right answer at the moment the monitor asked a question. Mentally, so it seems, there is a paradox as the pupil was *there*, able to reproduce the right knowledge at the right moment. But simultaneously the child seems to have been in a particular state of mind. The pupil became a plaything of the machinery, consisting of whistles, a wooden command system, programmed ways to move from one educational moment to another, prizes as motivation and of course, slates and cardboards and the way the monitors operated in relation to them.

In *Discipline and Punish: The Birth of the Prison*, Michel Foucault explicitly refers to Lancaster's method, describing the school as a machine for learning, "in which each pupil, each level and each moment, if correctly combined, were permanently utilized in the general process of teaching" (Foucault, 1977, p. 165). In this system, each moment a pupil related to the cardboards and slates he or she could not *not* learn. Accordingly the individual automatically and continuously produced the knowledge that was programmed in the curriculum. In this experience, I argue, the pupil reached a particular mental state, performing the act of learning as a routine. Pupils were neither mentally distracted, nor attentive, hovering between attention and inattention, almost reaching a state of mind where one is de-subjectified in the sense that one is deprived from the capability to be in the world in such a way that one can reflect about it.

Psychiatrists of the nineteenth century, so Janet's study shows, bluntly refused that the state of being of the automaton can be linked, not only to dolls, robots, animals or machines, but also to human beings (Janet, 1889, p. 34-40). Of course, the pupils of a Lancasterian classroom did not become robots or machines but nevertheless reached a mental state because of which they learned automatically. Consider how the main character in *A Clockwork Orange* (Kubrick, us, 1971) was brainwashed to re-adjust him to society. Strapped in a chair, he was forced to look at a cinema screen. His eyelids were kept open with a mechanical device so that it was impossible for him to close his eyes, he could not *not* see what the cinema screen projected and thus what the scientists and social workers wanted him to experience, thus programming his mind. Of course, in a less spectacular way, the automaton or teaching machine that Lancaster set in motion seems to have produced something similar. Learning materialized as a consequence of a stimulus-response mechanism that caught attention the way the dog starts salivating in Pavlov's famous experiment.

Consequently children *effectively* acquired the knowledge being printed on the cardboards or written down on the slates. This refers maybe to an evident and general characteristic of learning and education, namely that attention indeed has to be present in relation to a representation of (a specific part of) the world, to be able to relate to that reality, in whatever shape it appears, whether printed in a book, projected on a screen, written in the sand or painted on a canvas. But, the concrete realization of knowledge acquisition is produced by controlling the pupil the way a

screen user, when manipulating a computer application, arrives at the point the application wishes the user to arrive, by following the prompts that appear on the screen and making a choice between this or that option. What is more, the knowledge being offered on the cardboards and slates was very limited. As already mentioned, it existed of three subject matters in relation to which the pupil had to relate in a standardized way, through eight different levels. Lancaster realized a very small, almost self-created reality, an automated reality. Although he brought the child into the classroom, it seems that he kept the world outside this time and space, to replace it by an immersion in an automaton.

The object of this first part was not to criticize the experiences Lancaster had produced. The purpose of this study is to research how technology, when it is put into practice, shapes us as a consequence of its specificity. Lancaster's case is interesting to study because he is perhaps the most radical educator when it comes to allowing the materials to be in charge. Regardless of the fact whether we believe the outcome of this education is desirable or not, it can be argued that Lancaster made us aware of the pedagogical potential of technology running almost completely by itself. He experimented with the idea of letting technology as conceived by Saettler play the leading role over humans, the monitors and teachers included. The automaton, once switched on, does what it is programmed to do. In the second and third part, we will study the automaton and the nature of attention it produces in relation to the cinema screen and the digital screen.

Part 2

Bringing the world to the child



A philosophical inquiry about the mode of attention vis-à-vis cinema and a case-study on how the cinema screen entered the twentieth century classroom¹¹

Our first connotation when we think about cinema is with the big auditorium where we sit and watch a feature length film, mostly fiction with a narrative. We go to the cinema, that is, visit a public space, buy a ticket and withdraw into the darkness where the cinema screen presents us moving images. These images, Deleuze argues, move in and by themselves and accordingly he perceives cinema as an automaton (Deleuze, 1989, p. 156):

Those who first made and thought about cinema began from a simple idea: cinema as industrial art achieves self-movement, automatic movement, it makes movement the immediate given of the image. This kind of movement no longer depends on a moving body or an object which realizes it, nor on a spirit which reconstitutes it. It is the image which itself moves in itself.

(Deleuze, 1989, p. 156)

In this second part of the PhD dissertation I will further explore what Lancaster's system made us aware of, namely that technology can run in and by itself and co-construct meaning. In the first chapter I will oppose the automaton of Lancaster to a different automaton, which can be found in the cinema theory of Hugo Münsterberg (1916). I will research how the cinema screen produces automatisms in the mind and what the mode of attention of the cinema spectator accordingly could consist of. This way, the concept of attention, which already came to the fore in the previous part, will remain important. In the second chapter we will see how, from the twentieth century onwards, educators used the cinema screen to create educational experiences. In this second case-study we will see that by using the cinema screen in the classroom a particular way of *bringing the world to the child* became possible. This is in contrast to Lancaster's automaton, which kept the world outside the classroom walls. We will also study how educators respond to the automaton experience which cinema produces. I will argue that educational reform tamed rather than affirmed the automaton. I will conclude this second part by referring to the theories of Walter Benjamin and Gilles Deleuze, which will be studied elaborately in the fourth part of this PhD dissertation. They have a particular interest in cinema in common, as they ask the question what a "cinematographic" consciousness could consist of and what it entails to affirm rather than tame the automaton.

¹¹ Image on the previous page retrieved online from AECT website <http://www.aect.org/newsite/> on 15/04/2011.

Chapter One

An automaton-experience of the world

In this chapter I will show that the cinema theory of Münsterberg recognizes the medium as an automaton that generates a particular kind of attention. Because of this an experience of reality becomes possible as a consequence of the specificity of cinema. This experience, I will argue, could not take place in relation to the classroom technology of Lancaster.

1. Early cinema theory about the potential of moving images

Two of the oldest theoretical studies on cinema are *The Art of the Moving Picture* (1915), written by the American poet Vachel Lindsay (1879-1931) and *The Photoplay: A Psychological Study* (1916), written by Münsterberg (1863-1916), a German-American psychologist. Both books are mainly about the intrinsic characteristics of moving pictures, and how, in time, cinema should lose qualities that are theatrical or literate in nature. Instead, it should develop its characteristics unique to the medium itself, both authors argue. Lindsay was very ambitious as he believed that the cinema has political and educational potential. “The possibility of showing the entire American population its own face in the Mirror Screen has at last come” (Lindsay, 2000[1915], p. 57). So not to oppose words with words, but to relate pictures with pictures, *to think in pictures*. The proletariat, Lindsay argues, has “received more pictures into its eye than it has had words enter its ear” (Lindsay, 2000, p. 124). If universities, instead of writing pieces of literacy constructed photoplays they would allow the proletariat to ponder over scientific truth (Lindsay, 2000, p. 154-155). In the same way Münsterberg argued that “the masses of today prefer to be taught by pictures rather than by words” and that the school room, the newspaper and the library could be replaced by moving pictures in their function of spreading information and knowledge (Münsterberg, 2008, p. xi, xii). In both Lindsay’s and Münsterberg’s theories we can read the hope that in the near future the masses would be educated by images of such moral standards that censorship would not be an issue. Cinema, gradually refining and discovering its intrinsic qualities, would produce a democracy and educate children in ideals (Folks, 2001, p. 89).

Both authors believed cinema brought minds into a peculiar state. Münsterberg speaks of a penetrating influence, as “no psychologist can determine exactly how much the general spirit of righteousness, of honesty, of sexual cleanliness and modesty, may be weakened by the unbridled influence of plays of low moral standard” (Münsterberg, 2008, p. 80). “All countries seem to have been awakened by this social danger” (Münsterberg, 2008, p. 80). Simultaneously and in line with Lindsay Münsterberg argues that the cinema screen has a political, social and educational potential. It can remold and build a national soul (Münsterberg, 2008, p. 80). For Münsterberg, so it appears, cinema is both dangerous and wholesome, capable of weakening the moral and conduct of the

audience, as well as strengthening the soul. Conceiving cinema this way, as a double-edged sword, is something I wish to emphasize and throughout the rest of this study we will see the standpoint return that both the cinema screen and the digital screen can be conceived as such.

In what follows I will study Münsterberg rather than Lindsay, because with Münsterberg we can find a technocentric point of view and an attempt to conceptualize what it means to be shaped by the medium. Lindsay, although he emphasized that cinema should explore its own characteristics, does not really explore this question. Münsterberg interpreted cinema as a medium that produced “an original creative expression” and he believed that it could “mold” the “esthetic instincts of the millions” (Münsterberg, 2008, p. 84).

Yes, it is a new art - and this is why it has such fascination for the psychologist who in a world of ready-made arts, each with a history of many centuries, suddenly finds a new form still undeveloped and hardly understood. For the first time the psychologist can observe the starting of an entirely new esthetic development, a new form of true beauty in the turmoil of a technical age, *created by its very technique* and yet more than any other art destined to overcome outer nature by the free and joyful play of the mind.

(Münsterberg, 2008, p. 84, my italics)

As we will see, cinema produces an experience of the world that resembles the automaton experience. However, with cinema the automaton is different from what Lancaster’s technology had produced. To study the difference between them, I will now focus on the way Münsterberg conceptualized attention and in what condition attention finds itself when confronted with cinema.

2. Voluntary and involuntary attention

In Münsterberg’s study we find an interesting attempt to describe what he calls the inner development of the moving pictures (Münsterberg, 2008, p. ix). Cinema has the capacity to do what only the mind or the imagination could do, and force this upon the spectator. Cinema’s specificity is that it creates “a higher mental act”, a particular kind of consciousness inside the spectator (Münsterberg, 2008, p. 12). “The associated idea is not felt as our creation but as something to which we have to submit” (Münsterberg, 2008, p. 30). This as a result of the automatisms that Münsterberg recognizes as intrinsic to cinema: *depth and movement, attention, memory and imagination* and finally *emotions*. Each of these key words is the starting point for a chapter in his study and thus it becomes clear that Münsterberg writes a theory about cinema spectatorship.

To study the relevance of cinema, so Münsterberg’s study can be read, is to examine what it is precisely that cinema does in the mind and body of the viewer. Depth and movement, for example, are artificial, the spectator knows he or she is looking at a flat screen and at immobile images that follow each other at a particular rate. Yet, the mind is nevertheless brought into “a peculiar

complex state” creating the depth and movement automatically while looking at the cinema screen (Münsterberg, 2008, p. 7). At first sight it seems that Münsterberg’s interpretation comes close to the automaton experience produced by Lancaster, because he conceives cinema as something the spectator has to submit to. Let us therefore study how he conceptualized attention and compare this to the attention produced by Lancaster’s technology. The “peculiar complex state” of the cinema spectator, I will argue, is the exact opposite of what happens with attention in Lancaster’s classroom.

Particularly the distinction between “voluntary attention” and “involuntary attention” offers insights about the cinema experience. Voluntary attention implies that “we approach the impressions with an idea in our mind as to what we want to focus our attention on” (Münsterberg, 2008, p. 14, 15).

Our attention has chosen its aim beforehand, and we ignore all that does not fulfil this specific interest. [...] Through our voluntary attention we seek something and accept the offering of the surroundings *only in so far as it brings us what we are seeking.*

(Münsterberg, 2008, p. 15, my italics)

If we return to Lancaster we can argue that he made voluntary attention as conceived by Münsterberg an object of science, in that he controlled the mental capacity of a student in such a way so that when faced with the cardboard or slate, attention of the student was “voluntary”. Not in the sense that the individual autonomously chose to give attention to the cardboards or slates, but in the sense that attention of the student aimed *at that which the program aimed at*, namely a prefixed and pre-established, closed order. We saw that the radical systematization of this kind of attention guaranteed that the student reached a mental process of “automatic learning”.

Münsterberg - and this is crucial to understand his idea on cinema - introduces a specific interpretation of *involuntary* attention, which is not the same as inattention as conceived by Sully mentioned in the first chapter of this study (see page 36). Münsterberg discusses the effect of an explosion or a flash. “The guiding influence here comes *from without*” (Münsterberg, 2008, p. 15, my italics). Involuntary attention, we could add, is the kind of attention we have when all of a sudden, while walking in a street, someone shouts our name. The mental activity is called upon unexpectedly as perceptions force themselves upon us, they instinctively and emotionally control our attention, we must turn our mind to something and accordingly it is attention of the involuntary type (Münsterberg, 2008, p. 15). However, involuntary attention is not at all problematic and rather a natural phenomenon. In fact, Münsterberg sees our daily activity as a compromise between voluntary attention at a specific aim and involuntary attention as the result of the “aims of the surrounding world force” upon us, as naturally, life exists of a constant shift between the two forms of attention (Münsterberg, 2008, p. 15). Lancaster vacuum coated the learning activity so that involuntary attention was sucked out of it. Everything that happened, happened because it was

programmed and in doing so he sucked the outside world out of the classroom experience.

The way Münsterberg conceives attention produced by the cinema screen describes an experience which is the complete opposite from what happened in a Lancasterian classroom. The power of cinema is that “involuntary attention alone can be expected” (Münsterberg, 2008, p. 16). Like Lancaster Münsterberg also seems to hint at a certain automaton event in which the mind of the spectator is programmed or controlled. The crucial difference is that involuntary attention is not sucked out of the event, but on the contrary, *guaranteed*. Looking at the cinema screen, one cannot *not* have attention in a state that is involuntary. With Münsterberg the automaton is characterized as producing a state of mind of which the nature of attention is the complete opposite of the nature of attention as produced by Lancaster’s teaching machine. We may watch moving pictures with a particular interest, be it practical, personal, scientific. But if we truly are attentive to the screen, for example to a close up of a hand clutching a revolver, the hand “becomes the central point for all our emotional responses” (Münsterberg, 2008, p. 20). “[O]ur ideas and feelings and impulses group themselves around the attended object” (Münsterberg, 2008, p. 19). As Deleuzian media theorist Patricia Pisters argues, Münsterberg is sensitive to “the ambiguous relationships between cinema, reality, and the mind” (Pisters, 2012, p. 74). More precisely, cinema *bypasses* voluntary attention and this allows for a particular experience to take place. But how should we understand this? To further research the attention cinema produces we will study how Münsterberg conceived cinema as a laboratory. This because his interpretation of cinema is influenced by the experiments performed as a psychologist in a laboratory setting.

3. Cinema as a laboratory setting

Münsterberg’s theory on cinema, as Robert Brain (2012) poignantly shows, is directly influenced by the context of the laboratory, in which Münsterberg experimented with aesthetic elements. In his Harvard laboratory, he studied “how the shape of a line, a pattern of colour or sound, a perception of movement would produce a corresponding movement in the viewer’s eye-muscles, breathing, vascular system, or bodily musculature” (Brain, 2012, p. 335). From these concrete, material experiments in the laboratory, Münsterberg created a doctrine of aesthetic isolation. The isolation of artwork “allowed all practical impulses in the beholder to dissolve and personal will to become extinguished” (Brain, 2012, p. 339). “[T]he optical impression presents itself alone, absorbing the mind, and sets in motion the motor impulse to the organism and leads to localized tensions and movement sensations” (Brain, 2012, p. 339). Münsterberg saw the cinema experience of sitting in a dark space in this way, as anything but natural. The spectator of the cinema screen, like a subject in a laboratory setting, receives an isolated impression, cannot but passively accept this in the mind and accordingly the personal will becomes extinguished. Here, he describes a mental condition that is automatically produced by concrete experiences, either in the laboratory, or in the cinema auditorium. The experiences on the screen push the spectator outside himself or herself, forgetting about the individual body and mind, this way involuntarily becoming sensitive to the image. The

laboratory and cinema auditorium have in common that they limit the person who subjects himself or herself to these spaces. But this limitation, paradoxically, allows for certain elements to become meaningful: a sound, an image, a colour. Of course, in daily life one is constantly exposed to these forces. However, in the laboratory or in the cinema auditorium, these forces appear isolated and one cannot *not look* at them, because the experiment or the montage is set up in such a way that one cannot leave it aside, attention is drawn towards something. The subject cannot ignore it the way one would ignore or be inattentive to forces that continuously surround us in the everyday of life. Further in this PhD dissertation we will see that the classroom also has this potential, namely, it can focus attention in relation to a thing, by isolating learners from the real world, and expose them to an aspect of the world within its four walls, where it is experienced in a specific way.

It would be short-sighted to criticize Münsterberg's theory in the sense that the laboratory or cinema auditorium as he conceived it creates a passive subject deprived of the potential to think. Remember how we discussed Lancaster's pupil becoming de-subjectified in the sense that one is deprived from the capability to be in the world in such a way that one can reflect about it. Münsterberg's cinema spectator is not just a passive and immersed subject that merely absorbs moving images as the main character in *A Clockwork Orange* (see page 40). If that were the case, there would indeed be little difference with Lancaster's educational program, in which a limited program was forced upon the pupil. Münsterberg was aware of the fact that the personal will becomes extinguished, but for him this does not necessarily entail de-subjectivity. The analogy with the laboratory might give us the idea that Münsterberg interpreted the director of a film like a demiurge who could play with the involuntary attention of the spectators the way Lancaster played with voluntary attention. Like the scientist who uses the subject to empirically test the responses in relation to a particular stimulus, the film director, like Hitchcock's famous quote seems to suggest, could likewise "play" with the cinema spectator's attention:

The audience is like a giant organ that you and I are playing. At one moment we play this note on them and get this reaction, and then we play that chord and they react that way. And someday we won't even have to make a movie- they'll be electrodes implanted in their brains, and we'll just press different buttons and they'll go 'ooooh' and 'aaaah' and we'll frighten them...Won't that be wonderful?

(Hitchcock, In: Lovell & Sergi, 2009, p. 38)

This quote illustrates the involuntary attention masters like Hitchcock indeed could produce. It also hints at the possibility that the cinema screen creates a spectator who is passive and immersed in the world created by the film director¹². Münsterberg does not deny a certain passivity on behalf of the spectator, yet, cinema also "*yields to our subjective attention*" (Münsterberg, 2008, p. 22, my italics). Now it seems that he is contradicting himself. Cinema imposes itself upon us, produces that

¹² The condition in which Hitchcock's spectator finds himself or herself in is also interesting in relation to contemporary experiences with the digital screen. For example, it can be argued that immersion in cinematographic computer games is similar to the experience Hitchcock describes.

the personal will becomes extinguished, but simultaneously, cinema *yields* or gives in to our subjective attention? How to make sense of this paradox?

Regarding the laboratory setting Münsterberg had a very radical and controversial vision. This vision might help us understand how Münsterberg conceived cinema. “Without philosophical framing, he argued, the causal-mechanical relations of modern laboratory science would amount to a dangerous form of enslavement to an illusory vision of the world” (Brain, 2012, p. 345). Hence Münsterberg conceives the laboratory as potentially dangerous, as a double-edged sword. It could be argued that Lancaster’s classroom, although not necessarily dangerous, constantly produced mere causal-mechanical events, like in a laboratory. Remember how the teacher and monitor had to function like neutral operatives and that Lancaster saw them as productive precisely when they restricted themselves to performing pre-determined actions in accordance to the process of his learning machine. Being aware of the artificiality of such an event, Münsterberg however, looked for ways to affirm the laboratory setting, but in a way that would avoid a mere causal-mechanical reality, which he clearly found problematic. “A further step was required, a *philosophical step*, to redeem the objective reality of the laboratory and to tether it to a transcendental account of freedom” (Brain, 2012, p. 345).

Cinema, which Münsterberg conceived as the laboratory’s stepchild, could thus operate as a technology that gives the masses the possibility of philosophical reflection (Brain, 2012, p. 345, p. 347). Simultaneously, it should be conceived as a medium that produces involuntary attention. Paradoxically, a high level of reflexivity could thus coincide with involuntary attention and the fact that the personal will can become extinguished. This way, the cinema screen gives the masses the ability to think because of the automaton that it is. With cinema, the spectator becomes capable of thinking, not albeit involuntary attention, but as a consequence of the kind of attention which cinema systematically produces. If we relate this to the duality presented in the Apple commercial (see page 11), confronting the blond woman, who represents a critical thinking individual who actively responds to the world, with the grey masses on the other hand, who seem oblivious of the mediation of the cinema screen they are watching, it seems that according to Münsterberg this duality can no longer hold. According to him the potential of cinema is that the spectator can find him or herself in a state of attention simultaneously characterized by both passivity and activity¹³. “It is as if that outer world were woven into our mind and were shaped not through its own laws but by the acts of our attention” (Münsterberg, 2008, p. 22). In other words, through its characteristic automatisms - depth and movement, attention, memory and imagination and finally emotions - cinema allows the spectator a specific freedom vis-à-vis the material world:

The massive outer world has lost its weight, it has been freed from space, time, and causality, and it has been clothed in the forms of our own consciousness. The mind has

13 In the fourth part of this PhD dissertation I will further study this particular kind of attention, which Benjamin, in line with Münsterberg, does not problematize. In fact, the cinema spectator he proposes is a “distracted critic”. For a more detailed discussion, see page 214 and further.

triumphed over matter and the pictures roll on with the ease of musical tones.

(Münsterberg, 2008, p. 79)

Neither de-subjectified and thus incapacitated to think *at all*, like the grey masses seem to illustrate in the Apple commercial, neither in full awareness of oneself and the world and thus characterized by voluntary attention, seeing only what one wants to see, the cinema spectator *oscillates* back and forth between both mental conditions. In the next section we will conceptualise the mental state of the spectator of cinema and this way conclude our study on Münsterberg's cinema spectator. By describing this mental state, we might come to a first description what it is that the cinema screen makes the screenager do.

4. The cinema spectator according to Münsterberg

If we take into account the way Münsterberg, as described above, conceptualised the difference between voluntary attention and involuntary attention, the fact that according to him, the cinema auditorium, like a laboratory, exposes the spectator to a part of the world by isolating it, and that watching moving images systematically produces involuntary attention, how can we conceive the nature of attention produced by this automaton? The cinema spectator, in Münsterbergian terms, is drawn to something *outside the self*, through a program of incessant involuntary attention. A specific interpretation of Kantian transcendentalism would entail that sensory impressions lead to universal knowledge, they re-present an aspect of the a-priori world from which "Ideas" follow. Münsterberg's position, as Brain shows, is that such transcendental ideas are not necessarily wrong, but rather "static modes of contemplation that fail[] to grasp the larger process involved in aesthetic perception" (Brain, 2012, p. 340). So this kind of contemplation is not what Münsterberg had in mind. Cinema is first and foremost an anti-intellectual and emotional sensation, not an immediate intellectual visualisation of Ideas. Yet, it originates from an empirical and also controlled, artificial environment, the cinema auditorium, from where the screen operates and thus has a particular effect on the spectator. The cinema experience, however, should not be understood as pure immersion or absorption, as if the spectator lives in the illusion that the walls of the cinema auditorium are really gone. Rather, in the cinema auditorium, there is "a flickering, rhythmical, or oscillating relation to the object" (Brain, 2012, p. 341).

This Münsterbergian idea about cinema takes place inside the numerous picture palaces. Here, the minds of the masses, who never forget the fact that they are in an auditorium, reach a particular state of mind. Their attention oscillates between involuntary attention for an aspect of the world (in which the spectator forgets the self), and what Brain sees as self-reflective awareness or free-activity of the "I" (Brain, 2012, p. 345, p. 348). Paradoxically, this "I" becomes a possibility precisely because the subject oscillates back and forth between involuntary attention and a particular kind of self-awareness. It is the consequence of a double movement. It is an involuntary movement towards something outside the self, which the cinema screen is able to produce by

means of moving images. But involuntarily, a particular kind of self-awareness in relation to that experience is also there. So precisely a kind of self-consciousness in relation to the mediation of the screen, an awareness in which an “I” is conscious of the fact that he or she is in fact watching cinema, forces itself upon the spectator as well. The spectator is thus not merely absorbing pictures according to Münsterberg. While watching the images, the spectator is simultaneously aware that he or she is perceiving them. Experiencing cinema thus means what I would like to call *being exposed to the world*. But then “world” is interpreted not as an objective reality with a Kantian divide between subject and object. “Cinema *yields* to our subjective attention”, so we saw in the third part of this chapter. As a consequence of the cinema screen, something opens up to and in the subject, *through whose mind the world passes*, neither purely objective or subjective but both. As Deleuze and Guattari say in their introduction of *A 1000 Plateau*: “not the point where one no longer says I, but the point where it is no longer of any importance whether one says I” (Deleuze & Guattari, 1987, p. 3).

The power of cinema lies not in the fact that it immerses us in reality as much as possible. So when a moving image of flowers is shown, it would not be an artistic operation to add real scent of flowers so that the spectator would be “closer” to reality. The aim is “not to imitate life but to reset it in a way which is totally different from reality” (Münsterberg, 2008, p.51). This means that being a spectator involves neither a passive absorption of images, nor an active and intellectual interpretation in which we see what we already know. What happens could be conceived as an emancipatory act where seeing a part of the world by means of the screen entails that this world is not fixed or given, but on the contrary, open, as a result of this specific attention the cinema screen generates in the mind of the viewer. By “open”, I mean that (a part of) the world is presented to the spectator in such a way that one can reflect about it as a consequence of the medium itself, because of which a subject/object divide no longer holds.

Münsterberg’s theory on cinema spectatorship is a specific interpretation of this medium that allows us to conceptualise the potential of an automaton-experience. With Lancaster, the automaton resulted in the fact that the individual could not *not* relate to a programmed reality. Accordingly *an experience of the automaton* became impossible, although the automaton did happen *to* the pupils, who could not but be immersed in it. That is to say that the pupil was immersed in the automaton to the extent that no critical distance was possible in relation to this program. My argument is that in contrast to Lancaster, Münsterberg describes an automaton-experience that paradoxically *can be* experienced. The cinema is an automaton as it creates moving images that force themselves upon the “I”. Münsterberg affirms this characteristic of cinema. However, this involuntary “non-thought” that cinema produces does not dominate the mind, rather, it meets the “I” halfway. The automaton can be experienced, precisely because *to see* implies an oscillation between a passive reception (but not complete immersion or absorption) of moving images on the one hand, and a self-awareness of the “I” in relation to these moving images on the other hand. Maybe the French film director Robert Bresson comes closest to describing this experience concretely when he says that

cinema is not about seeing what you are already thinking, but thinking about what it is you see (Bresson, 1972, p. 57). This automaton-experience, where non-thought and subjectivity meet each other halfway, *is in us*, as Deleuze argues (Deleuze, 1989, p. 157). We will study this more thoroughly in the fourth part of this PhD dissertation.

Chapter Two

Bringing the world to the child

In what follows I will first study how, between the 1910s and 1950s, the cinema screen was implemented in local classrooms within the context of the USA. We will look at the way educators theorized about the intersection between cinema and education and how they put that theory into practice. As we will see, educators interpreted the potential of cinema for education from its *vicariousness*, an idea which theoretically speaking can be traced back to the French philosopher Jean Jacques Rousseau. The cinema screen brings the outside world into the classroom, and thus to the child by means of representations in the form of moving images. This way the screen allows that in a vicarious way, life and school can coincide. Apart from that, we will see, educators also interpreted the automaton-effect of the cinema screen as a double-edged sword. The French cultural critic George Duhamel, who hated cinema, expressed the automaton-experience best by saying that when exposed to moving images, he could no longer think what he wanted to think. Because of its automaton effect, we will see, educators stressed the importance of censorship and a teacher-centered “cinema education”, this way allowing the cinema screen and representations of the world to enter the classroom, but only under certain conditions. In the third part, we will study Henry Giroux’s *film pedagogy* as an example of a critical cinema education which attributes an emancipatory potential to this medium, but which nevertheless keeps the automaton at bay.

1. The Visual Instruction Movement

Bringing real and representational objects into the classroom

In the USA, cinema education originated from traveling motion-picture lecturers such as the American Lyman H. Howe (1856-1923), who travelled across the country, “providing phantasmagoria performances and other screen events” (Musser, 1991, p. 276). Howe focussed on the everyday with films such as *Runaway Horse* (1896), *The Morning Bath* (1896), *Watermelon Contest* (1896) and *Feeding the Doves* (1896). By means of horse and wagon, later with delivery trucks, all kinds of moving images, both fiction and non-fiction, were shown nationwide. Commercial enterprises like that of Howe were quite flexible, they changed their program according to the target group they addressed. Consequently they soon found a way to enter not only the local village community center, but also the classroom of local schools. In 1910 American film producer George Kleine published a catalogue with educational films, from which schools or other (educational) institutions could make their selection. “His plan was to let Universities become outlets for schools, churches and community services. In 1922 he had 22 universities distributing his productions” (Horwitz & Harrison, 1980, p. xxiv).

Here and there local educators recognized that the cinema screen could bring about a potential change in the way knowledge is being taught, although it should be noted that cinema was just one of many technologies educators were interested in. For example, in 1904 a local teacher from Saint-Louis, Amelia Meissner, persuaded the local government to buy items from the Saint-Louis World Fair, that exhibited objects in the town in that same year, so that these items could be used in an educational museum children travelled to and visited to experience objects first hand (Allen, 2005, p. 22, Saettler, 2004, p. 128-131). However, as James Allen states, the inverse was more efficient, that is, to bring real and representational objects into the classroom, so that they could be manipulated by the pupils within that environment (Allen, 2005, p. 24). Eventually Meissner not only relied on *realia* or real objects, but also on still photos, drawings, charts and stereographs, to which she added audiovisual materials as well (Allen, 2005, p. 23).

Although the cinema screen was brought into the classroom as early as 1910, it never fully integrated into education. Just like radio and television it did not become as important as the textbook or blackboard (Saettler, 2004, p. 167-169; Cuban, 1986, p. 17-18). Both Lindsay and Münsterberg suggested that the fullest realization of cinema would take place *outside* educational settings, in the picture palaces. Reading Larry Cuban's study *Teachers and Machines. The classroom use of Technology since 1920*, it can be argued that they were right, at least concerning the American context. Cuban gives four reasons why cinema never became important:

- Teachers' lack of skills in using equipment and film
- Cost of films, equipment, and upkeep
- Inaccessibility of equipment when it is needed
- Finding and fitting the right film to the class

(Cuban, 1986, p. 18)

These reasons are all practical in nature. According to F. Dean McClusky, one of the pioneers that tried to implement cinema into the classroom, the impact on education was extremely small because the system was too conservative (McClusky, In: Saettler, 2004, p. 168). But regardless of the fact that the screen never became an important classroom technology, what experience did these reformers think cinema would realize? What is so intrinsic about the cinema experience and in what way is it worthwhile to translate this experience into the classroom? To research this question, we will focus on how, in the American context, educators who wrote under the theoretical umbrella of *The Visual Instruction Movement* (1900-1950) researched cinema's potential (Saettler, 2004, p. 123-169). This movement was led by authors such as McClusky (1924, 1925), but also Anna V. Dorris (1928) and Joseph Weber (1930). Like McClusky, Dorris and Weber often wrote articles on the subject of visual education in *The Educational Screen*, a monthly magazine that published articles about educational technology between 1922 and 1956, after which it published under the name *Audiovisual Guide* (Saettler, 2004, p. 165). In this first part of the chapter, *The Educational Screen* will be analyzed to better understand how cinema was used and interpreted in educational settings,

how educators directly or indirectly posed the question how the characteristics of cinema itself altered - or could have altered - the experience of education.

Theoretical framework

The theoretical framework for the educational perspective that we find in this educational magazine, in which the world was literally brought into the classroom and in which diverse technologies are implemented to represent the world in a variety of ways, can be traced back to the work of the French philosopher Rousseau among other thinkers. In *Émile ou de l'éducation* (1762), he develops a theory of natural learning in which children have to be allowed to experience their ontological state of being a child and not an adult. Too much do we look for the adult in the child : “*Ils cherchent toujours l’homme dans l’enfant, sans penser à ce qu’il est avant que d’être homme*” (Rousseau, 1961[1762], p. 2). Nature, Rousseau argues, should be the sole teacher of the child. The world, albeit in a reduced version so as not to overwhelm the child, has to be experienced and observed so that the child can learn in a natural, individualized way and according to the characteristics of children. Rousseau argues that there are a thousand ways to arouse the interest of children to learn by interacting with the concrete environment. This did not imply that in Rousseau’s opinion, the teacher was unimportant. In contrast, by asking questions about the environment the child was in, the teacher would help the child to grow up naturally. *Here is a cherry tree, how shall we be able to climb in it? Is the ladder tall enough? Here is a river, how will we get to the other side? Will the wooden planks in the yard allow us to cross it?* This kind of interaction characterizes the educational experience according to Rousseau (Rousseau, 1961, p. 150).

Rousseau’s *Émile* is often regarded as the manifest for the *Pädagogik vom Kinde aus*, which originated at the end of the nineteenth century (Depaepe, 1998, p. 55). Gradually and on a global scale, progressive movements made a plea for radical changes in the way knowledge and life skills are taught in classrooms. Authors of *The Visual Instruction Movement* are no exception, as in line with Rousseau they argue that school should be about coinciding with life outside the classroom. The central thought of *The Visual Instruction Movement* is that verbalism (of the teacher) must be counterposed (without, however, disappearing) by learning through the senses. In this way the real object is the starting point from which the individual can acquire ideas (Saettler, 2004, p. 140). Cinema, as we will now see, was one of many technologies which could realize a more student-centered and natural approach in the way Rousseau conceptualized it. In line with this progressive vision, McClusky for example also mentioned Comenius’ pedagogy which made students learn from the world using illustrations to visualize subject matter, Pestalozzi’s use of the school journey or field trip and Froebel’s emphasis on learning by means of sight and touch (McClusky, 1949, p. 6). In short, this progressive movement focused on technologies and activities to let go of old, slow, and cumbersome methods in which the teacher was the pivotal figure, “to use the most effective procedures known to science for the promotion of learning” (Dorris, 1928, p. v). *The Visual Instruction Movement* used the latest psychological principals and technology that represents

knowledge in diverse ways. Flat pictures, graphics, exhibits, lantern slides, motion pictures, ... In short, technology that realized “the seeing experience” (Dorris, 1928, p. 6). This did not lead towards theory and practice in which the teacher, much like in Lancaster’s system of education, became a kind of engineer of the educational event. In fact, as we will see, the teacher had a very important role to play vis-à-vis cinema and the content the cinema screen projected. *The Visual Instruction Movement* nevertheless helped to pave the way for a more student-centered approach. To better understand this approach it is crucial to discuss the concept of *vicariousness* and the way these educators linked it to cinema.

Vicarious learning

To learn vicariously means for example that instead of sitting at a desk listening to a teacher, students visit a corn field to learn about agriculture, or they walk in a factory to see how a particular product is created. “School and life must be one and the same” (Dorris, 1928, p. 9). Therefore the actual experience with its kinesthetic characteristic should be thought of first (McAteer, 1928, p. 53), as it produces a “direct sensory contact and release of motor impulse” (Crandall, 1924, p. 54). Practically, many authors of *The Visual Instruction Movement* argue, it is not possible to visit the world for every subject matter being taught. The reverse is impossible as well, some objects “are too large, too rare, too expensive, too dangerous or otherwise inconvenient” (McAteer, 1929, p. 137). “Imagine our trying to bring an elephant, a lion, or Niagara Falls into the schoolroom” (Graves, 1927, p. 299). Therefore representations of the world are brought into the classroom, supported by the idea that learning has to get as close to reality as possible to be effective. So when an urban school from Boston finds it hard to bring children to the outdoors, teachers and students alike will gladly relate to the cinema screen that shows moving images of a mountain, for example, to learn geography. Cinema is not regarded as being able to coincide with reality, but it provides an experience nevertheless that comes close to what is outside the walls of the classroom. It is vicarious as you experience *as if* you are in the mountains, or on a boat in the ocean, or amongst a tribe in Africa and so on. Or to put it differently, cinema is interpreted as a fine alternative for the real world outside the classroom.

Unlike the textbook, from which the child “has to translate words into a mental image” (Campbell, 1928, p. 143), cinema makes the abstract concrete and brings the absent or the past to the present (McAteer, 1929, p. 138). Educators are thus interested in cinema because its camera can literally capture all aspects of the world, it offers a vicarious experience of that world which can be projected on a cinema screen. The “as if” characteristic of cinema as it appears in this way, however, is different from the “as if” that Münsterberg recognizes in the experience of cinema or what happens in his laboratory setting. As mentioned before, for Münsterberg “it is as if that outer world were woven into our mind and were shaped not through its own laws but by the acts of our attention” (see page 49). The perspective of the camera offers the spectator the same freedom and flexibility which Münsterberg connects to human imagination. The act of seeing entails that the spectator is not just looking at an empirical, objective world, but that at the intersection between

the mind and the images, objective images and subjective contemplation oscillate back and forth.

This way, Münsterberg hints at an emancipatory experience which is not as close to reality as possible, but rather artificial, like the way a sound or a colour is released upon the subject in the laboratory setting. The potential of this, according to Münsterberg, is that free thought paradoxically coincides with and originates from the moving images, which force themselves onto the mind, asking for attention involuntary in nature. *The cinema experience does not imitate life, it resets reality in a way.* In contrast to this, cinema described as a vicarious experience by McClusky and other educators, remains a tool that registers and represents reality almost as good as reality itself. For Münsterberg, however, cinema exposes the spectator to something other than an empirical fact. As we saw in the section on Münsterberg's theory on cinema, to be as close to reality as possible is not something he is really interested in. In the quote below, we can see an interpretation of a member of *The Visual Instruction Movement*, in which cinema is in fact not vicarious at all, and in line with Münsterberg's interpretation. That is to say, the effect of the camera and the montage as it is described here, is never experienced in the outside world, when not residing in a classroom. Only cinema, it could be argued, can realize an experience as it is described here:

No door is shut to the camera's all seeing eye, no barrier deters, no distance daunts. It mounts up into the air, rides upon the wind and is companion to the cloud. It dives into the ocean's depths and brings forth the slimy secrets of the vasty deep. It penetrates alike the frozen fastnesses of the north and the tropic jungles of the equator, bringing back a faithful record of the life history of bird and beast and reptile, as also of the manners, customs and habit of thought of strange and divers peoples. It follows the statesman into his cabinet, mounts the bench with justice and accompanies the soldier out upon the field of battle. When the 'rockets red glare, the bombs bursting in air' have been translated from poetic trope to grim reality, it again follows the wounded soldier into the hospital.

(Crandall, 1923, p. 402)

2. Cinema is a double-edged sword

The Payne Studies' recognition of the automaton-experience

So far we have seen that cinema education, as conceived by authors of *The Visual Instruction Movement*, focused on vicariousness. This is not to say that these authors did not recognize the potential of cinema that Münsterberg attributes to it, and the abovementioned quote testifies to this. In fact, educators were concerned by what Münsterberg describes as a penetrating influence and the way the mind can possibly be damaged or morally influenced in a bad way by the seeing experience. It should be noted that Münsterberg also recognized cinema to be potentially dangerous. For him cinema was wholesome as well as dangerous, a double-edged sword which requires care. This concern was not only a private concern of Münsterberg or of members of *The*

Visual Instruction Movement, but a concern of society as a whole in relation to a relatively young medium. In the third part of this thesis we will see that today, vis-à-vis the digital screen, a similar kind of concern is articulated. The concern that cinema is dangerous is a very important factor to take into account if we want to understand how the cinema screen, as I will try to argue, was assigned a specific place in the theories and practices of which *The Educational Screen* testifies. Apart from focusing on cinema as a vicarious experience, educators recognized cinema as an automaton as well.

In Great Britain, a report was published as early as 1917 by the National Council of Public Morals (NCPM), which illustrates the way cinema was interpreted and investigated by scientists, educators and politicians of that time. *The cinema. Its present position and future possibilities* is a nuanced report based on numerous interviews. Also, the authors of the report have both fascination and restraint towards the medium. “The cinema, under wise guidance, may be made a powerful influence for the good; if neglected, if its abuse is unchecked, its potentialities for evil are manifold” (NCPM, 1917, p. xxi). The picture palaces’ darkness, it is argued, implies a moral danger as in combination with a low standard of moral conduct of the individual, it can lead to (often sexually connoted) indecency (NCPM, 1917, p. xxvi). The report suggests to add more light into the auditorium and provide adequate supervision while films are being projected. More importance, however, is given to the impact of the film on the moral conduct of the spectator, with a special focus on the effect of film on youth (NCPM, 1917, p. xxxii). It is believed that *sometimes* films might lead children to imitate bad behavior. But this should not, according to the authors, be exaggerated as many other factors, such as the family environment, are much more important to take into account (NCPM, 1917, p. xxxvi). A critical reference is made towards the depiction of death and agony of characters dying, which should not be shown to children, at least not without reflection about what the children will see (NCPM, 1917, p. xlii). Some images should altogether not be shown to children, the suggestion is made to label films suited for children and to use a more strict censorship. Simultaneously the report argues that cinema also functions as a relief, a time out for the poor as it gets them off the streets and keeps the influence of public houses and pubs at bay (NCPM, 1917, p. xlv). The suggestion is even made to develop educational films, especially for older students who have already some notion of abstract ideas, as certain films “inculcate high qualities, such as courage, self-sacrifice and generosity” (NCPM, 1917, p. liii).

In the American context, *The Payne Fund Studies* (1929-1932) is the first elaborate research on motion pictures and their effect on children. It is in fact a combination of twelve different studies such as *Motion Pictures and the Social Attitudes of Children* (Peterson & Thurstone, 1933), *The Emotional Responses of Children to the Motion Picture Situation* (Dysinger et al., 1933), *Motion Pictures and Standards of Morality* (Peters, 1933), *Children’s Attendance at Motion Pictures* (Dale et al., 1933) and *Motion Pictures and Youth, a summary* (Charters, 1933). *The Payne Fund Studies’* objective was to seek data that could help constructing a national policy vis-à-vis the motion pictures (Charters, 1933, p. 1). What is the effect of the motion picture on the child, on youth,

adults and communities? How well is the movie industry organized to take its social responsibility? What may be accomplished through governmental agencies to control the effects of this medium? And finally, how can a campaign be launched to produce socially desirable results? Such questions resulted in studies in which children that attended movies quite frequently (“movie-children”) were compared to children that attended the movies only sporadically (“non-movie-children”) (Charters, 1933, p. 12-13).

In an empirical way these two groups were compared to find out whether there was a link between frequent movie attendance and delinquency. The conclusion was that there was indeed a significant link, but not a cause and effect relationship (Charters, 1933, p. 13). What is more, the influence of film on the individual is often described in *The Payne Studies* as intangible; the influence is most certainly there, but the same film influences every child in a different way (Charters, 1933, p. 16). Empirically, the authors argue, the least that can be said is that every single film has an effect upon the child, that the influence is cumulative - the influence of films increases as more films are being watched - and those effects are permanent in nature (Charters, 1933, p. 24). To show hard facts behind these assumptions, some of the Payne studies used laboratory techniques to measure the emotions of children. A pneumo-cardiograph could establish changes in the circulatory system of a person as the apparatus “records very fine reactions when the subject is sitting quietly - looking like a well-mannered, quiet, and well-controlled boy or girl” (Charters, 1933, p. 25-26). Internal excitement, the authors continue, which at first sight cannot be measured, is registered by the machine. For example, a film depicting erotic scenes, the result showed, had no influence on boys and girls aged 6 to 12, whereas between the ages of 13 and 15 some important reactions were registered, and between ages 16 and 18 “none is free from the influence of love scenes” (Charters, 1933, p. 28).

Apart from the empirical research, the Payne Studies also gathered information from intensive interviews and by means of asking subjects to write freely to open questions concerning their personal motion picture experiences (Blumer, 1933, p. 4-8). An entire chapter is devoted to the effect of motion pictures on childhood play. A very important amount of childhood play, the research shows, comprises the impersonation of a movie character or the enactment of movie themes like *Cowboy and Indians*. Child behavior that results from motion picture experiences “becomes impulsive and unreflective and on occasion distinctly harmful” (Blumer, 1933, p. 26). Impersonation, on the other hand, the report continues, can easily be cast off as well, “it seems to be worn lightly, like a cloak” (Blumer, 1933, p. 27). A chapter on imitation by adolescents, however, seems to indicate that in this age group, the impact of motion pictures is much more significant. “Our materials seem to show, however, that among older individuals there is a wide imitation of motion picture patterns which are seriously incorporated into conduct and so pass out of the realm of mere make-believe” (Blumer, 1933, p. 30). Then follows a discussion of how girls change the way they look based on female movie stars, and a depiction of the imitation of mannerisms as many kinds of pictures, particularly those dealing with society drama, “provide

models of conduct for individuals who aspire to such a life” (Blumer, 1933, p.31, p. 33). It concerns “imitation of a look, an attitude, a way of making a good appearance” and so on (Blumer, 1933, p. 34). Quotes are given at length, in which it is clear that many adolescents spend hours before a mirror, trying to imitate that particular way of behaving of a famous actor (Blumer, 1933, p. 35).

It’s worthwhile to quote at length how the scientists of the Payne Studies, although the nature of cinema is intangible according to them, describe in general terms what the effect is on children:

Foremost among the contributions of these reports is the elaboration of the phenomenon of ‘emotional possession’ which is characteristic of the experience of children before the motion-picture screen. Watching in the dark of the theater, the young child sits in the presence of reality when he observes the actors perform and the plot of the drama unfold. He sees the actions of people living in a real world - not of actors playing a make-believe role. His emotions are aroused in ways that have been described. He forgets his surroundings. He loses ordinary control of his feelings, his actions, and his thoughts. He identifies himself with the plot and loses himself in the picture. His ‘emotional condition may get such a strong grip on him that even his efforts to rid himself of it by reasoning with himself may prove of little avail’. He is possessed by the drama.

(Charters, 1933, p. 38-39)

In line with this description of what they understand as emotional possession, these scientists actually provide us with the argument that cinema is an automaton. They do not say this literally, but they describe the cinema experience of children nevertheless as automatic. In terms of attention, they clearly acknowledge what Münsterberg conceives as involuntary attention. What is more, cinema is conceived as “an extremely powerful medium of education” (Charters, 1933, p. 40). It teaches *automatically*, for the good and the bad:

Children accept as true, correct, proper, right what they see on the screen. They have little knowledge. The people on the screen are confidence-producing. Everything works to build up a magnificent and impressive world. [...] Children are born into a world of which they know nothing. They are little individualists who have laboriously to learn how to fit into social groups. They possess impulses, instincts, wishes, desires, which drive them on to seek experience, adventure, and satisfaction. They are avidly interested in everything that seems to them to be able to provide what they want. Yet they know so little and are so anxious to learn. They seek information, stimulation and guidance in every direction. They are often confused, frequently maladjusted, and sometimes without confidence. In this situation the motion picture seems to be a godsend to them. While they are being entertained they are being shown in an attractive and authoritative fashion what to do. They are guided in one direction or another as they absorb rightly or wrongly this idea or that one. Sometimes the guidance is good, at other times it is bad. Sometimes it lies in direction opposed to the

teachings of the home or the school; at other times it reinforces them. But always the motion picture is potentially a powerfully influential director.

(Charters, 1933, p. 40-41)

In line with this analysis, a suggestion is made to teach children emotional detachment from the film. Cinema education, according to this research, is about “learning how pictures are made, how effects are secured, what to look for in pictures, what makes pictures artistically good or bad” (Charters, 1933, p. 43). Here we can thus see a movement in education to educate children so that they can take care of the effect this medium produces.

Assigning cinema its place in education

If we study *The Educational Screen*, we can see that already from the outset, the cinema has to be kept under control, as it is feared that cinema, not the teacher, is the master of the situation (Weber, 1922, p. 16). Repeatedly it is stressed that the teacher is very important, it is he or she that in relation to the screen points out what is important to know. From the very beginning, articles in *The Educational Screen* repeatedly stress that the teacher is central to guide the process (Shepherd, 1922, p. 180). Not only the vicariousness of cinema is recognized, also Münsterberg’s oscillation between mind and image, which brings about individuality in the form of contemplation:

The only picture that can be considered as a mental product is the one that is built up in the mind of the individual through those processes that we have now come so well to understand. Not two persons get the same mental image from an examination of a given picture. Everything depends upon what the individual brings to the thing that is presented for observation and upon the character and amount of his reaction, or in other words, upon his ability to interpret the picture as well as its particular interest for him at the time of observation.

(Abrams, 1924, p. 258)

To respond to this “individuality” produced by the cinema screen, which we could relate to Münsterberg’s opinion that cinema “yields to our subjective attention” (see page 48), education has to respond in a particular way. To control all these individual points of view, the teacher should be the central human guardian who gives the moving pictures a lasting impression. “[T]he only justification for the existence of machinery and organization outside of the classroom is to make the teacher’s work more efficient” (Balcom, 1924, p. 261). In short, the teacher should serve as a moral compass to guide the children into giving sense to moving images. This shows that unlike in the case-study on Lancaster, the teacher plays a pivotal role and he or she is anything but a neutral agent.

To begin with, year after year *The Educational Screen* published reviews of films that appeared in the picture palaces. For every age they argued why teachers and parents should or should not select

a film for viewing. For example, this or that film “will need to be pasteurized if used as a family film” (Merriam, 1924, p. 329). The film *The Ladybird*, for example, starring Betty Compson, is described as “Crook melodrama. Among other thrills, heroine conquers villain by jiu-jitsu!!!” (National Committee on Theatrical Films, 1927, p. 229). This film was labelled “stupid” for “Intelligent Adults”, “doubtful” for “youth (15 to 20 yrs.)” and simply “No” for “Children (under 15 yrs.)” (National Committee on Theatrical Films, 1927, p. 229). As we can see below, popular films are clearly given a label meant to help adults and teachers censor the cinema screen.

FILM ESTIMATES				231
Film Estimates — Continued				
Titles of Films (Actors) (Producers and Distributors)	For Intelligent Adults	For Youth (15 to 20 yrs.)	For Children (under 15 yrs.)	
WHITE FLANNELS (Louise Dresser) Warner Grim little story of mining-town life. Honest attempt at realism, fine work by Louise Dresser, marred only by some crudity and improbability and the usual absurd “college boys.” A creditable try.	Above average	Good	Beyond them	
WHITE GOLD (Jetta Goudal) P. D. C. Dust, heat, drought in the sheep-country. Notable realism consistent to the end. A picture for the minority.	Notable	Passable	Beyond them	
WINNERS OF THE WILDERNESS (Tim McCoy) Metro Violent, military romance of frontier days at Pittsburgh. Historical costumes and sets quite well done.	Love melo-drama	Doubtful	No	
WOMEN LOVE DIAMONDS (Pauline Stark) Metro Good cast wasted on unwholesome material.	Mediocre	Bad	No	
WRECK, THE (Shirley Mason) Columbia Negligible story solved by train wreck.	No	Passable	Doubtful	
WRONG MR. WRIGHT, THE (Jean Hersholt) Univ. Farce, with fair idea spoiled by slapstick.	Mediocre	Hardly	No	
YANKEE CLIPPER (William Boyd) P. D. C. Effective story of British and American rivalry for Chinese tea trade. (See Review No. 108)	Worth-while	Good	Good, unless too exciting	

National Committee on Theatrical Films, 1927, p. 231

The involuntary attention the automaton can produce, is thus perceived as something that must be kept under control. As the motion picture results in an experience in which “truth and error, good and bad are stored away with equal tenacity” it is important that “only pure metal is poured into the mould”, or to put it differently, the raw material should provide what the teacher wants the pupils to see (Mcateer, 1927, p. 410). Apart from making the right selection, the adult/teacher should be the guide that gives the vicarious experience a lasting expression. A lesson, it is argued, must create a definite mental set in the child, must orient his mind steadily in a specific direction and must carry it along towards the goal in this direction” (Horn, 1927, p. 411). The teacher is suggested to ask, just before switching off the lights that disrupt the direct relationship between

teacher and students, those questions the moving pictures will answer. On the whole, it can thus be argued that the involuntary attention cinema can produce is recognized, and that by means of censorship and the strict guidance of a parent or teacher, cinema clearly was assigned its place, so as to avoid unwanted experiences. Accordingly, the adult supervisor looks at the cinema screen with voluntary attention, to ascertain the moral standards and representations of the world that one wants to see. The screen's potential to produce involuntary attention can then be instrumentalized to mold a lasting impression of an image of the world that has been approved beforehand.

“I can no longer think. The thoughts in my head have been removed by moving images”

The fact that the mind can involuntarily be influenced by the cinema experience is also formulated by the French cultural critic Georges Duhamel, who loathed cinema and attacked it in the 1930s, in *Scènes de la vie future* (1930) and *L'humaniste et l'automate* (1933). Like many educators, politicians and scientists of his time, he criticized and problematized cinema. Reflecting about his experiences in the cinema auditorium, Duhamel realizes that he cannot think what he wants to think:

Je ne peux déjà plus penser ce que je veux. Les images mouvantes se substituent à mes propres pensées.

(Duhamel, 1930, p. 52)

I can no longer think what I want to think. My thoughts have been replaced by moving images.

(Duhamel, in Benjamin, 1999[1936], p. 238)

With the phrase “my thoughts have been replaced by moving images”, Duhamel thus also recognizes the automaton effect of cinema. In fact, with this quote he gives a beautiful description of how involuntary attention the way Münsterberg conceives it penetrates his thoughts and disturbs voluntary attention. His conclusion, when discussing cinema in relation to education is that the two can never meet (Duhamel, 1933 p. 188). The cinema can give us distraction or a break, but produces no intelligence, no discussion, no reaction, no participation on the part of humanity. This because education is the unspeakable presence of two souls, of two beings: “*L'enseignement est le présent ineffable de l'âme à l'âme, de l'être à l'être*” (Duhamel, 1933, p. 188). Only humans can teach humans, only a person can give a child a taste of life and the recipe (Duhamel, 1933, p. 189). In short, education cannot be created through the automaton experience.

Humanity, in Duhamel's writings, comes *before* technology, it is always an intellectual, conscious thought that is being passed on from one soul to another and technology is an instrument that can help achieving this. It can be argued that Duhamel's quote is metonymic for the way educators responded to cinema and tried to give it a place in the American context. It embodies the particular kind of resistance I have tried to describe so far in this chapter on cinema education. Educators

thought that without any doubt this medium educates, for the good and the bad. In fact, it teaches automatically. If, in the words of Duhamel, moving images replace the thoughts in our heads, they might lead to all sorts of indecent behavior, ranging from delinquency to sexually related misconduct. It seems that in the educational field resistance translated itself into allowing the vicariousness of cinema in so far as the automaton was kept at bay, or at least judged and censored by the adult before the moving images were unleashed upon the eyes of children. The teacher was the pivotal figure to temper, censor and give the automaton the place it should have.

An example of such an education is Edgar Dale's *How to appreciate Motion Pictures* (1933), which is a manual addressed to high-school students to learn how to critically analyze the experience in the cinema auditorium. The book tries to develop standards as a starting point from which each individual should develop his or her own way of looking at cinema. At first sight, Dale seems to take a student-centered position:

Sometimes an overanxious teacher wants her pupils to have what she thinks are the right tastes; she decides that the best way to reach this happy condition is to tell students what they ought to like and what they ought not like. The students, either because they do not know any better or because they want to please their teacher, pretend that they have the same standards. [...] Do not be a 'yes man' in matters of taste in literature, in motion pictures, in poetry. Be yourself. You must express your own judgments about motion pictures.

(Dale, 1933, p. 7-8)

Regarding Duhamel's reaction against cinema, it could be argued that Dale seems to be provoking a different, positive response, making a plea for an independent, critical and free-thinking spectator. Nevertheless, as a writer addressing youngsters, Dale clearly positions himself as the teacher who, in Duhamel's words, thinks what he wants to think about cinema, and who translates this in standardizing the cinema experience for his readers. Basically, the book is about not just enjoying movies, but about learning why you enjoy movies, so as to increase enjoyment (Dale, 1933, p. 14). A critical analysis of film should lead to the habit of being more selective in what films you attend, and about learning "to see and hear things at the photoplay which you never saw or heard before" (Dale, 1933, p. 14). One chapter is devoted to becoming a critical consumer, finding the right sources - reviews for example - that inform you which films are worthwhile spending your money.

Two chapters give the reader a short history of cinema and insight into how a film studio works. Another chapter deals with how a person critically analyses a film. The author of the book suggests to view a film twice, as the first time the spectator will get acquainted with the main details, whereas the second time, one will be able "to watch carefully for skill in direction, acting, and so on" (Dale, 1933, p. 59). What follows are chapters that study the standards for good acting, direction, photography, lighting ... The reader is invited to change these standards, if he or she

believes this is necessary. The combination of all kinds of standards, according to the writer, make a motion picture good (Dale, 1933, p. 205). Although it is an art for the masses, the author believes that cinema can nevertheless serve as a moral compass:

Through the motion picture we can have displayed for us the finest responses that our finest individuals have been able to make in certain important decisions of life. In other words, it can provide patterns for the highest and most intelligent conduct of which man is capable. It can show us characters trying to discover what is most valuable in life and the methods which they use to achieve their goals. Of course, different characters will have different ideas about what is valuable, but the spectator will be able to view these different types of conduct and see which one fits in best with the kind of life which he wants to live.

(Dale, 1933, 206-207)

Here once more we find that a spectator of cinema who has a critical attitude is somehow in complete control of his or her own life and how the film should fit into that life. Dale's critical spectator has voluntary attention as in the film he or she selects what he or she wants to see. So although cinema, in Duhamel's words, seems to provoke that one cannot think what one wants to think, Dale's pedagogy seems to imply that a spectator can nevertheless train him or herself in seeing what one wants to see. Yet, the author remarks, this also implies a danger, as many films according to his point of view show human conduct vis-à-vis life problems that is unsatisfactory. It could be argued that here, Dale sees things he doesn't want to see, incorrect or unwholesome representations of human actions in the world. And, Dale also believes cinema to be an automaton: even though many people go to the movie theatre only to be entertained, nevertheless, the spectator's "information, attitudes and conduct were changed by that experience" (Dale, 1933, p. 212). The cinema can change your perceptions on life behind your back, without you knowing it.

The author continues that in movies there is too much emphasis on sex and crime and luxury, too much heroic depiction of bad characters (Dale, 1933, p. 212-219). The author concludes with addressing the individual reader, asking him or her to no longer be satisfied with mediocre films, to become a critical intelligent movie-goer "trained in the appreciation of pictures" (Dale, 1933, p. 231). Dale's book is what I would like to call an active response to Duhamel's quote because the spectator of cinema should examine, according to standards, what it is he or she sees and whether the cinema experience allows the spectator to think what he or she wants to think. What is more, Dale interprets attention of the masses vis-à-vis cinema as either passive and distracted - thus the way Sully conceives "inattention" - and this is problematic, or as critical and active, voluntary in nature, in line with Sully's concept of attention, which on the contrary seems to be wholesome. Because only then is the spectator in full control of judging the automaton. Accordingly, Dale and Duhamel both affirm the duality in the Apple commercial (page 11), that is, between the uncritical masses and the critical thinking individual in control of technology.

3. Giroux's active response to cinema¹⁴

Film pedagogy

Dale's response to what Duhamel believes to be problematic about cinema can further be illustrated by looking at how a specific tradition of cultural studies looks at film. According to this particular view, film is one of the most important distributors of a collective consciousness. Hollywood films, for example, can easily be connected to the political and sociological entity of the United States, or more broadly to ethics and values of a democratic discourse. Nowadays educators speak in terms of the potential of cinema for emancipation and among them is Henry Giroux, who started researching the intersection of film and pedagogy in the 1970s. Giroux, an important representative of the American school of critical pedagogy, believes that the combination of what film represents and pedagogical practice together can construct an emancipatory discourse. Film nowadays can be used "as a site of critique, understanding, and struggle" (Giroux, 2004, p. 126). Giroux, like Dale, believes a critical response to films is necessary as he argues not to leave the influence of film (for the good or the bad) to coincidence or to the economical laws of Hollywood which dominate the film industry. Giroux's entire oeuvre so far is about subjectivity, power and pedagogy. Pedagogy for Giroux must help us to understand how films are part of a complex and often contradictory set of ideological and material processes through which the transformation of knowledge, identities and values takes place (Giroux, 2002, p. 78). In his film pedagogy the subjectivities of the students encounter the subjectivities inside the film they have seen. This means there is an encounter between the opinions of the person watching the film, and the opinions, images of thought, suggestions and views on the world inside the film. The teacher, according to Giroux, becomes a cultural worker who can possibly create a space and time for democracy, emancipation and the individual. This can be achieved by bringing films into the classroom.

Breaking into the film *Dead Poets Society*

To give an example we can see how Giroux taught teachers in training on curriculum and secondary education using the film *Dead Poets Society* (Weir, us, 1989). He describes his students as "mostly white, middle- and upper-middle-class" (Giroux, 2002, p. 80). As the subject of the film explicitly deals with school and how teachers and students relate with each other, Giroux let students analyse the relationship between their own experiences in schools and those portrayed in the film. Giroux saw the film as a model of liberal pedagogy which he finds problematic because "even though the film takes as its central narrative the issue of resistance, its structure undermined a critical reading of its own codes by establishing a strong emotional affinity between the viewers and the progressive teacher portrayed in this film" (Giroux, 2002, p. 81). Giroux uses *Dead Poets Society*

¹⁴ This third part of the second chapter is based on the article *Cinema education as an exercise in 'thinking through not-thinking'* by Decoster & Vansieleghem (2014).

as a cultural form which produced knowledge in the service of particular forms of authority, proffered conditions for agency which privileged some groups over others, and revealed contradictory and partial insights regarding how oppression works through various aspects of schooling.

(Giroux, 2002, p. 81)

Giroux further discusses how discourses of power are constructed in the film. He studies how *whiteness* appears as a dominant racial category and how it is “a historically accurate representation [...] within a reactionary nostalgia” (Giroux, 2002, p. 82). Giroux states the resistance of the teacher in the film against centres of power that represent whiteness, heterosexuality and patriarchy “serves to depoliticize and decontextualize, since it is only developed within a romanticized aesthetic” (Giroux, 2002, p. 85). He further concludes that the film

does more than ignore structured inequalities in the wider society, depoliticize resistance, and naturalize how the canon is used to produce racist and class-specific practices. It also legitimates gendered social practices through various images and representations in which sexual identity is inscribed in various forms of sexist domination.

(Giroux, 2002, p. 88)

Giroux’s aim is to let students understand “how their own subject positions are partly constructed within a dominant Eurocentric assemblage of liberal humanism mobilized within configurations of meaning and desire” (Giroux, 2002, p. 89). He introduced to the students reviews of the film and his own written commentary, criticising certain representations of democratic ideals in the film and criticising the representation of the teacher. Giroux also provided pedagogical conditions so that his voice as a teacher also could be engaged and challenged by the students (Giroux, 2002, p. 89). To prevent, in Dale’s words, that the student is merely a “Yes-man”.

Cinema as the moving mirror of virtues and vices

Watching and discussing films in the classroom the way Giroux’s film pedagogy suggests, involves activating critical judgement and the personal voice of the subject. Giroux wants students to become democratic, political and self-critical, reading films and treating them like cultural texts with (political) representations of for example racism, gender or education. Film pedagogy is thus a confrontation of the personal beliefs inside the student, with what is represented on the screen. Film pedagogy for Giroux seems to consist of the encounter with a complex and coded subjectivity produced by cinema, to create a moment in which the subjectivity of a person transforms within discourses of democracy. Students are asked to recognize the complexity of their subjectivity which is coloured for example, by a masculine, white middle class voice. The specificity of the individual voice thus consists of units like *whiteness*, which (un-)consciously constitute who we are. Becoming aware of these units simultaneously implies an active judgement on the images and the

personal opinions. The student repositions herself by examining the different units of subjectivity and their interactions with political, social, economic, religious, educational ... spheres which the student encounters both in real life and through moving images.

Film, for Giroux, seems to be a *moving mirror* which students should actively look into. By looking into this mirror a particular pedagogy is installed in relation to the coded world film represents and the spaces that are inhabited. To learn is to safeguard whiteness from being racist, to safeguard masculinity from being sexist, to safeguard a middle class position from prejudice against a higher or lower class and so forth. We find a similar description of the purpose of art in general for education in a text of Giroux's inspirator Paulo Freire. In Lewis' critical reading (2011) of Freire's text *Education for Critical Consciousness* (1973) we read that the image comes to the fore in Freire's text as part of a "correspondence theory between intention, codification, decodification, and action" (Lewis, 2011, p. 39). This way in Freire's education

codified images are projected along with a corresponding generative word 'which graphically represents the oral expression of the object perceived'. Dialogue then continues until the decoding is 'exhausted'¹⁵.

(Lewis, 2011, p. 52)

In this way, Lewis continues, Freire's text constructs a particular kind of belief of how art can educate us and we recognize this belief in Giroux's film pedagogy as well:

Show images of people actively creating the world and the audience will identify with this subject position and consequently take action [...]. The same acts in reverse: show images of atrocities and students will become outraged followed quickly by revolution.

(Lewis, 2011, p. 41)

In *The Emancipated Spectator* (2011), Jacques Rancière describes in a similar way how art nowadays turns into politics through a model that educates the viewer in a specific way. This model, Rancière argues, is very old, maybe as old as theatre.

The stage was thought of as a magnifying mirror where spectators could see the virtues and vices of their fellow human beings in fictional form. And that vision in turn was supposed to prompt specific changes in their minds: Molière's *Tartuffe* supposedly taught spectators to recognize hypocrites; Voltaire's *Mahomet* to fight for tolerance against fanaticism, and so on. [...] Most of our ideas about the political efficacy of art still cling to that model. We may no longer believe that the exhibition of virtues and vices on the stage can correct human behaviour. But we are still prone to believe that the reproduction in resin of a commercial idol will make us resist the empire of the 'spectacle' or that the photography of some

¹⁵ Lewis quotes twice here from Freire's work *Education for Critical consciousness* (1973).

atrocities will mobilize us against injustice.

(Rancière, 2011, p. 60-61)

Giroux' film pedagogy is of course different from approaches from the 1920s and 1930s, of which Dale's handbook is an example. However, Giroux has in common with these educators the way these approaches answer Duhamel's reflections on cinema. Giroux does not hate cinema, in contrast, he proposes a film pedagogy that results in a critical reading of film. It is a translation of theories on critical pedagogy into social and emancipatory practices in the classroom. Empowerment becomes realized by *breaking into the movies*, as the title of his book suggests. I claim however that this translation, which seems very just and democratic, leaves aside a particular essence or potentiality of the cinematographic experience and ignores a fascination for the moving image, which Münsterberg's theory elaborated on. To think or to learn, via cinema education, somehow has to do with keeping this medium under control. I tried to argue in this chapter that, both in the pedagogy of Giroux and Dale, but also in the discourse of *The Visual Instruction Movement*, cinema education is a result of asking whether and/or validating that every image is a "just image". Accordingly, the automaton is conceived as a double-edged sword, but what is more, it is either kept at bay (because the automaton might influence the child in a negative way) or it is put to use for a predetermined goal which the education (exercise) wants to achieve.

Concluding thoughts

In search of a different cinematographic consciousness

In this part we studied how with cinema an automaton-experience can be produced that is different from the experience of technology in Lancaster's classroom. With Münsterberg we saw that moving images produce involuntary attention, this way forcing themselves in the mind of the viewer. However, the "non-thought" that cinema provokes, only goes halfway, producing an oscillation between passive reception of moving images and subjective, active self-awareness.

In the second chapter we studied how the cinema screen intersected with education in the American context. Within the scope of this study, it seems that cinema provoked a particular, straightforward cinema education. First, it can offer a vicarious experience, *bring the world into the classroom* and therefore closer to the child. This resulted in showing films in the classroom to differentiate between teacher centered, vocal, and linguistic presentations of knowledge on the one hand and student centered, sensory forms of vicarious learning on the other hand. Images pass through the eyes and sounds pass through the ears, this way bringing the student closer to life. Second, it can pass on certain values and knowledge into the minds of children, if the right choices are made, which resulted in a censorship pedagogy. This pedagogy is illustrated by magazines such as *The Educational Screen*, where representations of life as depicted in the picture palaces are judged according to morals of the family and society. Accordingly, the "automatic" effect of cinema on the spectator is recognized as a double-edged sword. For Duhamel, who conceived education as an interaction between two souls, cinema can never be educational. What is more, this medium does not allow to think what one wants to think, he argues, and therefore this medium is altogether problematic for him. For educators such as Dale and Giroux, who take a less radical position, the automatic effect of cinema should somehow be kept under control. To be clear, I did not want to problematize such pedagogies to the extent that they consist of invaluable ways of looking at the cinema screen or education. I think, however, that in the way they use the cinema screen, they nevertheless tame its *essence* rather than experiment with it, which is what Münsterberg's theory invites us to do.

In the fourth and final part of this PhD dissertation, I will further study the specific potential of cinema Münsterberg touched upon. I will study the cinema philosophy of Deleuze and Benjamin's essay *The Work of Art in the Age of Mechanical Reproduction* (1936). In line with the theory of Münsterberg, Benjamin and Deleuze both ask the question what it means to think through and as a consequence of photography and cinema. These authors have in common that they are interested in the art of photography and the spectator of cinema because of the involuntary attention being

produced. This defines the spectator as being in a state of a *distracted critic*, an oxymoron that juxtaposes the girl with the hammer and the uncritical masses as presented by the Apple commercial. With Benjamin a cinema spectator will come to the fore who, paradoxically, thinks through a non-thought. What interests me most in Benjamin's text is the qualitative nature he attributes to both technologies. Benjamin's text presents the awakening of an industrial consciousness, that is, the recognition of a particular human condition as a result of the presence of industrial arts such as photography and cinema. Their lenses mechanically capture everything that appears before them and their products - the photograph and the film - can endlessly be reproduced and distributed on a large scale.

It can be argued that Benjamin's text is an attempt to find a way to affirm the specificity of these arts which are designed for and brought to the masses. In the light of the intellectual positions of Duhamel, Giroux and Dale as described from page 63 onwards, Benjamin's essay is very important. Vis-à-vis the question what it means to think under the conditions of an industrialized society with technologies such as radio, cinema, television and the cultural products that they produce, Benjamin will offer an alternative view. Duhamel seems to ask rhetorically how it is possible for the subject to have a kind of critical distance in relation to cinema. For Benjamin and Deleuze, however, this is not a rhetorical question. Cinema requires a renunciation of the duality or bifurcation of active, critical thinking on the one hand, and passive, consumerist non-thought on the other hand.

Deleuze specifically conceptualizes cinema as an automaton. The task at hand is not to tame the automaton, but to render it into a spiritual one. Deleuze's cinema books, *The Movement-image* (1986) and *The Time-image* (1989), are about a particular cinematographic process of thinking as Deleuze asks the question what it means to think through and from within moving images. His study on cinema is a radical exercise to explore the implications of cinema for philosophy. Without ever installing a hierarchy, Deleuze describes scenes to demonstrate cinema's potential, which is a non-philosophy that can be used to do philosophy. Deleuze refers to it as an artistic medium that makes us feel, see and think differently than through ideas and poses that represent something, the way Giroux's film pedagogy uses this medium. For Deleuze, cinema cannot be defined or understood through linguistics or psychological models or theories, because then philosophy and science would build knowledge through concepts that determine what it is (Deleuze, 1995[1990]). The core of cinema is then an object, "film", that one should analyze with a method that allows verification, so that we can use it for a programme with pre-established goals and pre -and post-tests to measure its effects. In Münsterbergian terms, the attention in relation to cinema would be voluntary, seeking what one wants to find.

Cinema for Deleuze always shows us the world, and here lies my interest in his study; watching cinema is a way of being connected to the world. It shows aspects of the world "in the process of being formed or dissolving through the movement of lines and points taken at any-distant-whatevers

of their course” (Deleuze, 1986, p. 6). “Cinema” comes from the Greek word “kinetic”, meaning “a motion”. Cinema is a practice of images and signs, created by great directors who think through moving images and create compositions of “images and of signs, that is, a pre-verbal intelligible content” (Deleuze, 1986, p. ix). As an art form it has the potential to offer an experience of the world in which thinking does not think any more through a given method or a “presupposed image of thought which determines our goals and our methods when we try to think” (Deleuze, 2004[1968], p. xv).

Part 3

Standing in the light of the digital screen



A study on digital screen culture and an analysis of the twenty-first century response of educational innovators¹⁶

In this third part I will analyse how educators perceive the meaning of learning and education in relation to the technological objects that can be identified as digital screens. Typical examples are the screens of laptops, personal computers, smartphones and tablets, by means of which one can e.g. connect to Internet and social media (Pisters, 2012, p. 218). Accordingly our society consists of *screenagers*, i.e. people giving meaning to the world in relation to screens, integrating them in daily life, up- and downloading different representations of reality by means of these objects. As already mentioned in the introduction to this study, when I use *screenager* in this text I'm not only referring to the teenager surrounded by and interacting with screens, but to *all of us*, to the generations that nowadays are living in an *age of screens*.

When the screen is not only interpreted as a computer display, television or other device, but also as a surface onto which photographic or moving images are projected, then it can be argued that it was the medium of cinema which introduced this technology in society from the end of the nineteenth century onwards. In the cinema auditorium or *picture palace* the darkness creates a more or less straightforward experience; the audience looks at the big, singular canvas in the front. They see moving images created by film directors belonging to a specific cinema school, for example the American school of Hollywood or the German school of Expressionism. Nowadays however, the screen is experienced in a much more complex way. It comes in different shapes and sizes and it is accompanied by different technologies. Also, the *screenager* relates to it not only in a cinema auditorium, but in broad daylight and in everyday spaces as well, both public and private.

As Deleuzian media theorist Patricia Pisters argues in her book *The Neuro-Image* (2012), we belong to a *digital screen culture* in which a multiplicity of screens surround us and offer us new modes of interacting in and with the world. This part studies what kind of experiences are taking place because of this development and what kind of learning and education it generates. Pisters argues that maybe cinema *gave the world its screen* (Pisters, 2012, p. 69). This means that the screen is no longer only part of cinema, where one more or less consciously goes to, to buy a ticket and experience moving pictures. Gradually, screen technology seems to have reversed this movement of going into a specific designated public space to experience a screen. It is not that the *screenager* doesn't visit the cinema screen anymore, rather, technology also brought the screen to him or her. The television screen, for example, entered living rooms, hotel rooms, cafés and other spaces. Electronic billboards inhabited streets and nowadays compete with (touch-)screens which are present in railway stations, airports and shopping malls. Also, from the 1980s onwards, computer

¹⁶ Image on the previous page retrieved online from http://www.martapopivoda.info/wp-content/uploads/2011/10/display11_web.jpg on 28/09/2015.

monitors started dominating desks at work, at home, and in schools. What is more, today laptops and tablet-PCs pop up naturally from backpacks when a university lecture is about to begin. And the latest developments allow watches and glasses to become screens or that screens inhabit pockets. This shows that this technological object has not only reached the living environment and many public spaces, but also the very physical position of the individual. With the smartphone, the screen is literally at the fingertips, with the smartwatch the screen is around the wrist and in the case of Google Glasses, even part of the daily point of view¹⁷.

What I want to emphasize with this introduction is a general shift in the experience of screens, namely:

the shift from considering the spectator in front of a spectacle (screen) to a spectator embedded or immersed in an audiovisual environment in which filmmaker and camera, characters and spectators, world and screens are all circling and questioning each other and in which we have to ask ourselves constantly: Where is the screen? How do I relate to it? What does it make me see, feel, grasp, do?

(Pisters, 2012, p. 71-72)

More and more the screen is an object through which the screenager experiences self and world, and the self in the world. Thus, Masschelein argues, maybe we have never been so attached to an object as today vis-à-vis the digital screen (Masschelein, 2015). As already mentioned, in the light of a collective and intense relating of our society to multiple screens, this study will explore the meaning of learning and education. What are the implications of the human condition digital screens produce for how learning and education is conceived of and put into practice?

Educational innovation in relation to the screenager

Educators nowadays explicitly deal with the individual growing up within a reality immersed with screens, technology, online social networks, sound and (moving) images. The screenager, it is argued, has a certain knowledge not necessarily acquired in school, but related to television, computers, laptops, smartphones, tablets and the experiences through these devices. Don Tapscott for example, affirms the human condition as a consequence of the digital screen by interpreting contemporary teens as digital natives “bathed in bits” for whom “using the new technology is as natural as breathing” (Tapscott, 2009, p. 7, p. 18). Many educators therefore explore both theoretically and in concrete educational practices the potential of screens for learning and education. The use of screen technology and the (social) praxis that follows from it, which in daily life and outside the school environment has become a given should somehow become incorporated in the classroom, and more broadly, in the curriculum.

¹⁷ To watch this YouTube video (“Google Glasses Project”): <http://www.youtube.com/watch?v=JSnB06um5r4>, 2’30”, retrieved on 10/07/2015.

Enthusiasts have the optimistic opinion that digital technology will improve twenty-first century classroom learning. Different experiments arise everywhere in which digital technology is an essential part of the learning process. *Massive Open Online Courses, Computer Based Learning Environments, Mobile Learning, Bring Your Own Device, Blended learning*, the educational potential of video games, the use of mobile devices in the classroom, mobile social video application, the effects of video streaming on educational achievement, digital filmmaking in the classroom ... There are many examples of educators trying to integrate digital technology into the curriculum, and this with far reaching consequences. The innovation vis-à-vis digital technology, so it seems, is not about a separate ICT-course anymore, but about transforming the educational landscape. Tondeur et al., for example, argue that teacher education institutions are already in transition vis-à-vis this educational innovation. This is because more and more, as their research shows, these institutions are preparing pre-service teachers to embed ICT across different courses (Tondeur et al., 2013, p. 240). The concrete experience of learning in schools, the pedagogical relationship between teacher and pupils, the function of the teacher and the general perception what learning is or should be about, all these aspects of education are potentially open for change.

Radical advocates speak only in terms of performativity. Learning and education will benefit from the integration of digital technology and in terms of effectivity and efficiency, performances of students will improve significantly. Also, learning will be more natural, fun and better adapted to the individual needs of each learner. It is argued that home access to PCs and the Internet is an opportunity for learning; it realizes independent, personalized learning, it increases motivation and the individual acquires information and communication skills automatically. "These enthusiasts posit that teachers do not have to teach any new technology related skills for these learners, but merely integrate their existing knowledge and skills that they have developed through the personal use and experience of technology" (Gurung & Rutledge, 2014, p. 91). Tapscott's view of the computer is that because of it, school will finally be a place where students learn, not an institution where teachers teach (In: Stoll, 1999, p. 19). Studying the history of education, we can read that tools like the blackboard, the book, the cinema screen, radio and television have been discussed, tested and re-evaluated vis-à-vis their educational potential (Saettler, 2004, Cuban, 1986). Nowadays technology related to the digital screen should be explored to rethink educational practices. Implementing the digital screen and digital technology into the curriculum of formal education is interpreted as a necessary means to improve learning in the twenty-first century. Allowing students to use digital technology in the classroom, advocates argue, can only be a positive strategy to increase the performativity of education (Gurung & Rutledge, 2014, p. 91-92).

This technological and biological determinism - youngsters automatically acquire skills related to digital technology that have a positive impact on their learning capacities - is radically opposed by more sceptic points of view. According to one such standpoint the skills of digital natives are limited to "game playing, social networking, texting, and surfing information on the Web" (Gurung & Rutledge, 2014, p. 92). It is argued that these skills are not automatically transferred to academic

domains or professional contexts. Accordingly, sceptics are reluctant to allow the digital screen to enter the classroom. In the educational field of the United States, schools started buying microcomputers from the 1980s onwards (Saettler, 2004, p. 457). In *Teachers and Machines*, Cuban shows that the computer screen never got successfully integrated into the classroom context, and this mainly because a teacher-centered culture resisted a computer-centered policy that recommended to put money into classroom computers without really having thought about the concrete implications (Cuban, 1986, p. 101). For Clifford Stoll, a computer programmer, astronomer and teacher, computers should not be part of the classroom context at all. Scholarship, he argues in *High-Tech Heretic*, “is about understanding events, appreciating history, and interpreting our world”, it is “about developing human capacity”, something for which a real teacher is needed (Stoll, 1999, p. 18, p. 22). Implementing digital education in the classroom because it is simple, easy and fun would be devastating and result in the teacher being replaced by the computer screen. A decade and a half into the twenty-first century, it can be argued that both digital technology and student-centered learning are being affirmed in academic research as well as in educational practices. And this in spite of the sceptical, sometimes even cynical protests from teacher-centered perspectives of which Stoll’s argument is an example. A multiplicity of concrete screen initiatives are being set up and curriculum innovation in favour of digital education is being pushed onto the agenda. In various ways the screen appears both in theory and practice as a didactical tool that requires some experimentation to find new ways to teach and learn. For example, the tablet-PC is being described as a tool equipped with cameras, microphones, eBooks, digital text-books and interactive learning networks (Ifenthaler & Schweinbenz, 2013, p. 525). The educational potential of such a tablet-PC, in general terms, is that it allows students “to gather and use information in order to construct and manipulate knowledge” (Ifenthaler & Scheinbenz, 2013, p. 525). It is described as a multidimensional tool that allows the individual to relate to knowledge and to communicate with others in different ways.

In a Flemish school in Blankenberge, students are already using tablet-PCs on a regular basis¹⁸. The arguments of the pupils and teachers of this school in favour of this tool are manifold. For example, during art lessons pupils can immediately download a picture of a painting from the web. Or, external sources are accessible at any time by means of the digital learning platform of the school. In mathematics, a digital pen is used to do exercises on the tablet, which makes doing math fun. The danger of distraction (tablets could e.g. give students the opportunity to check their Facebook accounts) is limited according to the school because with one push on a button a teacher can verify what applications pupils are using. The article mentions that parents have concerns about the price of these educational tools, and moreover, they are concerned about the impact on their children’s eyesight. The practical benefits, on the other hand, include less heavy backpacks and a reduction of paper that has to be printed, it can be read.

18 Article retrieved from http://www.standaard.be/cnt/dmf20120918_00301183, 10/07/2015. “Voor mij geen papier meer”, Tom Ysebaert, 19/09/2012.

To conclude, the most straightforward implication of the advent of digital screens in society is that they gradually enter today's classroom, where new ways of learning are being tried out and the use of screens is being discussed in terms of effectiveness and efficiency, advantages and disadvantages and how educators should cope with the challenges the digital screen imposes upon us. In the following chapters I will investigate in more detail the impact of a screen orientated society for learning and education. Therefore I will first of all (1) investigate what the screen makes the screenager do. I will zoom in on different specificities of the screen and how they have an impact on the level of the individual and the society. Or to put it differently, I will hold a specific characteristic of the digital screen into the light, so that we can see it. (2) Secondly, I will describe in relation to each specificity how educational innovation affirms the screen. I will describe how innovators embrace the particular characteristic of the screen as enlightening for the way we teach and learn. (3) Finally, I will discuss each time how this affirmation of a specific characteristic of the screen repositions the way our society thinks about and concretely organizes education. What are the consequences of the way education is pushed into the light of the screen? Asking students to look at and interact with screens, what kind of screenager does education possibly create?

I will develop this threefold movement three times, accordingly constructing three chapters. In the first chapter, (1) I will consider that screen technology helps legitimizing a shift towards what is generally acknowledged as a computerized knowledge society. (2) This transformation of society, in terms of innovation, leads into a different meaning of education, (3) which implies a fundamental repositioning of the figure of the student. In the second chapter (1) I will argue that the digital screen is "always on" and turns the screenager into an interactive multitasker. (2) In terms of innovation, this leads into blurring the line between the living environment or daily life on the one hand, and education on the other hand. (3) This implies a fundamental repositioning of the role of the classroom. In the third chapter, finally, (1) I will propose that the screen is a self-referential object. (2) In terms of innovation, this leads into self-regulated learning by means of the screen (3) which implies a fundamental repositioning of the figure of the teacher.

Accordingly this third part of the PhD dissertation will have studied the impact of the digital screen on how we perceive learning and education. And it does this by means of studying the reconfiguration of three figures or aspects that are fundamental to the debate of what education is or should be about. The figure of the student, the time and space of the classroom and the figure of the teacher, fundamentally reconfigured by an innovation that affirms the digital screen in education, show how our society conceives the importance of learning and education in the light of the fact that we are living in an age of digital screens.

Chapter One

Towards a computerized knowledge society

1. Screen technology legitimizes a shift towards a computerized knowledge society

I will start my research on the digital screen by emphasizing an important historical shift in the meaning of knowledge as we evolved from a *modern society* towards a *post-modern society* shortly after World War II. I will discuss this transformation in the meaning of knowledge by elaborating on *The Postmodern Condition* (1984) of the French philosopher Jean-François Lyotard. Holding this shift into the light, the screen in its digital form can be seen not only as a useful didactical tool for classroom practice, but also as part of a series of technological transformations that have changed the way learning and education is perceived and accordingly changed how learners constitute themselves. Revolutions within computer and information technology can be seen as the *catalysts* which set in motion a new way of relating to knowledge. Moreover, with this historical shift the industrial, modern society transformed itself into a computerized post-modern knowledge society in which the role of the contemporary digital screen is very important. However, the abovementioned shift in our society cannot be understood solely from a technological point of view. Based on Lyotard's study I will argue that the importance of digital technology goes hand in hand with a particular, one-sided economical interest in knowledge and a shift in the perception on knowledge within the sciences.

The legitimization of knowledge in a modern society (18th century - 1945)

"Modern", in Lyotard's study, is a concept that is always related to a particular kind of scientific discourse. In modern society, Lyotard argues, knowledge is legitimated in relation to a metanarrative produced by the Enlightenment project which manifests itself from the 18th century onwards: true knowledge produced by scientific research should be the catalyst of progress, rationalisation and emancipation, freedom and the realisation of ideas (Jehaes & Simons, 2005, p. 291). This metanarrative put into practice the development and steady evolution of different scientific fields which each focused on a particular aspect of society. For example, the school and the family as institutions became important projects of the nation or state and an object of study of science and philosophy. As a consequence, the modern scientist who studies a specific aspect of our society is interpreted as "the hero of knowledge [who] works toward a good ethico-political end - universal peace" (Lyotard, 1984, p. xxiv). Lyotard refers to Wilhelm von Humboldt's (1767-1835) nineteenth century project of *Bildung* (in Dutch "*vorming*", in English "edification"), which illustrates that education in the modern society is about the edification of the souls of students, a human project with political meaning, to shape not only rational individuals, but also a unified system:

Humboldt [...] invokes a Spirit (what Fichte calls Life), animated by three ambitions, or better, by a single, threefold aspiration: 'that of deriving everything from an original principle' (corresponding to scientific activity), 'that of relating everything to an ideal' (governing ethical and social practice), and 'that of unifying this principle and this ideal in a single Idea' (ensuring that the scientific search for true causes always coincides with the pursuit of just ends in moral and political life). This ultimate synthesis constitutes the legitimate subject.

(Lyotard, 1984, p. 33)

In a modern society, Lyotard argues, students not merely *learn* knowledge; education is no "disinterested pursuit of learning", but trains the person to become "a fully legitimated subject of knowledge and society" (Lyotard, 1984, p. 32, p. 33). In relation to Lancaster, it can therefore be argued that his teaching machine was inspired by the Enlightenment movement in the sense that the local tradition of the village schoolmaster was replaced by a systematic and rationalized approach. On the other hand, it should be noted that Lancaster was an exception in the sense that the pedagogical role of the teacher and monitors was not guided by a pursuit to put science in the service of an ideal. In that sense, as Mesquita argues (Mesquita, 2012, p. 675), it seems that Lancaster was much closer to a contemporary, postmodern vision on education (which I will discuss in the next section) than that it generated a modern education the way Lyotard describes it.

Modern principles about how a person should behave resulted in a general education which is beneficial for the individual and for the society as a whole (Jehaes & Simons, 2005, p. 291). This concretely resulted in the organization of formal education nation or state wide; in classrooms a group of students received their education by a teacher, who, as a representative of the adult world, was responsible for them and guided them into the different aspects of the world. Consider Thomas Popkewitz' analysis of how in the twentieth century social constructivist theories of Lev Vygotsky and John Dewey were used in a particular way:

The ideas of Vygotsky and Dewey were shaped and fashioned within a period of intense modernization that involved the industrialization, urbanization, and rationalization that we now associate with modernity and the modern Western welfare state [...]. The psychologies written embodied a particular doctrine of modernity which linked an Enlightenment belief in the potential for reason to produce social progress with a faith in the rationality of science. But these two scholars recognized that science involved more than changing physical conditions. It also was to produce a citizen who would act wisely and autonomously in the new political and social institutions of the times. The social sciences would not only provide a cognitive knowledge but also discipline the capabilities, values, dispositions, and sensitivities through which individuals problematized their participation in the world. This assumption was part of a larger, profound reshaping of social life in Europe and the U.S. during the early years of the 20th century.

A clear example of a modern pedagogy, which would fit into Lyotard's interpretation and which tries to educate a student as Popkewitz writes, to become "a citizen who would act wisely and autonomously in the new political and social institutions of the times", can be found in the work of the Dutch pedagogue Martinus Langeveld (1905-1989). His theory about education is that it is primarily an experience in which an adult helps a child towards adulthood, conceptualized in Dutch as "*zelfverantwoordelijke zelfbepaling*", for which there is no real alternative in the English language (a literal translation could be "selfresponsible self-determination"). This refers to the capability to be responsible for the personal actions and thoughts. The behavior of the educator is of such a nature that it helps the child in becoming mature or responsible for his or her own life (Langeveld, 1967, p.42). Hence edification in Langeveld's theories is *per definition* a moral education. During and because of education a child, who by nature cannot be held accountable for its own actions, gradually moves towards the phase in life understood as adulthood, which is characterized among other things by the capacity to edify the self ("*zelfvorming*", Langeveld, 1967, p. 82). Consequently education normally comes to an end at a certain point. The objective of education, in general terms, is to make itself unnecessary, because when adulthood is reached the individual has the general capacity to take care of herself.

The second case-study of this PhD dissertation is a good example of such an education. *The Visual Instruction Movement* strived to reform education by making it student-centered, in the sense that the verbal lecture of the teacher was complemented with moving images that vicariously brought the world into the classroom. However, as we saw, this idea on student-centered education was not a threat to the figure of the teacher, who selected what moving images the students would experience by means of censorship and whose role included to highlight the learnings by providing suggestions both prior to and after the moving images were shown. This reform movement accordingly did not want to put the modern conception of education upside down as it was clearly guided by the idea that an adult, representative of society would mold a desired way of looking at the world. This modern point of view on education, as we will see in the next section, no longer holds in current educational theories and practices. And this is because, in line with Lyotard's argument, a different, *post-modern* relationship with knowledge gradually appeared after the Second World War. I now repeat myself, but this transformation allows us to look at the implementation of screen technology in the classroom in a particular way.

The legitimization of knowledge in a postmodern society

"In contemporary society and culture - postindustrial society, postmodern culture -", Lyotard argues, "the question of the legitimation of knowledge is formulated in different terms" (Lyotard, 1984, p. 37). Whereas in modern society knowledge had a role of edifying the subject - as Langeveld's pedagogy and *The Visual Instruction Movement* illustrate - after the Second World War knowledge gradually started losing this significance. It became an object amongst other objects,

more and more disconnected from the edification of the subject and society (Jehaes & Simons, 2005, p. 293). The grand narratives as mentioned above - rationalisation and emancipation, freedom and the realisation of ideas - have lost their credibility. The reason for this is twofold, at least in the short term. First of all, “as an effect of the blossoming of techniques and technologies since the Second World War” (Lyotard, 1984, p. 38), or differently put, because of “the proliferation of information-processing machines”, that is, computer and communication technology (Lyotard, 1984, p. 4). And secondly, this technology worked hand in hand with an advanced liberal capitalism, which surfaced between 1930 and 1960, emphasizing “the individual enjoyment of goods and services” (Lyotard, 1984, p. 38). Capitalism and “the disorienting upsurge of technology”, according to Lyotard, had an impact on the status of knowledge: it became a commodity in computerized societies (Lyotard, 1984, p. 38): “Knowledge is and will be produced in order to be sold, it is and will be consumed in order to be valorized in a new production: in both cases, the goal is exchange” (Lyotard, 1984, p.4-5).

This combination of capitalism on the one hand and technology on the other hand - two forces which according to Lyotard worked together - is mentioned in the study *The Evolution of American Educational Technology* of the American historian of education Paul Saettler (2004). He discusses the invention of the computer, the digitalization of mass media and the increasing importance of telecommunications (Saettler, 2004, p. 396). The object we are studying in this part, the digital screen, is the result of these technological inventions and revolutions in relation to information and communication. According to Saettler they gave rise to the *information society*, which arose between 1950 and 1980 (Saettler, 2004, p. 394). The information society - or *knowledge society* as we refer to it nowadays - originated in the American context, in the late 1950s and it referred to “the production and distribution of knowledge”, a classification first mentioned by the economist Fritz Machlup (Saettler, 2004, p. 395). Knowledge fits into new channels: information-processing machines create both producers and users of knowledge in the form of data. Predecessors of the digital screen are thus the catalysts of a new and concrete sector within economy, a sector in which knowledge is literally a form of capital with production value in different fields. At that time, Machlup mapped the information society by naming thirty different industries all belonging to five categories: “education, research and development, communications media, information machines such as computers, and information services such as finance, insurance, and real estate” (Saettler, 2004, p. 395).

Today certain experiences in the daily life of the screenager illustrate how technology and liberal capitalism together turn knowledge into an economical resource. It can easily be argued that in western societies a particular kind of economical interest in the individual consumer has increased significantly. A very straightforward example is that when the individual is surfing on the website *Google* to look up information about a foreign country, he or she will receive commercials about cheap flights towards this destination when checking email via *Google’s* application. Or, looking for a book on the website *Amazon.com*, one will receive suggestions about other books one might be

interested in. Searching for a new wrist watch online will lead to the fact that when checking the *Facebook* account, other watches that look similar to the one clicked on earlier will appear. And so on. Today knowledge about a user's profile - even when that user is not consciously surfing on the web to purchase a particular object - has a straightforward economic value, as data about the individual Internet activities result in specific marketing strategies. The screenager, in that sense, can be viewed as a consumer whose Internet history is growing with every mouse click, this way leaving traces in the form of bits and bytes. This digitalized information is a form of capital for corporations like *Amazon*¹⁹.

In his book *Art as far as the eye can see*, Paul Virilio problematizes the twenty-first century experiences with screens and the power of mass media. In the chapter *An exorbitant art*, Virilio characterizes Western societies as preoccupied with excess, overabundance and acceleration without treating its “‘advances’ with any critical distance whatsoever” (Virilio, 2010[2005], p. 57). Capitalism, he argues, has not slowed down, but has accelerated into what he calls turbo-capitalism and mass-individualization (Virilio, 2010, p. 99, p. 110). Contemporary screen experiences, he argues, are a result of economic progress that encapsulates technology without reflection. Of course, this does not mean that *every* screen activity can be reduced to consumption. Or, that the consequences of the knowledge society limit themselves to marketing strategies based on the individuality of the screenager. In the following sections this will be discussed in more detail.

For Lyotard the seeds of the delegitimation of knowledge as conceived in a modern society cannot be reduced to a combination of capitalism focusing on the individual consumer on the one hand and the rise of communication and computer technologies on the other hand (Lyotard, 1984, p. 38). “Simplifying to the extreme, I define *postmodern* as incredulity towards metanarratives” (Lyotard, 1984, p. xxiv). What is more, central in Lyotard's book is that the postmodern condition is mainly the consequence of an internal crisis within the sciences, which Lyotard interprets as the main catalyst for a change in the perception of knowledge. So the third, long-term and overarching transformation in which we should situate the abovementioned combination, is that the grand narratives within the modern sciences have lost their credibility. The focus gradually changed: from a modern discourse on knowledge which arose as a consequence of the Enlightenment, towards the postmodern principle of *performativity* - an interest in knowledge in terms of effectiveness and efficiency²⁰ which already originated in the nineteenth century (Lyotard, 1984, p. 39). In that regard, Lancaster's Monitorial System can be conceived as being ahead of its time, as this teaching machine also seemed to run on this principle.

19 Nowadays conspiracy theories argue that data about the individual are gathered by intelligence agencies such as the CIA, thereby focusing critique on a Big Brother system “out there” that would be registering every digital move the individual makes. Rarely, however, do these theories relate data profiling to marketing strategies, which most probably have a much higher impact on the everyday life of the screenager.

20 Effectiveness or effectivity is *content related*, whereas efficiency, on the other hand, refers to *the organisation* of a system, program or pedagogy (Vriens & Levering, 2005, p.280). A method is effective to the extent that the predetermined goal is reached. It is efficient to the extent that it reaches the predetermined goals with a minimum of effort. Both terms refer to different qualities, yet work hand in hand.

The postmodern condition is that knowledge loses its intrinsic value and only means something when it contributes to the increase in performativity of (an aspect of) society. To give an example, Jahaes and Simons argue by means of Lyotard's concept of performativity that postmodern scientific research in relation to the institutions of education and family, appreciates knowledge in so far that it leads to an augmentation of their effectiveness and efficiency. For example, research in education can focus on the figure of the teacher and how his or her behavior has an impact on the performances of students. Consequently a control group is compared with an experimental group to look for correlation between student performance and particular behavior of teachers. This way researchers can deduce which teacher behavior has a positive impact on standardized tests students have to take (Jahaes & Simons, 2005, p. 287). Experimental research manipulates the educational reality to know in what way and to what extent a particular variable (teacher behavior or parent behavior, for example) produces a particular kind of effect (Jahaes & Simons, 2005, p. 289). For Lyotard, the different domains in a postmodern society (of which the family and classroom context are examples) are looked upon by scientists as functionally related systems, "and that which contributes to a rise in the performative practices is considered as valuable" (Jahaes and Simons, 2005, p. 292, free translation).

In postmodern society the dominance of this kind of research is well established in educational sciences and it is referred to as the *empirical-analytical paradigm*. This paradigm makes no distinction between the specificity of education and the raising of children on the one hand, and other forms of psychic influence on the other hand (Smeyers & Levering, 2005, p. 17). What is more, in essence the research methods to be used for an analysis of the pedagogical reality cannot be distinguished from the methods used in the natural sciences (Smeyers & Levering, 2005, p.17). Accordingly pedagogical research is guided by a technologic-positivistic orientation that reduces pedagogical actions to technological manipulation (Smeyers & Levering, 2005, p. 16). Also, the search for true knowledge and the optimization of concrete practices are interrelated (Jahaes & Simons, 2005, p. 290). It is not that the modern significance of knowledge has disappeared. Nowadays, knowledge acquisition is still legitimized in terms of the grand narrative of emancipation, for example. But these modern signifiers are part of the objectives the postmodern system wants to achieve, and thus discussed in terms of performativity (Lyotard, 1999, p. 28). Or in other words, the empirical-analytical paradigm incorporates the grand narratives of modern science but it is guided primarily by the logic of performativity. This principle "allows a discussion in terms of effectivity and efficiency, whereas a question about this logic itself becomes impossible" (Jahaes & Simons, p. 298, free translation). The reality that Lyotard thus presents is that research in postmodern times that interprets education in different terms in fact excludes itself from a contribution to the very system it is part of (Jahaes & Simons, 2005, p. 293).

To conclude, in this section we discussed three aspects of Lyotard's analysis, which together are indicative for a transformation in the meaning of knowledge. Shortly after World War II, the way societies legitimize knowledge gradually yet fundamentally changed. The forces that accelerated

this way of relating to knowledge in the short term are the technologies which are part of the computer sciences and communication on the one hand - and I consider these technologies as the predecessors of the digital screen- and liberal capitalism which focuses on the individual on the other hand. Together they gave rise to what can be perceived as the *knowledge society*. Lyotard's study, however, highlights a third, more important and overarching aspect in relation to postmodern societies which is necessary to understand the impact of the combination of screen technology and capitalism: Lyotard refers to a change in the way the sciences related to knowledge; he speaks of a long-term transformation which already started in the nineteenth century, from an idealistic belief in the intrinsic value of knowledge as a means to make a better world, towards a disbelief in the grand narratives. Nevertheless, science has not become disorientated, the Enlightenment project has not been cast adrift nowadays. For Lyotard, scientific research and the various institutions of our society (of which education is an example) "are legitimized and guided by the principle of augmenting its performativity - a persistent obsession for efficiency and effectivity" (Jehaes and Simons, 2005, p. 292, free translation).

2. Affirming the shift in the meaning of knowledge: towards a postmodern pedagogy

Lyotard's standpoint that knowledge has a different legitimization in a postmodern society helps us to better understand the way we perceive the importance of learning and education nowadays and consequently also the way we perceive the digital screen as a didactical tool. In this section I will investigate the consequences of the dominance of the principle of performativity in postmodern societies for learning and education, mainly based on Lyotard's twelfth chapter, *Education and its Legitimation through Performativity* (Lyotard, 1984, p. 47-52) and Deleuze's *Postscript on Control Societies* (Deleuze, 1995, p. 177- 182). What does an education look like which *affirms* the abovementioned shift in the meaning of knowledge?

Learning nowadays has a specific economical meaning. The shift in the status of knowledge means that learning and education now, apart from edifying generations of youngster, also and gradually has become a basic human need to survive economically in our society. We can see that this transformation is acknowledged in the way the act of learning is connected to the economy in the Unesco World Report *Towards Knowledge Societies* (2005):

Tomorrow's jobs will be more and more a matter of producing, exchanging and transforming information or knowledge. Our societies will be wholly engaged in assimilating a continuous flow of new knowledge. The demand for learning will be greater than ever, but its expression will be different: the object will no longer be an apprenticeship in one specific type of activity, which scientific and technological progress may very well make obsolete in no time. In an innovation society, the demand for knowledge will be in terms of ever-recurring needs for re-skilling. Vocational training will itself be forced to evolve.

(Unesco World Report, 2005, p. 59)

Accordingly, in information societies or knowledge societies, “the old limits on where and when organized knowledge could be acquired - inside educational institutions or immediately after initial training - no longer apply” (Unesco World Report, 2005, p. 57). “In an increasingly complex world, where anyone may need to ply more than one trade in the course of a working career, lifelong learning becomes indispensable” (Unesco World Report, 2005, p. 57). For Lyotard, the legitimization of knowledge through the principle of performativity means that postmodern education more and more focuses on skills “to fulfil society’s own needs” instead of “the formation and dissemination of a general model of life, most often legitimated by the emancipation narrative” (Lyotard, 1984, p. 49), which is the role of formal education in a modern society as the example of Langeveld shows. The old principle that the acquisition of knowledge cannot be dissociated from the training (*Bildung*) of minds, or even of individuals, is becoming obsolete and will become ever more so (Lyotard, 1984, p.4). “The transmission of knowledge is no longer designed to train an elite capable of guiding the nation towards its emancipation, but to supply the system with players capable of acceptably fulfilling their roles at the pragmatic posts required by its institutions” (Lyotard, 1984, p. 48).

In *Postscript on Control Societies*, Deleuze (1995) analyses contemporary societies differently than Lyotard, using the concept of “control society” instead of postmodern society. However, his idea that the model of the *corporation* is omnipresent in the control society, can contribute to the question how we perceive education nowadays by affirming a shift in the meaning of knowledge. Like Lyotard, Deleuze also recognizes World War II as a turning point in the history of western societies. Lyotard shows there is a movement from a modern towards a postmodern society. Deleuze, however, speaks of a transformation from the *disciplinary societies* towards control societies.

[Disciplinary societies] initiate the organization of vast spaces of enclosure. The individual never ceases passing from one closed environment to another, each having its own laws: first, the family, then the school (‘you are no longer in your family’); then the barracks (‘you are no longer at school’); then the factory; from time to time the hospital; possibly the prison, the preeminent instance of the enclosed environment.

(Deleuze, 1995, p. 177)

For Deleuze, after the Second World War, there is an acceleration of new forces which push old institutions like the family, the school, the military, the hospital and the prison - institutions that were important in the disciplinary societies - into a crisis. These institutions, which in Foucauldian terms *enclose* the subject from the eighteenth century onwards and make up the disciplinary societies, thrived in the first half of the twentieth century. However, these environments, which literally confine the individual to a specific place with specific rules to follow (and in which Lyotard’s idea that modern education edifies the subject should be situated), have entered into a crisis after World War II, Deleuze continues. Reform after reform is being announced, “but

everybody knows that these institutions are finished, whatever the length of their expiration periods” (Deleuze, 1995, p. 178). The model of the corporation or business has replaced the model of the factory in every segment of society, including the field of education.

Factories formed individuals into a body of men for the joint convenience of a management that could monitor each component in this mass, and trade unions that could mobilize mass resistance; but businesses are constantly introducing an inexorable rivalry presented as healthy competition, a wonderful motivation that sets individuals against one another and sets itself up in each of them, dividing each within himself.

(Deleuze, 1995, p. 179)

In this quote we read an important reference to the individual, which should be taken into account when thinking about how in education nowadays the emphasis lies on individual, student-centered learning. Deleuze describes a shift from a disciplinary society in which enclosed environments govern the individual as part of the masses (to be educated by the school, to be drilled by the military, to work in the factory, to be confined by the prison), towards a control society, in which a business model has pushed these institutions into a crisis and controls rather than disciplines the individual: the individual is not enclosed anymore, but rather exposed to perpetual rivalry which “sets itself up in each of them, dividing each within himself”. According to this model of the corporation “*perpetual training* tends to replace the school, and continuous control to replace the examination” (Deleuze, 1995, p. 179). If the factory and its workers are metonymic for the economic life in the disciplinary society, the business corporation and its employers are metonymic for the conditions in which we find ourselves in today. The individual, living in a control society is consequently is not only a consumer of goods, but a producer as well²¹. Education, instead of shaping a character towards adulthood, would then organise the training of each individual to become an active participant of society and to relate to knowledge from an economical perspective.

In Deleuzian terms it can be argued that the impact and authority of educational institutions as enclosed environments is crumbling down. Lyotard, on the other hand, would say that the school as a modern instrument to build a society and to edify the soul of the student, is losing its significance. At the same time, knowledge acquisition and economic productivity become more and more enmeshed. This is what the quotes from the Unesco World Report show, namely, in the way we perceive education vis-à-vis the knowledge society, the strict division between learning and education in formal settings like schools on the one hand and economical productivity on the other

²¹ In *The corrosion of character*, Richard Sennett analyses the impact on the character of a person of what he calls *flexible capitalism*. With an emphasis on flexibility and continuous risk-taking, the rigid bureaucracy has been replaced by a system which offers the individual more freedom. However, Sennett argues that the new capitalism implies ways of controlling the individual (Sennett, 1998, p. 10). What is more, in the contemporary economy that focuses on the short term, the character of a person - based on long term goals, mutual commitment and loyalty - corrodes. “How do we decide what is of lasting value in ourselves in a society which is impatient, which focuses on the immediate moment? How can long-term goals be pursued in an economy devoted to the short term? How can mutual loyalties and commitments be sustained in institutions which are constantly breaking apart or continually being redesigned?” (Sennett, 1998, p. 10).

hand, becomes obsolete. In the disciplinary society, you always restarted from zero; “you went from school to barracks, from barracks to factory” (Deleuze, 1995, p. 179). The individual belonged to the masses, which were governed in the different enclosed environments like schools, factories and prisons. In control societies, however, the business model dominates all these environments and “you never really finish anything” (Deleuze, 1995, p. 179). This refers to what is understood nowadays as “lifelong learning”, which concretely puts the individual at work by preparing for the job market from an early age onwards and by continuing this preparation in relation to the knowledge society until the end of life.

Kafka’s novel *The Trial* is very important for Deleuze, who together with Guattari analysed that it shows a society constantly shifting between discipline and control. The novel is about “apparent acquittal (between two confinements) in disciplinary societies, and *endless postponement* in (constantly changing) control societies” (Deleuze, 1995, p. 179). *The Trial* stands in between discipline and control, illustrating both modern and postmodern strategies. Nowadays, western societies are already deeply transformed into what Deleuze calls a control society or what Lyotard would address as the postmodern condition. The abovementioned quotes of the Unesco World report are indicative that the way education is perceived nowadays, indeed is transforming from education as a means to edify the subject, towards a focus on learning based on a business paradigm. In the light of both Deleuze’s and Lyotard’s hypotheses, we can see the language of the Unesco World Report differently:

The ‘learning’ model has spread far beyond the world of education, into every cranny of economic and social life. It is now increasingly accepted that any organization, profit-making or not, needs to strengthen its educational, ‘learning’ side; and here it is important to note that the rise of this pattern coincides with that of innovation generally, in all areas of human activity.

(Unesco World Report, 2005, p. 57)

Vis-à-vis the economic productivity of society, knowledge has become a primary resource. In a postmodern society individuals select the knowledge they need “à la carte” in their specific contexts (Lyotard, 1984, p. 49). This way, however, learning is not perceived as merely learning facts or insights as opposed to the modern idea of *Bildung*, in which learning was directly related to shaping a personality. Indeed, it cannot be compared to the modern idea of edification anymore. However, it does have a purpose as we can relate it to the business model Deleuze mentions or the performativity principle of Lyotard. Regarding the aforementioned, it should be noted that learning today does not simply imply that time and again, as long as one lives, one merely has the capacity to access information. Rather, it is “the capacity to actualize the relevant data for solving a problem “here and now,” and to organize that data into an efficient strategy” (Lyotard, 1984, p. 51).

The principle of performativity

At this point, we can come back to the very first section of this chapter, where we saw that more and more, digital technology is being used in the classroom, to look up information, to have access to videos, sound and graphics, to communicate with peers and teachers, to up- or download data from a learning platform and so on. The previous section sheds a different light on the importance of implementing the digital screen in educational contexts. First of all, the digital screen can be interpreted as the latest tool in a series of technologies that helped constructing and accelerating the postmodern, performative way of relating to knowledge I elaborated on above. Secondly, in terms of performativity, it can be argued that the most important challenge of education nowadays is the integration of the screen into the curriculum so as to give each learner the ability to survive in the computerized knowledge society. According to Lyotard, information and communication technology will not lead to the disappearance of pedagogy or the end of education. Less and less, however, will learning involve the transmission of content. Rather will it become a matter of acquiring the general skill “how to use the terminals” (Lyotard, 1984, p. 50). Lyotard further interprets technology in the postmodern society as a “prosthetic aid” in relation to the increase of performativity of the different systems that run society:

They [technology] follow a principle, and it is the principle of optimal performance: maximizing output (the information or modifications obtained) and minimizing input (the energy expended in the process). Technology is therefore a game pertaining not to the true, the just, or the beautiful, etc., but to efficiency: a technical ‘move’ is ‘good’ when it does better and/or expends less energy than another.

(Lyotard, 1984, p. 44)

Regarding technology, Deleuze also recognizes computer and information technology as the tools on which society will run. And the impact on our economy of the latest developments within information and communication technology cannot be underestimated, it can be read in the Unesco Report:

The simultaneous growth of the internet, mobile telephony and digital technologies with the Third Industrial Revolution - which, at first in the developed countries, has seen much of the working population migrate to the service sector - has revolutionized the role of knowledge in our societies.

(Unesco World Report, 2005, p. 18)

In the quote below Lyotard summarizes that which I want to emphasize in this chapter. Namely, it shows that moving from a modern towards a postmodern society, western societies experienced a shift in the significance of knowledge, which implies that a particular transformation took place in education and that technology has a specific role to play:

The question [...] now asked by the professionalist student, the State, or institutions of higher education is no longer 'Is it true?' but 'What use is it?'. In the context of the mercantilization of knowledge, more often than not this question is equivalent to: 'Is it saleable?' And in the context of power-growth: 'is it efficient?' [...] This creates the prospect for a vast market for competence in operational skills. Those who possess this kind of knowledge will be the object of offers or even seduction policies. Seen in this light, what we are approaching is not the end of knowledge - quite the contrary. Data banks are the Encyclopedia of tomorrow. They transcend the capacity of each of their users. They are 'nature' for postmodern man.

(Lyotard, 1984, p. 51)

Today, what Lyotard calls "data banks" are the numerous digital archives on the Internet. The last decade, due the latest inventions regarding digital technology, the consequences of the historical transformation towards a knowledge society can be experienced in very concrete and radical ways. Digital screens have become the tools to constantly communicate with and onto which a *flood of information* is experienced. The digital screen is the technology onto which knowledge constantly appears. This aspect will be discussed more thoroughly in the second chapter of this part. The possibility to permanently have access to knowledge in the form of digital data (text, sound, video, graphics ...) has more or less become a given because of developments related to wireless connectivity to the Internet, and its data and computing resources and inventions like smartphones and tablet-PCs. Also, the screens have become more diverse, mobile, connected and sophisticated. Screens more or less allow the screenager to have access to information wherever and whenever he or she wants, this way intensifying the importance of relating to information and communication in regard to all aspects of life, and especially in the economic domain. The use of the digital screen in educational settings can thus be seen in a different light. It can be interpreted as the artefact the screenager has to be able to work with. It seems that digital screens in particular have become the "terminals" one needs to learn how to relate to, because this is where knowledge in the form of data is flowing. This implies that educational innovation is about more than ensuring that everyone has a computer and Internet connectivity. To a much larger extent does innovation require that the screenager, in line with Lyotard's principle of performativity, has the skills and knowledge that improve the personal expertise and optimize the individual performances within a computerized knowledge society.

Consider how Siu Cheung Kong recognizes the change in the way we relate to knowledge: because of an upsurge of a culture related to digital technology the way of learning and education should also change and focus on specific information skills as its outcome.

The growth of digital culture in the twenty-first century drives the use of digital resources and communication tools in school education. To benefit from this emerging learning trend, students need to be able to retrieve, select and collate useful information from the

enormous digital sources, as well as able to judge the suitability and reliability of the retrieved information and to decide whether to process the selected information.

(Kong, 2014, p. 160)

In this quote learning and education is not only perceived as simply allowing the individual to be connected to information by just providing the right tools. Rather, education is about giving the individual the skills to cope with the abundance of information in the digital world, and accordingly this is in line with Lyotard's hypothesis that postmodern pedagogy is about how to use the terminals. Of course this does not simply imply that individuals merely learn how to manipulate computers in a technical sense, which would concretely result in a separate ICT-course. "Students in the twenty-first century, therefore, need to master information literacy and critical thinking skills for their success in learning advancement" (Kong, 2014, p. 160). This perspective therefore translates itself into an education that does not question the specificity of the screen, that is, the particularity of what the screen *does* to the society and the individual and what kind of experiences it generates. Rather, it is conceived in a functional way, as the tool par excellence onto which the economy of the society is running. The innovation that is taking place, accordingly, can be conceived of as preparing the individual to survive in the knowledge society, by instrumentalizing the digital screen in education and preparing the individual to cope with this instrument. What then, does an education look like, that prepares the twenty-first century student to cope with this transformation of knowledge in our society?

3. Repositioning the figure of the student: towards self-regulated learning

Because of the emergence of the knowledge society, Saettler predicted in 1990, important changes are taking place within settings of formal education. The tradition of giving children an education in schools where a collective of pupils gathers in a teacher-centered classroom practice is likely to be transformed into individualized ways of learning, into systems of self-learning which cross the boundaries of the time and space in which the individual receives her formal education. Also, education today, in contrast to Langeveld's modern idea that at a certain point in life it has made itself unnecessary, will not stop at a specific age:

(I)t is likely that the nature of our present formal school systems will be radically altered by the creation of computerized knowledge networks and long-distance systems. The traditional uniform method of collective education promises to be replaced by individualized approaches geared to individual ability and choice and by systems of self-learning that will change the traditional role of the teacher as a transmitter of information. Moreover, it is probable that greater emphasis will be placed on the education of adults and elderly people so that they may be able to adapt to the changes of the information society and develop their abilities for the society as a whole.

(Saettler, 2004 p. 394)

More than a decade into the twenty-first century we can see that the educational field explicitly responds to the postmodern knowledge society as elaborated by Lyotard, as indeed a more student-centered, individualized curriculum with an emphasis on lifelong learning is being implemented. In Flanders, for example, curriculum innovation has been set in motion to help students cope with the knowledge society. In her PhD dissertation, Devolder states the following:

In Flanders (Belgium) societal expectations towards this exponential growth of information were reformulated into a formal educational curriculum for compulsory education and this specifically in the form of cross curricular goals 'learning to learn' (VLOR, 2003). The aim of these goals is that learners need to acquire new knowledge and skills as well as solve problems on a more independent base. The focus thereby lays not only on the context of compulsory schools but also on learning outside the walls of the traditional schools.

(Devolder, 2014, p. 2)

The argument is that because of the exponential growth of information, quick changes in organisations and the strong individualisation of society, it is required that everybody should be able to find information and to acquire and use that information in a successful way. The technological inventions related to screens and the upsurge of a knowledge society that goes along with it consequently realized that recent learning theories emphasize on the importance of active and constructive, student-centered ways of learning. To be able to cope with the continuous changes of organizations and systems, it is required of the individual to be eager to learn and to be able to change the learning process independently when necessary (VLOR, 2003).

Although it can be argued that there is no overarching concept that guides contemporary educational research or educational innovation vis-à-vis digital technology, a general transformation is nevertheless taking place in which learning and education is moving away from collective, teacher-centered experiences towards *student-centered, individualized learning trajectories*. A concept such as self-regulated learning, therefore, can be interpreted as indicative for a fundamental repositioning or reconfiguration of education as a consequence of a shift in the meaning of knowledge. Below we can read a few definitions of this concept and argumentations of educators in favor of a self-regulated education, which should be stimulated to address the important characteristics of the knowledge society we live in (VLOR, 2003, Devolder, 2014).

Self-regulated learning is based upon the assumption that individuals can act as causal agents in their own lives. Self-regulated learning would appear to center on the *self* as an agent who acts upon his or her environment.

(Barnard-Brak et al., 2010, p. 62)

Self-regulated learners are those who are aware of their own knowledge and understandings, i.e., what they know and what they do not know or need to understand. It combines self-

observation, self-judgment, and self-reaction.²²

The need to move away from a vision of learning as a transmissive process, where the teacher plays the role of “sage on the stage”, has been widely acknowledged. Both theoretical and applied research indicate educational paradigms like cognitivism, constructivism, and their social versions as stimulating and effective approaches, not only as concerns learners’ development of content-related competence, but also regarding their overall cognitive and personal growth. According to these views, the role of teachers is to promote student-centered learning by designing learning environments which encourage motivation, self-efficacy and metacognitive awareness. On the other hand, learners are expected to become more active, reflective and responsible for their own learning, to different degrees and in different ways, according to their needs and potential, as well as the nature of learning objectives and content.

(Dettori & Persica, 2011, p. xix)

Self-regulated learning is a process that assists students in managing their thoughts, behaviors, and emotions in order to successfully navigate their learning experiences. This process occurs when a student’s purposeful actions and processes are directed towards the acquisition of information or skills.

(Zumbrunn et al., 2011, p. 4)

Research shows that self-regulated students are more engaged in their learning. These learners commonly seat themselves toward the front of the classroom (Labuhn, Zimmermand & Hasselhorn, 2010), voluntarily offer answers to questions (Elstad & Turmo, 2010), and seek out additional resources when needed to master content (Clarebout, Horz & Schnotz, 2010). Most importantly, self-regulated learners also manipulate their learning environments to meet their needs (Kolovelonis, Goudas, & Dermitzaki, 2011). For example, researchers have found that self-regulated learners are more likely to seek out advice (Clarebout et al., 2010) and information (De Bruin et al., 2011) and pursue positive learning climates (Labuhn et al., 2010), than their peers who display less self-regulation in the classroom. Due to their resourcefulness and engagement, it is not then surprising that findings from recent studies suggest that self-regulated learners also perform better on academic tests and measures of student performance and achievement (Schunk & Zimmerman, 2007; Zimmerman, 2008).

(Zumbrunn et al., 2011, p. 6-7)

These quotes show that what education should do is create student-centered experiences which do not only focus on content, but on overall cognitive and personal growth as well. This growth, however, cannot be interpreted as an edification in the modern sense of the word. The modern pedagogy of *The Visual Instruction Movement*, as we saw, brought the cinema screen into the

²² Retrieved on http://portal.unesco.org/education/en/ev.php-URL_ID=26934&URL_DO=DO_TOPIC&URL_SECTION=201.html, 27/07/2015.

classroom, to allow representations of the world - which the teacher had selected beforehand, - to enter the classroom. The screen thus presented representations of the world, in relation to which the teacher guided the students with lasting impressions so as to edify them. Bringing the digital screen into the classroom, is not so much about allowing students a vicarious experience about the world. Of course, more than the cinema screen, the digital screen is able to produce such experiences, particularly when connected to the Internet, for example. It goes without saying that in education the digital screen also operates in this way. But more importantly, the digital screen is brought into the classroom to be able to cope with its screen-reality and the *economic* world it has generated.

Today, educational innovators argue that learning and education is about self-observation, self-judgement and self-reaction. Also, self-regulated learning is about metacognition and self-efficacy, about personal needs and potential and about managing own thoughts, behavior and emotions. This implies that the individual is being offered *an educational mirror* in relation to which he or she has to change. Students that have the ability to look at themselves in this way, so the last quote suggests, are the most successful learners. This poses the question to what extent the content itself, that is being offered, is still important. Self-regulated learning is clearly about allowing the student to reflect about how he or she is learning. So growth is expressed in terms of self-referential reflexivity about the learning process, vacuum coated of implications for growth of *the specific content itself* in relation to which the individual is learning.

For example, in *The Learning to Learn Toolkit*, a handbook designed for secondary school pupils, the pupil is invited to look at the self in a self-regulated manner (Best et al., 2011). It is suggested that pupils use a *SWOT analysis* when confronted with a task. In scientific literature, a SWOT analysis is not necessarily and explicitly related to the concept of self-regulated learning. However, it nevertheless also implies a pedagogy in which the student does a particular kind of self-analysis. A SWOT analysis maps the individual strengths, weaknesses, opportunities and threats in relation to a specific situation or a concrete task, or to better understand how one learns in general (Best et al., 2011, p. 132). Specifically, the individual learner looks at his or her personality traits or characteristics and analyses whether and how aspects of the self either improve or hinder learning. Also, situational factors linked to the individual are taken into account and discussed in terms of opportunities and threats. It is in that sense that we should understand that education nowadays offers the individual a mirror to look at the self in a particular way.

Self regulated learning (SRL) involves effective use of cognitions, behaviors, and emotions to achieve learning goals (Pintrich, 2000). Self-regulated learners know how and when to use meta-cognitive strategies such as self-monitoring and self-evaluation for optimal learning and successful performance (Pintrich & De Groot, 1990; Zimmerman & Martinez-Pons, 1990).

(Delen et al., 2014, p. 312)

In other words, a postmodern education implies that more and more, students are given self-regulated learning strategies so that they *learn to learn*, which allows them to independently study specific knowledge and the relevance of that knowledge within a certain strategy or vis-à-vis a certain objective the student has to reach. This way, education affirms the shift in the meaning of knowledge, by teaching students *how to learn* (or *learning to learn*), rather than teaching them specific knowledge and helping them to cope with the specificity of that knowledge. Of course, specific knowledge will not disappear, but more and more does the particular form of knowledge about the world become an economical resource as part of a lifelong project of self-realization. Learning also implies that the individual observes and changes how one learns, while relating to knowledge. Vis-à-vis Lyotard's analysis, the student's behavior accordingly should be interpreted as performative in nature. It is in the interest of the individual and the society to look at the self and improve that self in terms of efficiency and effectivity. Or, rather than relating to the specificity of knowledge, the screenager, in Deleuze's words, has to be prepared for the rivalry inherent to the control society. As we continue to study other characteristics of the screen in the following chapters, this blueprint of education will resurface time and again because it is the principle onto which the postmodern knowledge society is running and to which education according to innovators has to contribute.

Chapter Two

Towards a different regime of relating to the screen, the world and others: possibly *there* but at any time potentially *elsewhere*

In this chapter (1) I will argue that the digital screen is “always on” and turns the screenager into an interactive multitasker. (2) In terms of innovation, this leads into blurring the line between the living environment or daily life on the one hand, and education on the other hand. (3) This implies a fundamental repositioning of education and the role of the classroom in particular.

In this chapter we will zoom in on two specific and concrete characteristics of the digital screen in order to further understand the implications of living in a screen-oriented society. The screenager is “always on” and performs multitasking behavior as a daily habit. We will see that together these two characteristics not only have concrete implications for the *everydayness* of life in general, but they influence educational innovation as well. Now I repeat myself, but in this study this innovation results in a postmodern focus on student-centered, individual learning trajectories as presented in the first chapter, which thus implements a performative pedagogy vis-à-vis digital screens. I will argue that by affirming the two characteristics studied in this chapter, the digital screen and educational innovation fundamentally change the role of education and particularly the space and time where and when education takes place.

1. The digital screen is “always on” and turns the screenager into a multitasker

“Always On”

In the chapter “Always On”, the psycho-analyst Sherry Turkle highlights that in times of mobile phones face-to-face conversations are constantly influenced by the presence of screens:

Mobile technology has made each of us ‘pausable’. Our face-to-face conversations are routinely interrupted by incoming calls and text messages. [...] In the new etiquette, turning away from those in front of you to answer a mobile phone or respond to a text has become close to the norm. When someone holds a phone, it can be hard to know if you have that person’s attention.

(Turkle, 2011, p. 161)

Although Turkle’s chapter specifically focuses on how screen communication disrupts face-to-face communication, the concept “always on” can easily be used to refer to the fact that more in general the screenager’s life is constantly *tethered*, that is, connected to the Internet, SMS services, Twitter accounts, live news feeds, social media and so on. What is more, the screenager

actively uses the screens of mobile devices, tablets, desktops and televisions, sometimes simultaneously.

To say that children and youngsters are constantly surrounded by one or multiple screens and thus to a certain extent “always on”, is not an overstatement. For example, in France, according to a study performed in 2009, children look at and interact with screens on average three and a half hours per day (Tisseron & Stiegler, 2009, p. 9). This number, which refers to screen time in front of a television, surfing on the Internet, playing a console game or sending an SMS, does not include the amount of time a child interacts with screens at school. In hours per year, this means at least 1200 hours of screen time. To compare, yearly, children in France spend an average of 900 hours at school (Tisseron & Stiegler, 2009, p. 9).

According to another study the amount of screen time could even be much higher. In a research report by the Kaiser Family Foundation, *Generation M: Media in the Lives of 8-18-year-Olds*, we can read the following conclusion in relation to children in the United States of America:

The survey focused on a statistically representative sampling of 2,032 young people, 694 of whom were selected for more detailed study through the seven-day media diaries they were asked to keep. The results indicate that the average time young people spend with media per day is a whopping 6.5 hours - every day of the week, including school days. Because some of this time is spent consuming more than one form of media, the average time with media in general [...] rises to 8.5 hours.

(Hayles, 2007, p. 189)

The magnitude of the screen's omnipresence in children's lives goes even further. In Europe, “between 1/3 and 2/3 of children now have a television in their bedrooms, according to country and social class (nearly 75 % in the lower classes in England). These figures apply to children between 0 and 3 years of age” (Stiegler, 2010, p. 56). In the US, 40 % of babies older than three months regularly watch television, DVD's or videos (Stiegler, 2010, p. 56).

When it comes to texting, a Nielson study performed in 2010 reveals that the average American teenager sends three thousand text messages per month, a startling number which according to the Turkle is steadily increasing (Turkle, 2011, p. xiv). The phenomenological study of Gurung and Rutledge with in-depth interviews of American teenagers seems to affirm the high amount of texting activities amongst teenager. For example, a male senior in high school admits that his parents cut off his cell phone because they could not pay the bill anymore (Gurung & Rutledge, 2014, p. 96). One girl says she has a “‘chain’ habit of texting” (Gurung & Rutledge, 2014, p. 95). Another girl says that she texts all the time, even when driving, but also in the classroom, although the policy of the school prohibits it. This study also indicates that teenagers predominantly use the screen for the abovementioned activities: they use it for texting or sending an SMS, participating in

online social networks, gaming and listening to music.

Multitasking

Crucial, however, is that this condition the screen creates is related to the fact that it turns the screenager into an *active multitasker*. Multitasking is a concept that originated in computer language and it refers to the ability of computing devices to execute two or more tasks simultaneously. What happens is that different programs are active while the computing device is running, and that the system rapidly and continuously switches between these programs²³. Multitasking, however, can also refer to human behavior, not just while using a computer, but more in general when practicing more than one thing simultaneously, like preparing a meal while helping one's child doing homework.

“Always on”, the screenager has to combine different screen activities, but also relate to off-screen activities while using the screen, this way doing two or more things at the same time or multitasking. An example of this is that a student present in a classroom, while taking notes, can receive a signal from the Facebook account on the smartphone and, while listening to the lecture, quickly interacts with the screen. The significance of the “always on” aspect of the screen should therefore be studied in relation to this general notion of multitasking. Comparing the digital screen with cinema and television, this section describes what it means to *do something* in relation to screens and how the digital screen, as a consequence of being “always on”, installs multitasking as a habit. In line with how I conceptualize the screenager, this habit is not exclusively something teenagers or twenty-year olds experience, but something which applies to the different generations of society. As we will see in the second part of this chapter, the innovative learning environment is characterized by this habit, this way fundamentally transforming the experience of learning and education in accordance with the performativity principle as discussed in the first chapter.

In cinema, the whole idea is to eliminate multitasking. To experience cinema, one has to go and visit it, which thus entails an explicit *withdrawal* from ordinary life. In the second part of this PhD dissertation, we saw that Münsterberg compared the cinema auditorium with the laboratory, an artificial space and time which creates a specific experience (see page 47). The darkness of the cinema auditorium has a public character. As Anna Friedberg argues, “spectators who eat loudly, make out, talk on their phones - or otherwise multitask-”, - whose actions take place outside the screen - “are targets of social opprobrium” (Friedberg, 2006, p. 232-233). Eating popcorn or drinking soda while watching the film is the only kind of multitasking that is allowed, as long as it doesn't disturb other spectators. What is more, the architecture, obscurity and organization of the cinema auditorium encourages the attention of the viewer to be focused on what happens inside the frame of the screen. Accordingly, the cinema screen is not at all “always on”, but when it is, it requires complete attention. In fact, as Masschelein puts it, the cinema has a specific *regime of*

²³ Information retrieved from Wikipedia and online dictionary Merriam-Webster on 26/09/2015.

watching which involves a complete absorption of the spectator in relation to what is shown (Masschelein, 2015). The screen attempts to create a complete illusion, Masschelein continues, and asks the spectator to fully identify with the screen and consequently forget what is outside the screen, a reality which seems to dissolve. Here again we see that this regime creates a particular kind of attention, one cannot *not* look, so to speak, not only because of the mode of attention the cinema screen generates by itself, but also because of the *pedagogy* that surrounds the screen, related to architecture, light and silence.

Whereas cinema is about eliminating multitasking, the domestic television screen actually introduces it. The TV-screen reverses the public withdrawal intrinsic to the cinema experience as it blends in with the other furniture, and therefore belongs to the private sphere. Because of this it is experienced according to the rules and habits of the individual and the family. For example, research by Gurung and Rutledge shows a girl who uses her TV-set not really to watch it, but to have background noise (Gurung & Rutledge, 2014, p. 95). The spectator of television finds herself in a private regime of watching and is the first to *do something*, either in relation to the screen or to something outside the frame of the screen. Accordingly and in contrast to the cinema spectator she splits attention in two, between what happens on the screen and what happens in relation to the off-screen environment:

The television's domestic site encouraged house-wives to iron and fold laundry in front of the set, families to eat dinner with the TV on in the background, children to play with toys while watching cartoons. Channel switching, aided by accessory devices like the remote, implied the inherent potential to engage in a 'mode switch'.

(Friedberg, 2006, p. 233)

Watching television while eating or ironing and folding clothes at the same time can be considered as multitasking in the way it is described above. Using the remote control as well, because a button is being pushed at the same time the spectator is watching the screen. It can be argued that manipulating the remote control is the first direct interaction of the spectator with what is happening within the frame of the screen. The TV-spectator, by means of the remote control, can *zap away* to another channel. This direct interaction is rather basic, in the sense that choice implies that you watch either this or that moving image. *Doing something* is still limited to switching channels and minor interventions like controlling the volume. As Friedberg argues, the remote control introduces a mode switch, which is about experiencing the rapid alternation between different channels as a consequence of using it.

To conclude, whereas the cinema screen is about eliminating multitasking behavior, the television screen actually stimulates it, albeit on a rather basic level. Both screens predominantly only produce spectatorship, although the regimes of watching are opposite to each other: one is public, the other is private. To experience cinema the screenager has to go and visit it. The TV-screen on

the other hand can be “on” in the background while the screenager is eating a sandwich in the kitchen. In terms of effect it can be argued that the TV-screen neither eliminates multitasking (as the cinema screen does); nor does it fully integrate multitasking (as the digital screen does). As we will now see, the digital screen radicalizes the function of the remote control vis-à-vis the television screen.

Multitasking and “always on” as opposed to “doing nothing”

In relation to the digital screen, the screenager almost constantly has to do something. The keyboard and mouse, but also touchscreen- and voice technology result in the fact that the screenager is not only a spectator anymore, but also a screen-user. As a consequence the basic function of the remote control in relation to the television screen is brought to a higher level. Computer technology generates experiences where the screen user can rapidly switch between a wide range of activities. The act of zapping, the chain reaction of rapidly switching channels in relation to the TV-screen, can be compared to the screenager manipulating the digital screen. More precisely, the constant *clicking* of the mouse or the tapping and swiping on the touch screen involve the continuous possibility of going or being *somewhere else*: a different window or program, to communicate with someone, to look up information on the Internet and surf from webpage to webpage.

The user of a digital screen who is connected to a computer, in contrast to the spectator of a cinema screen or TV screen, constantly and actively interacts in relation to what is happening on the screen. Doing something in relation to the screen, generally conceptualized as *interactivity*, is in itself maybe not so important. As Lev Manovich argues in *The Language of New Media*, “the concept is too broad to be truly useful” (Manovich, 2001, p. 55).

Once an object is represented in a computer, it automatically becomes interactive. Therefore, to call computer media ‘interactive’ is meaningless - it simply means stating the most basic fact about computers.

(Manovich, 2001, p. 55)

However, interactivity simultaneously implies multitasking behavior. That is, as Friedberg states, “the user can - and easily does - split focus and attention to multiple tasks, since computers can now routinely run multiple applications, each open in a different window” (Friedberg, 2006, p. 233). The computer user

[...] ‘crosscuts’ between one or more programs in selective sequence. Just as the instrumental base for the moving image - the retinal retention of successive virtual images - produced a newly virtual representation of movement and a complex new experience of time, the instrumental base for multiscreen multitasking poses new questions about the computer user’s experience of time. Computer multitasking makes it possible to combine

work with leisure - running an excel spreadsheet while checking email or shopping on eBay - and hence serves to equate productivity with a fractured subjectivity.

(Friedberg, 2006, p. 233)

In relation to the computer screen, while doing something, the multitasker literally *splits* the attention over the different windows, whereas in reading a book or attending a lecture the reader is forced to follow a “slow, linear process” (Friedberg, 2006, p. 234). The combination of “always on” and interactivity in the form of multitasking behavior makes that the digital screen produces fundamentally different experiences than the TV- and cinema screen. More precisely, it results in a habit that does not belong to computer experts and hackers only, but which has an impact on the individual and societies on a global level.

The fact that knowledge in the form of data is an economic resource and that this resource runs on digital technology, which includes soft- and hardware procedures that multitask, seems to result in an acceleration of time. Of course, chronologic time always stays the same. But the way digital technology functions - it can multitask and be “on” all the time, leads to a mode of being which the screenager to some extent has to copy in order to be productive. This relates to Virilio’s concept of “turbo-capitalism” (Virilio, 2010, p. 110) or to *fast capitalism* as conceptualised by the online academic journal with that name, which studies “the impact of rapid information and communication technologies on self, society and culture in the 21st century”²⁴. This journal publishes essays that deal with the blurring of the line between work and family, education and entertainment “in an accelerated, post-Fordist stage of capitalism” where “the working day has expanded”, “people can ‘office’ anywhere, using laptops and cells to stay in touch”. On the crossroads between the technology onto which our society is running and the concrete economic life, the habit that is produced, is one in which humans copy computer behavior. As technology allows humanity to organize society more efficiently, it seems that individuals also have to accelerate, get more out of time so as to keep up with competitors (Rosa, 2014, p. 28). Like a computer, the screenager’s brain has to operate on different fields and be available at all times - be “always on”. “You can’t expand time, so what you try to do is deepen time by doing more things in the same period” (Friedberg, 2006, p. 346).

As the German sociologist Harmut Rosa argues, communication technology has increased the speed with which we can communicate. It takes, for example, two hours to write ten letters but much less to write ten emails (Rosa, 2014). This can be illustrated by the fact that the contemporary worker easily responds to and receives more than forty emails per day (Rosa, 2014). The fact that digital technology - the software and hardware onto which the knowledge economy is running - can multitask, requires that the screenager can multitask as well. Discussed in terms of performativity, the principle which guides today’s postmodern control society, multitasking is about doing more with time, or getting as much out of time as possible. Multitasking can thus be interpreted as an

²⁴ Retrieved from the website www.fastcapitalism.com on 27/07/2015.

economic, productive mode of thought which allows the individual to be more efficient, as more than one task is being completed simultaneously. The idea is that by multitasking, splitting attention over two or three different projects at the same time, an average day can count for more than 24 hours of activity. In other words, the screenager's mental abilities are pushed into the act of zapping, between this or that task, between this or that (virtual) space. While focusing on one thing, the screenager has to bear in mind that he or she also has to do *something else* or be *somewhere else*, in the same way that a computer can switch between multiple tasks. It could be argued that multitasking behavior coincides with economic performance of the individual. This individual is a producer of activities in which behavior is characterized by efficiency, effectivity, flexibility and a mind-set that is willing to make ad-hoc decisions. What is more, this behavior does not limit itself to the time allotted in the office or workplace, but it is "always on", except perhaps when one sleeps.

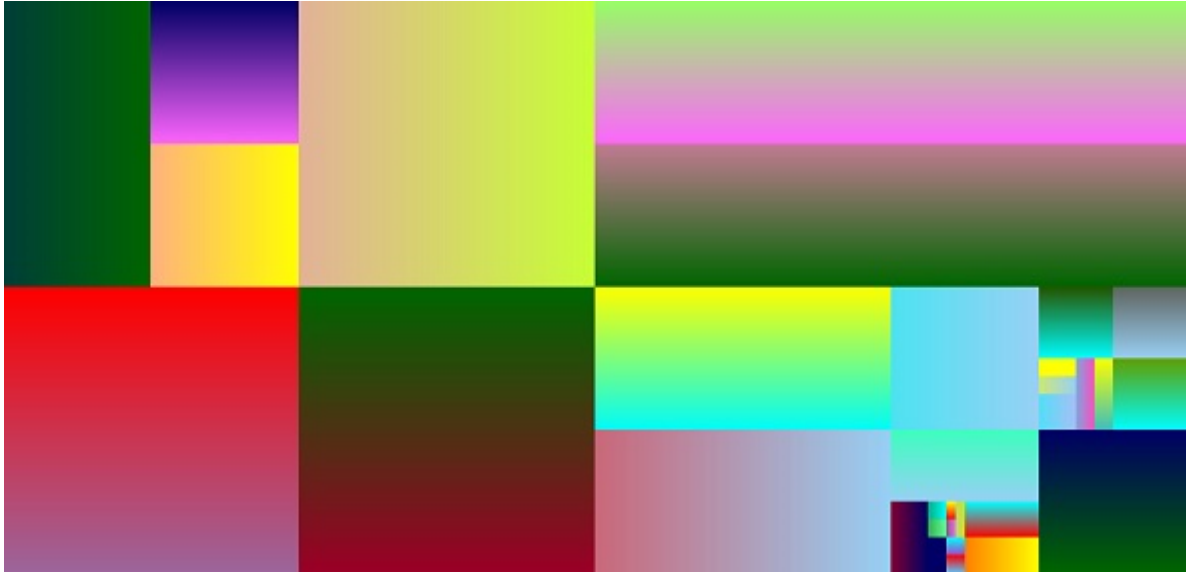
The crossroads where technology and the principle of performativity meet can bring about a feeling of stress and alienation. Physically, it could be argued that work has not become more demanding than thirty years ago. Mentally, however, there might be a continuous strain as a consequence of the abovementioned cognitive condition as a consequence of digital technology and the Internet. It can be argued that if one wants to be able to keep working at this high pace, one also has to be able, from time to time, to switch the screen off and do completely nothing (i.e. the complete opposite of multitasking and "always on"), to avoid what nowadays is referred to as a *burn-out*. Contemporary societies already show ways of trying to cope with the mental and physical stress caused by digital screen culture. Ironically, the digital screen is often used to achieve this. There are numerous examples in which the screen is used to experience time differently, as a way to produce *digital calmness*.

Consider David Parrack's blog *Take a break: 10 websites to help you relax for two minutes*. His argument goes as following:

You don't need to take huge chunks out of your day to relax and de-stress, as just a couple of minutes here and there may be enough to remove the anxiety, tension, or lethargy you're feeling. While taking time away from the Internet [...] is a good idea, you can also relax without disconnecting from the Internet, with websites dedicated to helping you achieve this²⁵.

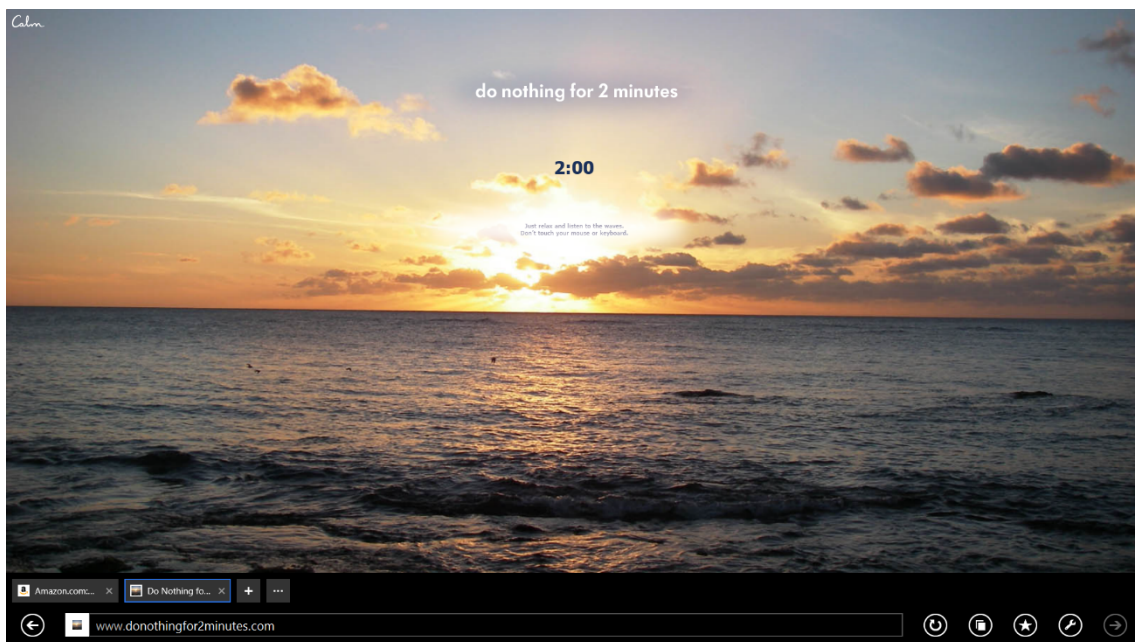
The suggested websites this blog suggests allow the screenager to relax for a specific designated time. On *calm.com*, one can relax for 2, 10 or even 20 minutes, choosing a background with soundtrack. This involves listening to and looking at ocean waves, birds or falling rain. The website *Into Time* shows the following image:

²⁵ Retrieved from the website <http://www.makeuseof.com/tag/take-a-break-10-websites-to-help-you-relax-for-two-minutes/> on 27/07/2015.



Into Time offers an insanely simple premise, but it's one which will help chill you out thanks to the ever-changing colors and infinite possibilities. You start off with a blank square, and every time you click within that square the space will halve. You get to choose which squares to divide in this way, or you can just sit back and watch the colors swirling and blending before your eyes²⁶.

Or there is *donothingfor2minutes*, a website in which the visitor is offered a picture of a beach and the ocean, the sound of waves and a count down from 2 minutes to zero²⁷.



26 Image and quote retrieved from <http://www.makeuseof.com/tag/take-a-break-10-websites-to-help-you-relax-for-two-minutes/> on 27/07/2015.

27 Image retrieved from <http://www.donothingfor2minutes.com/> on 27/07/2015.

Whenever the user moves the mouse or clicks on the keyboard, the countdown restarts. After the two minutes have expired, the user is referred to the website amazon.com, to buy the book *Calm. Calm the mind. Change the world*. The book seems to be about very concrete exercises to deal with the hectic life of the twenty-first century. For example, *design your island* is an exercise the book offers to create calmness in a particular way.

If you were to design a whole island for yourself, a place that had the specific purpose of helping you to feel as calm as possible, what would you put on it? What would it be like, Where would you sleep, what music would be playing, what would you eat, where would you unwind? [...] Whatever it is that would help to get you into a calm state of mind, write about it or draw it here. Revisit this place whenever you feel stressed, embellishing the details and adding new, calming features over time.

(Smith, 2015)

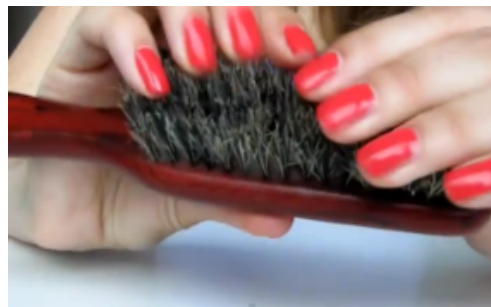
The Flemish newspaper *DeStandaard* recently gave four “exclusively designed” coloring pages for adults and even offers a book with coloring pages, specifically for adults, a free box of colored pencils included. On one particular website, “Zen and Anti stress coloring pages for adults” can be downloaded to print and the adult is invited “to color it unhurriedly to relax”²⁸.

To give just one more example, on YouTube there are specific channels that upload what is called ASMR videos. ASMR stands for Autonomous Sensory Meridian Response. It is sometimes also referred to as AIHO (Attention Induced Head Orgasm) or AIE (Attention Induced Euphoria). An ASMR video, according to the creators of such videos as well as the people who watch them, creates the effect of a real massage, via moving and sound images. Allegedly these videos produce physical sensations in the brain and around the skull and spine. In such a video a person would write slowly on a piece of paper, for example, or whisper very softly. The sound equipment is very sensitive so that the person watching this video by means of a headphone is fully exposed to the sound of the pencil touching the paper, for example. Or, a role-play takes place in which an “eyedoctor” examines the camera lens as if it was the eye of her patient, this way achieving that the audience, vicariously speaking, is in the seat at a doctor’s consultation. When creators of ASMR videos are talking, it should be noted, they almost always whisper to provoke relaxing sounds.

Sometimes a person whispers for more than an hour while chewing bubble gum. Or, a Japanese story is read and not understanding Japanese actually allows the spectator to concentrate on the sound instead of the meaning. Other videos consist of a person typing on her computer for half an hour and the constant clicking sounds are experienced as relaxing. Also, a lot of videos consist of objects that are being tapped on or scratched, so as to produce the specific sound only this or that object can make. In this regard it should be noted that although the visual aspect produced by the moving image is important in these kind of videos, the sound-*image* is far more important. It

²⁸ Retrieved from the website <http://www.coloring-pages-adults.com/coloring-zen/>, on 27/07/2015.

becomes a quality in itself that allows the listener to doze or reach a kind of slumber state. Some people use ASMR videos to fall asleep, others to relax, almost as an alternative for taking a bath, for example²⁹.



Below we can read two comments addressed to the person who made an ASMR video:

Your voice is making me always go to sleep.

Violet has the perfect tone and volume to be quiet and relaxing, but not an annoying whisper. I found this hypnotic. So I'm watching and drifting and suddenly I think she says "Steve brushing". It was like a bolt of lightening went through me.

Here, the screen, although still on and connected to the Internet, is used to *short-circuit* multitasking behavior, much in the way the color pages for adults and the websites that offer digital meditation create realities in which everything comes to a halt and one focuses on one particular thing, if only for two minutes. One possible interpretation is that these sub-cultures can be regarded as particular reactions to cope with the acceleration of time. If we study time from an economical perspective, the individual is a producer of productive time on the one hand, and a consumer of leisure time on the other hand. Is this not how we should understand the drawing of colored pages for adults? If this would be connected to economic life, is this then not the consumption of free-time, time that is allotted to recharge the battery to be able to cope with the

²⁹ To experience some ASMR videos, see for example <http://www.youtube.com/watch?v=WpOfEQosAdo>, <http://www.youtube.com/watch?v=slpDYhVI14E>, <http://www.youtube.com/watch?v=3agWTHHqv1s>, <http://www.youtube.com/watch?v=dqwrTBXDluU> retrieved on 27/07/2015.

high paced working rhythm of society? And, isn't there as a consequence of this, a whole market which focuses, not on time-consuming activities, but rather on time as a good to be consumed?

Towards a new cultural mode of attention

I will now discuss the habit digital screens produce in relation to the general ability of the individual and society to have attention for someone or something. According to Friedberg the digital screen's production of multitasking behavior introduces and imposes an important cultural mode upon society. "On the computer," Friedberg argues, "we can be in two (or more) places at once, in two (or more) time frames, in two (or more) modes of identity, in a fractured post-Cartesian cyberspace, cybertime" (Friedberg, 2006, p. 235).

Here the question must be asked whether indeed it is possible that the screenager can be in different places *at the same time*, can have more than one mode of identity *simultaneously* and can be part of multiple time-frames *at once*. The act of multitasking related to one or multiple screens leads to the question *where* the screenager *is* in terms of attention. If one or multiple screens with multiple windows operate in her presence, what kind of attention do screens produce? Splitting attention and focusing simultaneously on two or more things at the same time is extremely difficult. To give an example, texting while driving - which, interestingly, is considered as "distracted driving" - at first sight could be considered as true multitasking. According to the National Occupant Protection Use Survey, in the US at any given moment in broad daylight 660,000 drivers are looking at and/or interacting with a mobile device while driving a vehicle³⁰.

One particular video shows in-car video footage of American teenagers failing to multitask³¹. The example shows that the conceptual difference in psychological theories between true multitasking - doing two things at the same time - and rapid alternation between different tasks is important (Rubinstein et al., 2001). It seems that texting while driving rather achieves rapid alternation between paying attention for what happens on the road and texting, with devastating consequences. The mode of attention, it could be argued, is quite similar to how Sully conceptualized inattention (see page 36). In the United States, an estimated 16 percent of fatal crashes is due to multitasking behavior, causing 5000 deaths a year. Being "always on", the digital screen requires of the individual to alternate between different activities. It can thus be argued that the behavior of the drivers in the video provides an extreme example of a particular mode of distraction produced by the digital screen: a distraction in the sense that while being *here*, either screen-related or in "real life", attention is actually *somewhere else*. What digital screens might impose upon the screenager is a cognitive style for which the remote control of the television screen is metonymic: attention *zaps* rapidly between different aspects of life, between on-screen and off-screen activities and on-screen and on-screen activities, in the way the TV-spectator rapidly jumps from one channel to another.

30 Retrieved online via <http://www-nrd.nhtsa.dot.gov/Pubs/811719.pdf>, 27/07/2015.

31 Retrieved online via <https://www.aaafoundation.org/distracted-driving>, 27/07/2015.

Scientific research in the fields of psychology and neurology shed a particular light on this subject, although there are no conclusive, definitive answers. “Always on” and producing multitasking behavior, what kind of thinking does the digital screen produce? What is the state of mind or quality of attention? According to Katherine Hayles neurologic research indicates that the digital screen imposes a new cognitive style on our society that can be described as *hyper attention*, which she opposes to *deep attention*:

Hyper attention is characterized by switching focus rapidly among different tasks, preferring multiple information streams, seeking a high level of stimulation, and having a low tolerance for boredom.

(Hayles, 2007, p. 187)

Deep attention, the cognitive style traditionally associated with the humanities, is characterized by concentrating on a single object for long periods (say, a novel by Dickens), ignoring outside stimuli while so engaged, preferring a single information stream, and having a high tolerance for long focus times.

(Hayles, 2007, p. 187)

Hyper attention, according to Hayles, is stimulated by the experience of media and the growth in variety and kinds of media. This is because the brain’s plasticity, she continues, interacts with them. In the brain, a process called “synaptogenesis” strengthens those neuron connections that are actively and frequently used. At the same time synaptogenesis allows the eventual decay of unused neurons (Hayles, 2007, p. 192). This well-known plasticity of the brain is a widely acknowledged fact in the field of neurology. In his chapter “Synapses change with experience”, the American neuropsychiatrist Eric Kandel concludes that changes in synaptic strength due to the learning of behavior can result in a reconfiguration of a neural network (Kandel, 2006, p. 204). For example, the brain structure of an individual that becomes blind undergoes a fundamental change; the neuron connections related to vision decrease whereas simultaneously the neuron connections related to the other senses improve significantly. This way synaptogenesis allows people that have become blind to cope with the environment, albeit in a different, non-visual way³². According to neuropsychologist Jerzy Kornorski, plasticity leads to “permanent functional transformations [...] in particular systems of neurons as a result of appropriate stimuli or their combination” (Kornorski, in: Kandel, 2006, p. 158). Also, this plasticity of the brain is higher among children than among adults. Early brain development is characterized by an explosion of synapse formation, which reaches its peak in the brain of 3,5 year old toddlers. Scientists conceptualize this as “exuberant synaptic density” (Huttenlocher & Dabholkar, 1997, p. 173).

32 Retrieved online from <http://www.sciencedaily.com/releases/2009/11/091118143259.htm> on 27/07/2015 from University of California - Los Angeles. “Blindness causes structural brain changes, implying brain can re-organize itself to adapt.” ScienceDaily, 19 November 2009.

According to Hayles the extreme plasticity of the brain means that children born in media-rich environments have different brain structures from children who are not exposed to these environments. Hayles' thesis is that in the long term, because of the quantitative omnipresence of the digital screen, the brain structure of a person who is exposed to one or even more screens tends towards hyper attention. Or differently put, for a generation that is "always on", growing up tethered and multitasking all the time, the brain's plasticity evolves towards neuron connections that produce and can be associated with hyper attention as defined in the above. This hyper attention, however, should not be related to children only, a point I wish to emphasise in this study; the screenager is not just a teenager interacting with screens. In a similar way but to a lesser extent, Hayles argues, adults also develop hyper attention. Because of the phenomenon of exuberant synaptic density, however, it can be argued that young children show in an enlarged way what screens produce in relation to brain structure.

Taking into consideration the neurological process of synaptogenesis, the cognitive mode produced by computers and economic life and considering the quantitative findings about the amount of time that the screenager spends in front of a screen, it can be hypothesized that our minds have developed a particular *quality*. Continuously exposed to different media, its plasticity creates what we might call a postmodern brain structure as a result of being immersed in screen related activities.

It is not far-fetched to imagine that the trend toward hyper attention represents the brain's cultural coevolution in coordination with high-speed, information-intensive, and rapidly changing environments that make flexible alternation of tasks, quick processing of multiple information streams, and a low threshold for boredom more adaptive than a preference for concentrating on a single object to the exclusion of external stimuli.

(Hayles, 2007, p. 194)

In his essay *Is Google making us stupid?* (2008) Nicholas Carr gives a personal description of what Hayles would call hyper attention. Carr reports that because of his life online he is losing the ability of having deep attention while reading a printed book:

I get fidgety, lose the thread, begin looking for something else to do. I feel as if I'm always dragging my wayward brain back to the text. The deep reading that used to come naturally has become a struggle. [...] Once I was a scuba diver in a sea of words. Now I zip along the surface like a guy on a Jet Ski.

(Carr, 2008)

Both Hayles and Carr oppose the object of the digital screen to the book: in their opinion the first produces hyper attention, a particular kind of inattention as conceived by Sully, whereas the latter requires deep attention. Immersion in relation to the screen, so Carr's argument goes, seems to

corrode the ability to have deep attention in relation to reading. Remember Duhamel's revulsion for the cinema screen. "I can no longer think what I want to think. The thoughts in my head have been removed by moving images" (see page 63). In regard to the computer screen, distraction might receive yet another quality, so Carr's testimony of Hayles' concept of hyper attention indicates. Before researching how educational innovation responds to the fact that screens are "always on" and that they produce multitasking behavior, we return to the cinema screen once more, because the experience of cinema can be considered as very important to understand what is happening vis-à-vis the contemporary digital screen.

Cinema gave the world its screen, but not its regime of watching

In the second part of this PhD dissertation, I addressed the matter of distraction regarding the cinema screen. Having discussed concepts such as voluntary attention, involuntary attention, the distracted cinema spectator and the automaton experience, we saw that with cinema, the attention of the spectator involuntarily focuses on what happens within the frame of the big singular screen. The nature of attention produced by the digital screen is to some extent similar to the nature of attention produced by the cinema screen. Simply put, any screen that is "on" instinctively draws attention. The digital screen of course does not achieve an experience as strong as the cinema screen in terms of absorption or immersion. For one, it is smaller and experienced in broad daylight, instead of in a cinema auditorium. However, because "always on" and producing multitasking behavior, the experience of digital screens might be more radical than the cinema screen in terms of attention. How should we understand this?

To a large extent, attention produced by the cinema screen is "deep" the way Hayles conceives it, in the sense that the screenager will not avert the eyes from this medium and that, while the experience lasts, the body is immobilised and shut off from the outside world. Or, the experience echoes Hayles words that "outside stimuli cease to exist". However, as we saw, cinema produces a form of attention that is distracted in nature as well, which I would not, however, describe as hyper attention. In Münsterberg's words, there is an oscillation between aspects of the self on the one hand and the perceptions that the cinema screen forces upon the spectator on the other hand. Or, as Benjamin argues, the spectator is, paradoxically, a distracted critic (see: part 4, from page 214 onwards).

Hayles' bifurcation between hyper and deep attention, it seems, does not really apply to the experience of cinema, in relation to which attention is "deep", yet not as opposed to "hyper" the way Hayles and Carr contrast the reading of a book to surfing on the Internet. The possible reason that the cinema screen does not produce hyper attention is that in relation to the screen, it is self-evident that the spectator, for a designated time, finds herself in a situation in which the attention cannot be called upon; not by the outside world and neither by interactivity in the form of multitasking in relation to the screen. Although the cinema experience is not vacuum coated from the world and the "I" of the spectator, it nevertheless forces itself upon the spectator, allowing for

a relatively long mental dive in relation to the specificity of moving images and the montage that the film director has produced. This mental dive is possible because cinema *has* a regime of watching, which consists of an explicit withdrawal from the world which lasts 90 minutes or longer. This regime, it can be argued, is something which the digital screen is actually lacking. Accordingly, the cinema screen could be interpreted as producing a particular kind of attention which the digital screen cannot produce and vice versa. Or differently put, when cinema gave the world its screen, it could not, for very straightforward reasons, give the world its regime of watching as well. So maybe it could be said that today the overall experience of digital screens is characterized by the fact that *there is no regime of relating to the screen anymore*. Or, if there is one, it is characterized by the fact that it inverted or flipped the regime of cinema.

By this I mean that today attention towards the screen happens without the public regime of watching which is characteristic to the cinema experience. The tablet-PC and smartphone, because of their mobility, produce continuity in the experience of screens. Practically everywhere and at all times, screens can coincide with life and consequently their presence, and the attention they produce, becomes the norm. The automaton experience, which was studied in relation to Lancaster's Monitorial System and the medium of cinema, thus returns. However, with Lancaster and cinema, the automaton is restricted to specific moments in life, experienced in a designated space and time. Also, the domestic television still limits the *everydayness* of screens to the private sphere and it is predominantly about spectatorship. Nowadays, both in public and private spheres, the screen can always draw the attention of its user, inviting him or her to watch and do something in response to it. Today there is little or no withdrawal from ordinary life anymore in order to experience the screen and do something in relation to it. This withdrawal is intrinsic to the habit of going to the cinema, but absent in relation to digital screens, as ordinary life *is* intrinsically screen-related. The digital screen knows no withdrawal from the world, whereas the cinema screen is characterized by it.

Today, with the digital screen, there is no physical threshold anymore, there is no "going towards the screen" involved. In fact, on pages 102-106 we saw that digital screen culture produces habits of withdrawal, not to visit the screen, but to turn it off, to create a space and time which has no screens. In the way the screenager relates to the world of screens there is no boundary to be crossed and there is no physical or mental separation. Not restricted to the cinema auditorium, the digital screen accordingly achieves something new and unprecedented. The involuntary attention which the digital screen to some extent has in common with the cinema screen - both screens impel the spectator/user to look/interact - can be realized *at all times*. The constant presence of the digital screen - each individual his or her own screen that can connect to the Internet, social media, friends and family, ... - results in a fragmented, at times privatised and individualized experience. Anytime and anywhere, something might appear on the digital screen that asks the individual to look at it and interact with it. The digital screen "does this" time and again, the individual has short-term experiences in which he or she disappears from the off-screen reality. "Something from

without”, an SMS, a call, an update of the news, a tweet, an email, a Facebook message ... might draw the attention of the screenager.

When there is an event on my phone, the screen changes [...]. There is a brightening of the screen. Even if my phone is in my purse ... I see it, I sense it. ... I always know what is happening on my phone.

(Turkle, 2011, p. 161)

“Always on” and producing multitasking behavior, it can be argued that if there is a regime, it is a minimalistic one characterized by Hayles’ concept of hyper attention. Having discussed the process of synaptogenesis, it is not farfetched at all to conclude that when the individual relates to screens on average 8,5 hours per day, hyper attention becomes the norm. It can be argued that this form of attention is not a local phenomenon that takes place here and there, but it is rather a *global condition* every individual is experiencing to some extent, wherever there are screens. Or differently put, “always on” and producing multitasking behavior, digital screens continuously make attention zap between two or more things.

Concluding thoughts

In this photograph³³, we can see a young man most probably looking at and/or interacting with his mobile device during a ceremony, possibly a graduation. This photograph illustrates that in a digital screen culture, the individual’s attention can be caught by his or her device. And this because potentially, at any time, in Turkle’s words, the screenager “glances down and is lost to another place”. To cope, not only with the multiple windows inside the screen, but with the off-screen reality and other screen realities as well, the screenager constantly makes mental jumps from one on-screen window to



another, from off-screen reality to on-screen reality and the other way around, like the distracted drivers in the video alternate between the screen of their mobile device and the window of their car. Constantly attention can shift towards “somewhere else”, thereby creating a spectator/user who, in terms of attention is surfing between different worlds. Or differently put, there is a regime connected to the digital screen and it entails that at all times, mentally the screenager possibly is *there*, but potentially *elsewhere*. Accordingly it could be said that the contemporary regime of watching and using screens has radically inverted the regime of the cinema screen, to such an extent that when reading a traditional newspaper or a book, it is hypothesized that attention in relation to the text becomes difficult to maintain (Carr, 2008). It can be argued that to read the text from beginning to end mentally strains the reader because attention, while reading, is focused

³³ Image retrieved online from http://www.dalebasler.com/wp-content/uploads/2010/08/3640960948_47f579af0c.jpg, 24/05/2015.

on going somewhere else.

Gurung and Rutledge' qualitative findings, the quantitative data about the amount of hours children spend in front of screens and Turkle's analysis are some illustrations of the omnipresence and importance of digital technology in our society. We could thus argue that for children and youngsters as well as for adults, although we should not take it literally, the screen to some extent is "always on", producing the habit of multitasking and this beyond the sphere of job related activities. Digital screens seem to produce a particular mode of attention for which Hayles' concept of hyper attention might be indicative. This cognitive mode, a particular form of inattention, is something, so we saw with the example of ASMR and particular kind of websites, the screenager is trying to cope with.

In regard to this cognitive mode, the question can be asked what the consequences are of the distraction produced by the digital screen. The digital screen's omnipresence, on a global level, increasingly reaches all individuals and their societies in the everydayness of life. Not only the issue of safety regarding "distracted driving" comes to the fore, but also the implication for all other aspects of life. What are the effects of the screen's distraction for the politics of a society? What does it mean for the screenager to receive, at all times, a news update about world events such as an airplane crash, a person being decapitated, a public figure's sudden death, political uproar in some distant land? What happens to the quality of face-to-face dialogue among screenagers, Turkle asks, if at any time, eye contact is or can be interrupted by looking at the screen? And it goes without saying that, in relation to this study, it is highly relevant to discuss the cognitive mode produced by screens in relation to education. Since the Enlightenment, as we saw in the two case-studies in the first part of this study, educators have been preoccupied with the concept of attention, to create a pedagogy that somehow allows the student to have attention for something. Duhamel's opinion that the cinema screen produces a mode of attention that is problematic, seems to return in the context of the digital screen and is articulated by the radical point of view of the German neurologist Manfred Spitzer. In his book "Digitale Demenz, Wie Wir Uns Und Unsere Kinder Um Den Verstand Bringen" (2012), Spitzer gives both neurological and philosophical arguments to convince parents and educators to ban the digital screen as much as possible. Spitzer wants to provoke a public debate about the digital screen, which, although he discusses many aspects, primarily focuses on the mental and physical health of the individual and society. He considers banning digital screens as a necessary pedagogy, hereby arguing for a technophobic point of view that suggests that a conscious, healthy and good life is a life *off screen*. In a more nuanced way, psychiatrist and psychoanalyst Serge Tisseron makes a plea to not expose children under the age of three to television as a matter of public health. He furthermore argues for a "screen diet" based on the age of the child (Tisseron & Stiegler, 2009, p. 17-18).

Turkle on the other hand, in *Alone Together: Why We Expect More from Technology and Less from Each Other* (2011), argues that we have not yet reached the point where we are completely cut-off

from each other and thus should reclaim active control over how we want to use technology, instead of being controlled by it (Turkle, 2011, p. 296). This includes, for Turkle, not that we turn our backs to technology, but that we have to know how and when to turn off the technological devices we have the habit of using on a daily basis. Profound interaction between people, Turkle argues in the conclusion of her book, requires from time to time a fundamental withdrawal from the screen. Accordingly she suggests writing letters to each other to be able to have a rich and profound relationship, because using digital programs such as Skype to conduct a videoconference with your family and friends via the Internet, only make it possible to have a superfluous contact (Turkle, 2011, p. 298).

What Spitzer, Tisseron and Turkle have in common is that they propose a pedagogy or psychology in the shape of a diet regarding watching and interacting with screens. The underlying idea seems to be that screens, which are “always on” and produce multitasking behavior, *do something to us* in terms of attention and that to avoid a misshaping, the screen should become the object *not* to relate to (Spitzer) or at least with care and moderation (Tisseron and Turkle). In other words, the idea that the screen is a double-edged sword, which arose in relation to the cinema screen, resurfaces in relation to the contemporary, digital screen. In the next chapter, when studying the computer programs which educators write for students, we will see how innovators explicitly deal with the matter of attention. In the next section, however, we will first study what educational innovation looks like that, instead of installing a pedagogy that bans or limits the use of the screen, affirms the two characteristics we discussed in this second chapter and thus positions itself within the contemporary regime produced by digital screens.

2. Blurring the line between the living environment or daily life and education

As a consequence of being “always on” and producing multitasking behavior, Gurung and Rutledge show that for children there is an overlap with life in school (Gurung & Rutledge, 2014, p. 91-100). The use of digital technology in the way it is described above does not stop at the school gates, in a same way as for adults there is an omnipresence of the screen in the different environments and during the multiple activities they undertake. Screen related activities like texting, listening to music and interacting on online social networks also take place inside the classroom. One girl describes that even though texting in the classroom is not allowed, she does it anyway. She argues that the act is “almost natural” and “you don’t know when you are texting” (Gurung & Rutledge, 2014, p. 91-100).

Empirical evidence seems to support the abovementioned crossing of boundaries. In the US, 62% of students use mobile technology for non-academic purposes inside the classroom, while studying or doing homework (Ravizza et al., 2014). 95% of all students bring their mobile device to the classroom. “Because the increased availability of new portable digital technologies has made it possible to use these technologies anywhere and anytime, many individuals regularly access and

interact with technologies in every context in their lives - including the classroom” (Wood et al., 2012, p. 365).

The aspect of “always on” is problematized by Gurung and Rutledge’s research in terms of obstructing the student to have “‘flow’ - a deep immersion, in her learning and with the learning environment [...] and attention of their learning engagement” (Gurung & Rutledge, 2014, p. 99). They refer to the study of the American Hungarian psychologist Mihaly Csikszentmihalyi, *Flow: the psychology of optimal experience* (1990), who describes it as “a state of concentration so focused that it amounts to absolute absorption in an activity” (Csikszentmihalyi, 1990). In short, Gurung and Rutledge see the use of personal devices in the classroom as hindering the possibility to have deep attention for the learning activity. Here, Turkle’s abovementioned quote echoes in Gurung and Rutledge’s concern: “When someone holds a phone, it can be hard to know if you have that person’s attention” (Turkle, 2011, p. 161).

According to a study by Ravizza et al. (2014), non-academic use of screens inside the classroom negatively influences classroom learning. This empirical research investigated the impact on learning of the fact that students monitor the input of the content presented during a class while simultaneously interacting with their personal device for non-academic purposes. Another research experimented with texting in the classroom, in which one group of students performed text-messaging while reading an article whereas the other group texted first, then read the article without text-messaging (Gingerich & Lineweaver, 2014). The results of both studies confirm the general assumption that it is detrimental for the learning process to divide the attention between reading an article and sending text messages, or to listen to a lecture while interacting with the screen for non-academic purposes. O’Bannon & Thomas offer a good summary of similar kind of recent studies, which all seem to conclude that mobile phones disrupt the learning experience in the classroom (O’Bannon & Thomas, 2015, p. 111).

Although Gurung and Rutledge recognize the risk of allowing digital screens in the classroom, they nevertheless argue that teachers and schools should somehow integrate students’ digital habits and skills, “especially when many current high school students are simply bored or disengaged in their classrooms” (Gurung & Rutledge, 2014, p. 99). The argument that traditional classroom activities intrinsically produce “boring” activities, is of course not new. But what might be an important factor to take into account nowadays is that “always on”, the screen produces habits like texting, playing video games, listening to music, watching video clips and participating in online platforms like Facebook. These habits, if the screen is used 8,5 hours per day, of course easily turn the classroom into an extremely dull event, especially if the smartphone is secretly present during class. Without ignoring the fact that the use of digital technology in the classroom can obstruct the learning process, it should be allowed, Gurung and Rutledge conclude, that students experience digital technology, not merely for drilling exercises but as an overall pedagogical instrument. “It will be “highly” beneficial if students’ digital habits and skills are recognized, explored, and

promoted in the classroom” (Gurung & Rutledge, 2014, p. 99). In this quote we can read the argument that educators should connect to the life world of the child. According to this adagio, learners should be motivated, activities should be fun and learning should start from something children are familiar with. Of course, nowadays the digital screen is omnipresent outside the classroom context and when children spend so many hours relating to one or multiple screens, these technologies become an integral part of their life and world. From this perspective, using these screens in the classroom can be seen as a way to capture the attention and to have a classroom full of motivated children. In short, the screen’s blurring of boundaries between life world and classroom context, should be embraced and not shunned. However, it goes without saying that radical changes have to take place to allow the digital screen to become part of the educational experience because blurring the boundaries involves much more than giving a specific ICT-course.

In what follows I will present how the screen, “always on” and creating multitasking behavior, operates within the discourse created by contemporary educational innovation. Discussing examples of practices that implement the screen in education I first list the arguments and the way in which the screen is used. In the third part of this chapter I will then show what kind of learning experiences educational innovation subsequently generates and consequently what kind of idea about education becomes possible. In this manner I also describe the boundaries, that is, the limitations of this way of looking at the screen and education.

“The Flipped Classroom” and “Bring Your Own Device”

Discussing how the twenty-first century classroom should look like, Kong argues that the traditional roles of both teacher and classroom have to be *flipped* or put upside down (Kong, 2014). Concepts such as *inverted classroom*, *blended learning* and *24/7 classroom* refer to similar reorganizations of educational practices (Chen et al., 2014, p. 17). In the space and time of a flipped classroom, learning activities are reversed compared to the way they traditionally take place. For example, homework is not done at home, but in the classroom. Theoretical lectures by the teacher however, which normally are given in front of a collective of students, are filmed and uploaded on the Internet to be watched somewhere else, in preparation for classroom lessons (Kong, 2014, p. 161). In this way the teacher’s specific role of transmitting knowledge does not disappear, but the time and space when and where the theoretical lecture should take place becomes a matter of choice for the individual student. *A first important aspect thus entails that because the screen is “always on”, there are different environments where education can and should take place.*

This is supported by the concept of BYOD or “Bring Your Own Device”. BYOD originated in the economic sector, within a business or other organizational context where the personal device is used for both company and private purposes. “Anywhere” - due to WLAN and Internet connection - and “Anytime” - without distinction between working hours and private times (Disterer & Kleiner, 2013, p. 45). BYOD shows very clearly that instead of banning the personal device, it should be supported, integrated inside the classroom and used to allow education to cross physical

boundaries. The straightforward idea is that it is very practical to allow a student to use a device he or she is familiar with (Song, 2014, p. 51). Students are explicitly obliged to use the personal device for communication and to access information in the classroom, but also elsewhere. In a BYOD science project with primary school children in Hong Kong, children used their own device, onto which three mobile apps had to be downloaded in relation to a science project concerning the anatomy of fish (Song, 2014, p. 52). Students who did not have such a device, could borrow a tablet-PC. It goes without saying that the personal device was not only used inside the classroom, as the objective of the project was to integrate the personal living environment in the learning process. The screen thus provides the possibility that learning is “always on”, as exemplified in the scheme below³⁴.

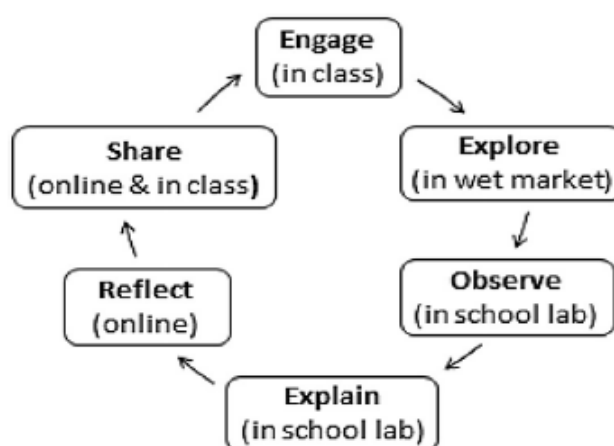


Fig. 1. Seamless inquiry-based learning model in primary science.

Table 1
The seamless inquiry-based learning activities on “The Anatomy of Fish”.

Activities (As)	Description
A 1 Engage (in class)	Engage: Access Hong Kong marine fish database online (http://www.hk-fish.net/chi/database/feature/feature.htm)
A 2 Explore (in wet markets & at home)	Students search and share online information about fish on Edmodo at home, and explore a few kinds of fish in the wet market, take photos, find out the names of the fish and upload them to Edmodo.
A 3 Observe (in school lab)	There are four kinds of fish prepared by the teacher for each group to observe. They need to observe and find out the scientific names of the fish and their anatomy with the help of a magnifying glass. They are encouraged to make full use of their mobile devices in the observational process.
A 4 Explain (in school lab)	Label the body parts of the fish using the mobile app – Skitch to explain the anatomy of a fish, and upload it to Evernote which is shared in Edmodo.
A 5 Reflect (online)	Reflect on the guided questions in Evernote, e.g., Q1: Why are the four kinds of fish called fish? Q2: What have you learned?
A 6 Share (online & in class)	The students upload their labeled anatomy of fish and reflections to Evernote to share; they also share their work in class for evaluation.

As we can see in the table and the figure, this particular BYOD project created “seamless” acquisition of knowledge; the devices were used “to communicate, share information and work, submit assignments, and coordinate learning activities seamlessly” (Song, 2014, p. 52). By means of the mobile device, learning activities in one place fluently connected to learning activities elsewhere. Accordingly, BYOD blurs the boundary between the personal life on the one hand, and

³⁴ Table and scheme on the next page retrieved from Song, 2014.

the experience of learning on the other hand. It is argued that BYOD holds the promise “to help promote better outcomes via a more personalized learning and an enhanced engagement between home, school and other spaces” (Song, 2014, p. 51). Or differently put, learning and education does not start and stop inside the space and time of the school, but continues elsewhere.

So the fact that learning takes place in different environments entails that any particular learning activity has to be connected to other educational experiences, which either still have to take place, or which already happened somewhere else. For example, the online video platform YouTube can provide online lessons students have to watch before or after a particular lesson in the flipped classroom. What is more, both on YouTube and other platforms students can be obliged to participate in online discussions. Or, quizzes accessible via digital platforms have to be taken to test whether knowledge present in the YouTube videos is acquired by the student (Kim et al., 2014, p. 39). The multiplicity of (online) screen experiences requires that a student can move meaningfully from one digital learning experience to another.

It therefore becomes clear that when classrooms are being flipped and/or the own device becomes a pedagogical tool, it is not simply about the application of inverting a few practices or blending new technologies in existing ways of learning. Due to multimedia, it is argued, new opportunities arise that go beyond the “flipping” of lectures and homework (Kim et al., 2014, p. 38). So apart from the fact that learning can take place *somewhere else* than in the classroom, it seems that a particular perception on what learning should be about comes to the fore. And this has to do with the fact that more and more, the digital screen, “always on”, is the catalyst of every learning experience and requires a particular kind of multitasking. Instead of transferring specific knowledge, education produces active behavior on behalf of the learner in relation to that knowledge. Accordingly, inside the digital classroom students are allowed to “use mobile devices that are wirelessly interconnected for completing learning tasks, especially accessing additional learning information from sources other than textbooks” (Kong, 2014, p. 162). What is more, formal class time is used “for students to actively engage in knowledge construction through extensive interactions with peers and teachers” (Kong, 2014, p. 161).



Fig. 1. An Active Learning Classroom, characterized by round tables, microphones, large-screen monitors, whiteboards, and wireless.

Furthermore, the Active Learning Classroom as depicted in the photograph³⁵, has round tables everywhere across the room. “The tables are often paired with additional learning technologies such as whiteboards and student computer-projection capabilities for sharing work, microphones to hear student voices, and wireless Internet access to retrieve resources” (Baepler et al., 2014, p. 228). Also, instead of one central blackboard, we see multiple large screens on the different walls, much like Lancaster’s cardboards, which were also situated on the walls. The future of the classroom thus evolves: there is no fixed point towards which a student should look, although everywhere there are screens and digital technology. The teacher can decide to project the same image on all these screens, this way focusing everybody on the same content. Or, as is the case in an interactive classroom at the University of Southern California, to experiment with this new constellation:

Fourteen large screens span the walls, providing display space for input controlled by wireless laptop computers scattered around a large conference table. One mode of interaction is ‘Google jockeying’: while a speaker is making a presentation, participants search the Web for appropriate content to display on the screens - for example, sites with examples, definitions, images, or opposing views. Another mode of interaction is ‘backchanneling,’ in which participants type in comments as the speaker talks, providing running commentary on the material being presented.

(Hayles, 2007, p. 196)

³⁵ Image retrieved from Baepler et al., 2014.

“Google jockeying” and “backchanneling” can be seen as experimental pedagogies that make use of and produce the cognitive mode of hyper attention. These kinds of activities, although not necessarily the norm in the example of the flipped classroom, show an ad-hoc experimentation with knowledge rather than focusing on knowledge acquisition itself. Like in Lancasters’ teaching machine, focus does not lie on the significance of the specificity of knowledge but rather that one actively relates to it and that everybody actively does something with it.

In this digital learning environment the teacher clearly loses the central position which we associate with a traditional, modern classroom, in which all chairs and desks are orientated towards the front where the blackboard and teacher are usually situated. The classroom, it is argued, is *free* from teacher-centered activities (Baepler et al., 2014, p. 229). In a flipped classroom or “active learning classroom” we can see that there is no central location in the classroom anymore to which the attention is supposed to focus. The lessons inside the flipped classroom focus on “student presentations, small group problem solving, self and peer evaluation, and group discussions” (Zappe et al., 2009). In one particular example students had to film their group activities which took place in the digital classroom, this way providing the teacher with self-created audio-visual reports of the group work. The teacher, however, did not use the video for evaluation, but rather to facilitate dialogue and to monitor the learning process without giving concrete instructions (Kim et al., 2014, p. 39).

Also, during class time, instead of giving lectures, the teacher is much more involved in monitoring students individually as well as in group and giving them feedback (Kim et al., 2014, p. 37). What is more, inside the flipped classroom, the teacher, instead of transferring knowledge or presenting it, coordinates the whole process of learning, both for the group and the individual. The lessons in the flipped classroom show that instead of a linear, rather slow process which characterizes the transmission of knowledge by a teacher in a traditional classroom, emphasis lies on active, self-regulated learning. Being together, *live*, so to speak, in a particular space, clearly should not disappear. However, the activities in the classroom nevertheless become part of a broader, screen- and student-centered curriculum. Or put differently: what happens inside the classroom shows great resemblance with what happens outside the classroom, in relation to one or multiple screens and the different windows inside the screens. This indicates a transformation from experiences where one acquires knowledge, towards an active use of knowledge in a self-regulated manner. Accordingly the teacher’s role in relation to the screen-events becomes both managerial, administrative, pedagogical, instructional, technological and facilitating (Anderson, et al., 2001; Maor, 2003). This kind of assistance is required as both on an individual and a collective level, the screen is “always” on and produces multitasking behavior.

The shift from the transfer of knowledge towards an active use of knowledge is supported by online lessons where teacher-centered activities take place, for example in the form of a video lecture the student can watch online. First of all, online lectures should not last more than twenty minutes

(Day, 2008, p. 133). This way, the argument continues, web lectures take into account “psychological (e.g. interference with short- and long-term memory processes) and physiological (e.g., arousal and attention effects) factors” (Day, 2008, p. 12). Also, a particular example of a video lecture, *knowledge clips*, shows that the lecture should be “attractive and intriguing” and avoid long sessions of traditional lecturing (Young & Moes, p. 17). It is argued that knowledge clips also should have transparent titles and students should be able to access them easily and quickly (Young & Moes, p. 17). This is confirmed in literature on recorded lectures, which advocate interactivity; “the learning object can be accessed on demand on students’ devices in their own time and is controlled via search, start, stop, pause and review” (Young, 2008, p. 14). Furthermore, these lectures are best logically structured, that is, divided in clearly separated phases in which each identify concrete goals to be reached (Day, 2008, p. 12).

To conclude, even though teacher-centered activities and moments of instruction should not disappear, it becomes clear that content-related knowledge is experienced by means of short clips which have to be transparent, at least to some degree interactive and related to concrete learning outcomes the student has to achieve. In general it could be said that the importance shifts from the transfer of knowledge towards a more active relationship with knowledge. This does not mean, however, that the screenager can do whatever he or she feels like doing. While learning *somewhere*, the student has to take into account experiences that took place or still have to take place *elsewhere*, which requires a particular kind of management of the individual learning trajectory in relation to the blurring of boundaries the screen creates and which educational innovation affirms. Additionally, it could be argued that the nature of attention that is being produced by this postmodern pedagogy is rather moving towards hyper attention than that if focusses on the development of deep attention.

3. Repositioning the role of education and the classroom

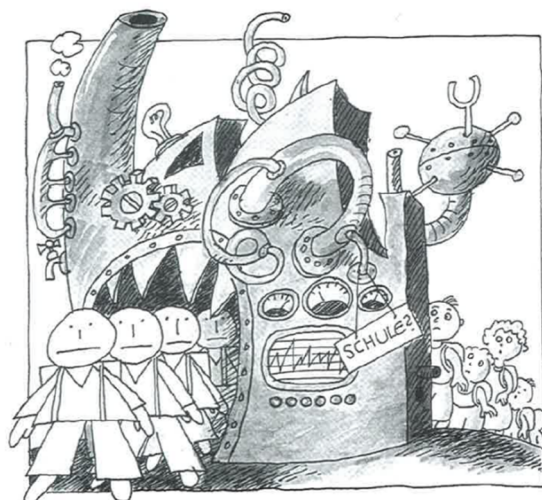
In the last section we saw that the screen’s ability to capture all sorts of information, even the theoretical lecture of the teacher of the specific domain knowledge, means that educators ask the question *where* knowledge and skills should be acquired (Voogt & Roblin, 2010). Also, the literature on BYOD shows that in terms of space and time, learning is perceived as a *seamless* activity: a fluid, smooth continuum in which the division between the classroom and other environments is not conceived of as a rupture anymore. Yet, theoretical lectures are not only put online because the learner can press pause, stop, rewind or fast-forward, when and whenever he or she pleases. Educational innovation that affirms the fact that at all times the screenager can relate to the screen, not only allows the use of digital technology in the classroom and beyond, it also fundamentally transforms the role of education in general. To show the transformation of the role of education, I will now compare the modern educational reform produced in relation to the cinema screen with the postmodern educational innovation in relation to the digital screen.

The taming of the cinema screen in the disciplinary society

It is striking to see, in relation to the way education is perceived, that the impact of the digital screen's presence is more radical than the cinema screen. It is true that in terms of educational reform, the life world or natural living environment of the child was already mentioned in the first part of the twentieth century. At that time, reformers already complained that the classroom was an artificial space and time that separated the pupil from "real life". Handbooks for teachers on biology in the beginning of the twentieth century, for example, suggested to allow children to bring a frog to the classroom. This idea aligns with the reform educators of *The Visual Instruction Movement* had in mind, bringing *realia* and representations into the classroom. As we saw, the idea of Rousseau to learn naturally, in the personal living environment (for example, in the own garden, the road towards the village, ...), was already popular at that time. The cinema screen was a technology which *brought the world inside the classroom*, and which brought children much closer to reality than schoolbooks. What is more, the cinema screen made an audio-visual experience possible that complemented the verbal, linguistic experience of listening to a teacher. A factory, the Niagara waterfalls, Antarctica, the culture of a distant country, a historical event, a political issue, a frog ... All aspects of the world could enter the classroom *vicariously* in the form of moving images and come alive in the minds of the students while looking at the screen. The cinema screen functioned as an added value and to complement the intellectual with the emotional, the verbal with the audio-visual.

Yet, the moving images were censored by the teacher, who functioned as a representative of the adult world (see page 61). Because of this, there was no real objection within the frame of a modern perspective to use the cinema screen in the classroom. Neither the frog, nor the cinema screen questioned the agreement between teacher and pupil that once inside the classroom, the teacher determined the learning experience and which knowledge would be transferred. Accordingly, in the light of the reform that went along with the cinema screen, we cannot really speak of advocates of *student-centered learning* as it is conceived today vis-à-vis the digital screen. In the example of the cinema screen, student-centered meant *natural, vicarious learning*, not a reform that can be opposed to teacher-centered classroom activities.

In the minds of the reformers who tried to implement the cinema screen in education, the particularity of the space and time of the classroom never really became a question, its four walls were an essential condition for education to be achieved. Under the reign of a modern, pre-war disciplinary pedagogy the cinema screen never blurred the line between the classroom and the world. Rather, it



brought the world inside the classroom and helped to transfer knowledge from the teacher - who knows - towards the pupil, who does not know. In this traditional way of teaching, the classroom door is closed, the body of the pupil is fixed to a desk and attention is fixed on the teacher situated in the front and at a central position. Cinema, radio, television and the blackboard were educational technologies that fitted into a disciplinary pedagogy which focuses on collective experiences where the teacher was in charge. In the modern, disciplinary society, the traditional classroom functioned as a space and time that disciplined the subject. This is in fact what Foucault so powerfully has shown in *Discipline and Punish: The Birth of the Prison* (1977). The classroom rules function to shape an obedient citizen and its organization duplicates the model of the factory and the prison³⁶. Accordingly it reproduces the inequality of the outside world, rather than emancipating the subject.

The digital screen and the postmodern control society

The role of education, moving from a modern towards a postmodern society, clearly has changed. In the first chapter we saw that a historical transformation took place, from a modern, disciplinary society towards a postmodern control society. This means that everywhere, the models of the factory and the prison no longer function as blueprints for how institutions such as schools operate. However, learning has not simply been liberated from this blueprint to reach a discourse-free reality. As we saw in the first chapter of this part, the business corporation has become the blueprint for the way different systems of society organize themselves. This means that educational institutions do not lose their power over the individual, but rather that the character of their influence changes, it loses its disciplinary character and also stops emphasizing the transfer of knowledge. Also, education, as we saw on page 87, influences the subject beyond the boundaries of the institutions' walls. An important consequence of the digitization might thus entail that although the space we associate the classroom with remains important, less and less it will have a role that can be distinguished from what happens elsewhere. In that sense, the classroom *as classroom* might cease to exist.

As Masschelein and Simons argue, the digitization questions the importance of the school, the classroom and the teacher-centered activities that the classroom allows to take place.

Learning becomes perfectly suited to changing individual needs, say supporters. The learning process gains increased support through ongoing evaluation and monitoring. The act of learning itself becomes fun. Learning can take place anytime and anywhere. This means that the class as a communication technology that brings with it passivity, boredom, and constant letdowns (and the classroom as the core unit of the school in which a teacher brings together a group of students who are dependent on him or her for a fixed amount of time) is rendered obsolete. The classroom, so goes the argument, was best suited for a pre-

³⁶ Image retrieved from Ballinger, 1990.

digital age. Pre-digital society was relatively stable, and therefore had stable requirements of what one needed to know and be capable of doing. In this society, the school, and especially the classroom - so long as it bowed sufficiently to authority - had a self-evident role. But today, so it is said, other expectations have arisen. The school and classical education have become redundant: the entire concept of curriculum and classification based on age is a product of outdated ways of distributing knowledge and expertise. The school as a whole is determined by primitive technologies of the past. The artificial learning that we call school, so it is said, was only ever needed to teach children the things they could not otherwise learn in their natural (learning) environment. When this need disappears, so too will the institution of the school: learning becomes once again a 'natural' event, where the only thing that matters is the distinction between 'rich' and 'poor' learning environments.

(Masschelein and Simons, 2013, p. 21-22)

Or put differently, the digital screen is incorporating the classroom as an important part of the individualized, digital learning environment of each student. Learning, in that line of thought, takes place *here, there and elsewhere*. If, under the modern paradigm the cinema screen brought the world into the classroom, it could be argued that the digital screen nowadays pushes the student out of the classroom, back into the world. However, it can be argued that the presence in the world should be situated within a particular, screen-centered regime, not of discipline, but of control. Although this regime does not exclude the physical presence - in the classroom as well as in the world - it could nevertheless be argued that both classroom and world are experienced in a specific way. The regime of learning that is being developed is one where learning, just like the digital screen, is "always on". Not as a matter of speaking, but as the concrete consequence of boundary blurring activities produced by screen-technology. The flipped classroom and BYOD produce learning experiences that take place in other environments than the classroom. Within this screen-centered regime, classrooms should not necessarily disappear, but rather be conceived of as rich learning environments amongst other learning environments.

Pedagogies that flip the classroom, blend learning and allow the use of the personal device show that the role of education is transforming as a consequence of the digital screen. The latest technological developments made the digital screen mobile (smartphones and tablet-PCs). Also, the omnipresence of the Internet and the speed with which it provides data creates a continuous experience of information and communication. Accordingly, because of the omnipresence of digital technology, learning might simply coincide with life. Anywhere and anytime learning is an inherent part of being somewhere, and, potentially, elsewhere. In short, to learn, we maybe don't have to go to school anymore. This seems to run parallel with the fact that we don't have to go to the cinema anymore to experience the screen, as cinema gave the world its screen. In a screen-oriented world, in which this object always surrounds the screenager and produces multi-tasking behavior, it is not required anymore to go to a classroom in order to learn. But just like cinema could not give

the world its regime of public withdrawal, the classroom, it goes without saying, also cannot give the world its regime, which entails closing the door because of which something becomes an object of attention.

Because of this, today the question is being asked whether the classroom is in harmony with the transformation of the figure of the student as described in the first chapter of this part. This does not result in the question whether this or that specific knowledge has been acquired, which is a modern, pre-war and disciplinary concern. To what extent, so educational innovation of today seems to ask, does the classroom produce experiences that allow the individual to improve self-regulation? A classroom is successful first and foremost when it generates self-regulatory behavior, which is necessary to cope with the complex reality of screens. This is because, when learning takes place *somewhere else*, at home, in the bedroom or at the local fish market, this kind of activation of the self, in terms of self-regulation, will enable the student to cope with screen, the surface onto which different windows can be opened at all times. In short, educational innovation is about surviving the new regime imposed by the screen as discussed in the sections on hyper attention and economic time. Accordingly, education does not reproduce the inequality of the outside world anymore as in the way it functioned in the disciplinary society. Rather, there is no outside world anymore in the sense that classroom and world are environments that more and more will enmesh by means of the screen.

We have reached the point in history where innovators conceive the act of closing the classroom door as pointless, the catalyst of boring activities, and, what is more, not an efficient response to what is happening in the real world. In short, the classroom should open its doors and smoothly connect to other learning environments. Flipping the classroom and using the own device in the classroom and elsewhere, allows this to happen. This requires that the student self-regulates the learning process across different space and time experiences. Allowing education to take place outside the classroom and on the screen, affirms a regime that does not run on discipline and transferring factual knowledge. Accentuating that screens are “always on” and produce multitasking behavior, education does not provide the student with knowledge, but produces a series of learning experiences that push the student into self-regulatory behavior.

The screen-environment accordingly does not exclude the physical presence in “the real world”. Going to the fish market, however, like being in the classroom, can be conceived as a preparation for life long learning, which requires self-regulation in relation to ever changing situations. But being there, in the fish market, entails being there with a screen, which registers that reality in relation to this or that competence that needs to be acquired. The question rises whether there is no price to be paid for this perspective on education. As a consequence of the blurring of boundaries, learning might become so natural and so smooth, that it becomes an automated process like that of Lancaster. Blurring the boundaries, consequently, entails that both world and classroom are interpreted from a narrow perspective. This means that the world’s specificity is at least

secondary to the productive behavior it should produce. This way, the digital screen does not push the student out of the classroom, back into the world, but makes it rather unnecessary to go into the world.

Chapter Three

The screen is a self-referential object

In this chapter (1) I will study how the screen can be conceived as a self-referential object. (2) In terms of innovation, this leads into self-regulated learning by means of the screen, (3) which implies a fundamental repositioning of the figure of the teacher.

1. The screen is a self-referential object

In the first chapter we saw with Lyotard that the Enlightenment project is a historical event that influenced society in such a way that not God but the sciences become the catalysts to understand the world, self and others and to act in the world. Specifically Lyotard describes a shift in the meaning of knowledge which took place from the 1950s onwards, which has to be understood from the principle of performativity and thus from the act of augmenting the efficiency and effectiveness of each sub-system of society, education included. The development of this principle, argues Lyotard, comes from *within* the sciences and relates to the rise of technology within the field of information and communication on the one hand, and individualistic capitalism on the other hand. As we saw it is crucial to understand this movement to grasp how in relation to digital screens, our society has turned into a knowledge economy which runs on software programs and screen activities.

Also, the postmodern perspective of science and the coinciding transformation in the meaning of knowledge explicitly focuses on the *individual*, the element without which the state or system cannot run. This was already mentioned in the first part, while studying Lancaster, who put into practice what Foucault called “cellular power” (see page 37). The significance of learning and education today is that it should prepare each individual for lifelong learning vis-à-vis the computerized knowledge society. Self-regulated learning can be interpreted as an important contemporary pedagogy that puts cellular power into practice; it produces experiences in which the individual has to cope with personal strengths and weaknesses, has to be able to analyze the point of departure vis-à-vis a particular goal that needs to be achieved and has to meta-reflect about the personal learning process.

This pedagogy already indicates that today there is a particular *psychological* interest in the individual, who should *look at the self* by means of a performative filter. In this chapter we will further elaborate on the crisis which faces contemporary sciences as Lyotard describes it, by focusing on one particular characteristic of the screen, namely that it produces self-referential experiences. This is exemplified by social media websites and applications like Facebook, YouTube, Twitter and Tumblr. On these digital platforms, the screenager can up- and download

representations of oneself and others, but also produce and manage virtual representations of personal life-experiences.

In the first part of this chapter I will focus on this ability of the screen, namely that it can produce self-reference. In the second part of this chapter the relevance of this quality of the screen will be discussed vis-à-vis education. I will argue that in relation to how education is changing as a consequence of the rising importance of the digital screen, the screenager has to look at the self in terms of performativity and that the screen functions as an instrument to achieve this. Educational innovators that affirm the digital screen nowadays therefore embrace its capability for self-reference as illustrated by contemporary image culture by relating it to the performativity principle. In the third part of this chapter the consequence of the implementation of screen technology in this way will be studied. I will argue that the self-referential potentiality of the screen drastically reconfigures the figure of the teacher.

The purpose of this part is to show how digital screens co-construct a particular kind of screen-subjectivity. The central point of departure of this chapter is that it is important to understand the relation between psychological theories on the one hand and digital screen culture and technology on the other hand. In *Psychologization in times of globalisation* (2012), psychologist and philosopher Jan Devos argues that today's image culture is saturated with a *psychologized* gaze and he deems it necessary to take this into account if we want to understand contemporary screen subjectivity (Devos, 2012, p. 67, p. 70).

Images do not come out of the blue - out of some unmediated human nature - but are mediated, in the same way as they are not screened in a vacuum, but in a mediated environment. And those mediations, I claim, are closely connected to psychology, and, hence, to psychologization processes.

(Devos, 2012, p. 70)

More precisely, "in image culture the gaze is manipulated, guided and fed", the gaze is steered (Devos, 2014, p. 68). "*Look, this is what you are*" is a self-referential script, Devos argues, that psy-sciences have produced outside their own sphere, overflowing into image culture and thus present in screen experiences (Devos, 2012, p. 125). "*Sidetracking God*" and "*showing him the door*" - the result of the Enlightenment period - led to a permeation of the psy-sciences in the private and public life of the subject, in the core of being and thus also in the contemporary image culture which digital screens produce (Devos, 2012a, p. 54; Devos, 2012, p. 69). Devos argues that image culture - television programs and Internet websites, for example - nowadays illustrate that a psy-script influences how the individual gives meaning to life. To study this subject matter I will first describe the psycho-analytical views of Christian Metz and Turkle to better understand what is meant with the idea of the screen as a self-referential object.

Metz' theory on cinema spectatorship

In what follows I will study Metz' theory about of the cinema spectator, which stems on Freudian and Lacanian theory³⁷. As a consequence of the medium, Metz argues, the cinema spectator is or can become aware of him or herself in a particular way. In *The Imaginary Signifier* (1982[1977]) he states that without a particular kind of inward look on behalf of the spectator, there is, in fact, no cinema experience. The screen functions like a mirror, although not in the sense of the primordial mirror, as the self-identification is of a different order (Penney, 2007).

According to the psychoanalytical theory of Lacan, the mirror is very important for the development of a self (Vanheule & Verhaeghe, 2009, p. 396). In a real mirror, the bathroom mirror for example, "the child sees itself as an other, and beside an other" (Metz, 1982, p. 45). To put it differently, "the other human being who is in the glass, the own reflection which is and is not the body, which is like it", helps the child to identify with itself as an object (Metz, 1982, p. 45). Of course, unlike the situation in which one stands before a real mirror, the spectators' body is absent from the cinema screen. This absence is possible precisely because the spectator is no child anymore that has never experienced a mirror:

Thus, what *makes possible* the spectator's absence from the screen - or rather the intelligible unfolding of the film despite that absence - is the fact that the spectator has already known the experience of the mirror (of the true mirror), and is thus able to constitute a world of objects without having first to recognize himself within it.

(Metz, 1982, p. 46)

For Metz, the identification of the cinema spectator with him or herself - which is what the mirror experience is about - is a specific result of the medium itself. However, this identification has nothing to do with an actor's body on the screen. A young man watching a cowboy, for example, of course can identify himself with this character, imagining that he is the cowboy or wishing people look at him the way the actor personifies the fictional character. Commercial cinema uses this possibility of the spectator to identify with representations of the personalities, so that the spectator consumes the self in a kind of narcissist way. To illustrate that cinema can realize self-identification of a different order, Metz refers to watching long "inhuman" scenes, where no human form is seen, only objects and landscapes, but the cinema nevertheless can be conceived intelligibly. And even when a human body in a fiction-film appears on the screen "that someone who is capable of self-recognition" - the cinema spectator - is somewhere else than in that human body on the screen (Metz, 1982, p. 47). Identification with human bodies that appear on the screen is at most vicarious in nature, as that body that is depicted is not at all the body of the spectator

37 Metz' cinema theory in *Film Language* (1974[1968]) will not be discussed here. In *The Time-Image*, Deleuze criticizes Metz' film language theory which claims that every shot should be considered "as the smallest narrative utterance" (Deleuze, 1989, p. 25). Metz, Deleuze argues, sees narration as referring to "one or several codes as underlying linguistic determinants from which it flows into the image in the shape of an evident given" (Deleuze, 1989, p. 26). Deleuze, however, does not see narration itself as a given, but as the result of the visible images and the montage. I will limit myself to a discussion of Metz' theory on cinema spectatorship, this way keeping our focus on the capability of the screen for self-reference.

(Metz, 1982, p. 48-49).

The specificity of the cinematic apparatus has to do with the fact that it turns the spectator in the all-perceiving subject (Penney, 2007, p. 47). The cinema apparatus - and this is how Metz conceives the screen as a self-referential object - realizes that the spectator identifies with him- or herself in a specific way, this way creating a mirror experience which is cinematic in character:

At the cinema, it is always the other who is on the screen; as for me, I am there to look at him. I take no part in the perceived, on the contrary, I am all-perceiving [...]: absent from the screen, but certainly present in the auditorium, a great eye and ear without which the perceived would have no one to perceive it, the instance, in other words, which constitutes the cinema signifier (it is I who make the film). [...] I know I am perceiving something imaginary [...], and I know that it is I who am perceiving it. [...] In other words, the spectator identifies with himself, with himself as a pure act of perception (as wakefulness, alertness): as the condition of possibility of the perceived and hence a kind of transcendental subject, which comes before every there is.

(Metz, 1982, p. 48-49)

In this quote Metz interprets cinema as producing non-empirical experiences. The cinema apparatus involves the spectator with what is happening on the screen and accordingly the spectator is no mere passive receptor of moving images (Penney, 2007, p. 51). With who or with what can the spectator identify, if not with the human bodies on the screen? With the self as all-perceiving, which is the result of an identification with the camera. As he or she “identifies with himself as look, the spectator can do no other than identify with the camera, too, which has looked before him at what he is now looking at” (Metz, 1982, p. 49). The camera’s absence during the viewing is represented by another object, the projector. This object, in turn, has no significance without the cinema spectator. The self-reference as conceived by Metz involves an identification with the point of view of the camera. More precisely, the cinema spectator identifies with him- or herself as someone who coincides with what the camera has filmed in the past. Accordingly, the spectators also coincides with the projector, which shows these images from behind the back of the cinema spectator, by making them appear onto the screen.

When I say that ‘I see’ the film, I mean thereby a unique mixture of two contrary currents; the film is what I receive, and it is also what I release, since it does not pre-exist my entering the auditorium and I only need close my eyes to suppress it. Releasing it, I am the projector, receiving it, I am the screen; in both these figures together, I am the camera, which points and yet which records.

(Metz, 1982, p. 51)

Metz’ cinema spectator is essentially a particular kind of voyeur. The cinema screen does not only show the spectator a story, it shows a story in which the spectator is a voyeur who cannot be looked

at. Unlike a voyeur looking through a keyhole, the cinema spectator cannot be caught by what takes place on the screen. Metz refers to the fact that film actors, although they know the images will be shown to a public, act as if the camera, the crew and the director are not there. In that sense the screen functions as a surface which *shields* or hides something, turning the masses in anonymous voyeurs. “For this mode of voyeurism (which by now is a stable and finely tuned economic plateau) the mechanism of satisfaction relies on my awareness that the object I am watching is unaware of being watched” (Metz, 1982, p. 95). Psycho-analytical theory about the cinema spectator accordingly discusses the relationship with what happens on the screen as a one-directional, self-referential relationship. This means that spectatorship strictly belongs to the people sitting in the darkness of the cinema auditorium, where they watch moving images that don’t look back.

In 1953, the spectator in the cinema auditorium was exceptionally and explicitly confronted with moving images that break the one-sided relationship of the voyeur with the screen. In *Summer with Monika* (Bergman, s, 1953), the spectator, in Metz’ terms coinciding with projector, screen and camera at the same time, is directly addressed when on the screen, all of a sudden, the protagonist *Monika* (Harriet Andersson) looks into the camera for approximately thirty seconds³⁸.



38 In *Profanations*, Agamben discusses this scene vis-à-vis contemporary pornography. I will discuss his argument a bit further in this text. See *Profanations*, (Agamben, 2007[2005], p. 89-92).

Image retrieved from

[https://www.google.be/search?q=Monika+\(Harriet+Andersson&hl=nl&rls=com.microsoft:nl-BE:IE-Address&rlz=117MXGB_nlBE594&tbm=isch&tbo=u&source=univ&sa=X&ved=0CCIQsARqFQoTCOaN5tf1_cYCFQEULAoddiEDdw&biw=1218&bih=618#imgrc=5XZo](https://www.google.be/search?q=Monika+(Harriet+Andersson&hl=nl&rls=com.microsoft:nl-BE:IE-Address&rlz=117MXGB_nlBE594&tbm=isch&tbo=u&source=univ&sa=X&ved=0CCIQsARqFQoTCOaN5tf1_cYCFQEULAoddiEDdw&biw=1218&bih=618#imgrc=5XZo)

beqzyeCvSM%3A on 27/07/2015.

Monika's gaze disrupts the kind of cinema-voyeurism Metz describes. "Here for the first time in the history of cinema, there is established a shameless and direct contact with the spectator," Ingmar Bergman says (Bergman, In: Agamben, 2007[2005], p. 89). The cinema spectator watches moving images which all of a sudden "look back". It is as if Metz' psychological theory about cinema - which states that the spectator identifies with him- or herself as look - is countered by the woman's gaze on the screen, a gaze which is conscious about being watched by the spectator. Rather than simply saying "*I know you are watching me*", this gaze disrupts, shocks or exposes the spectator's gaze with itself as gaze. From within the darkness of the auditorium, normally it is permitted a kind of anonymous voyeurism. But now the gaze in the auditorium is doubled on the screen, this way confronting the spectator with itself as look, not identifying with the character Monika - *as that body that is depicted is not at all the body of the spectator*, - but with the self as a gaze caught in the act of looking. The screen's function as a shield which prevents the spectator from being looked at, becomes inoperative and in doing so, it deliberately exposes the spectator to him- or herself as all-perceiving subject. Monika's gaze therefore offers a kind of critical awareness. At that time and in relation to the role of cinema in society, it can be argued that this gaze was a powerful image *about* images and cinema spectatorship. Further on I will come back to this gaze, but in relation to the digital screen.

Turkle's Second Self

Having studied a psycho-analytical perspective on the cinema screen as producing a self-referential experience, we will now focus on Turkle's psychoanalytical theories about digital technology, which I already referred to in the previous chapter of this part. Her books *The second self, computers and the human spirit* (1984) and *Life on the screen* (1995) clearly interpret the digital screen as a psychological object. It can therefore be argued that Metz' point of view vis-à-vis cinema somehow returns in Turkle's study about computer screens. What "second self" does Turkle precisely refer to and in what way do computers provoke this self-reference? In line with Metz' argument about cinema, Turkle sees computer technology as a kind of mirror. Again, computer technology does not function the way the primordial mirror literally reflects the body that appears in front of it. The screenager, accordingly, when interacting with computer technology, does not necessarily see a reflection of the own body on the screen in the way a bathroom mirror works, much like the spectator's body of cinema does not appear on the screen. But, Turkle argues, it nevertheless provokes a particular kind of self-identification.

Turkle claims that from the 1970s and 1980s onwards the personal computer constructs a second self through a second, virtual life, which gradually, for a large number of people, becomes almost as important or equally important as life off screen, or "real life". The titles of some of the chapters already indicate that the screen can function as a kind of mirror for our identity: *Adolescence and Identity: Finding Yourself in the Machine* (Turkle, 1984, p. 138-164), *Personal Computers with Personal Meanings* (Turkle, 1984, p. 167-200) and *Thinking of Yourself as a Machine* (Turkle, 1984, p. 281-318). Turkle sees the personal computer as a psychological object as

described in the theory of psychoanalyst Winnicott (2005). For Winnicott a baby blanket or tattered rag doll is something children are attached to, because

they are mediators between the child's earliest bonds with the mother, whom the infant experiences as inseparable from the self [...]. As the child grows, the actual objects are discarded, but the experience of them remains. [...] This experience has traditionally been associated with religion, spirituality, notions of beauty, sexual intimacy, and the sense of connection with nature.

(Turkle, 1995, p. 272)

“Now”, Turkle argues, “it is associated with using computers” (Turkle, 1995, p. 272). “The computer’s chameleonlike quality, the fact that when you program it, it becomes your creature, makes it an ideal medium for the construction of a wide variety of private worlds and, through them, for self-exploration” (Turkle, 1984, p. 6). So from a psychological perspective, the digital world can be seen as a space for the screenager to explore the world and self. “Exploring the Web is a process of trying one thing, then another, of making connections, of bringing disparate elements together. It is an exercise in bricolage” (Turkle, 1995, p. 61). In *Life on the Screen* Turkle argues that there is a postmodern identity manifesting itself through the digital world. Here, postmodern is not used in the economic sense I have referred to it throughout this study, in terms of performativity. For Turkle, the postmodern identity is “‘decentered’, ‘fluid’, ‘nonlinear’ and ‘opaque’” (Turkle, 1995, p. 17). And personal computers are the objects-to-think-with to exemplify postmodern theories of Frederic Jameson (1984) and Jean Baudrillard (1988).

The postmodern experience is characterized by the precedence “of surface over depth, of simulation over ‘the real’, of play over seriousness” (Turkle, 1995, p. 44). When Jameson wrote his essay *Postmodernism, or the Cultural Logic of Late Capitalism* (1984), he stated that “the postmodern era lacked objects that could represent it” (Turkle, 1995, p. 44). However, with the personal computer, postmodernism can be described much like industrial modernity can be imagined with objects like “the turbine, smokestack, pipes, and conveyor belts of the late nineteenth and early twentieth centuries” (Turkle, 1995, p. 44). By and large the use of screens is co-determining the present human condition. Central to the postmodern experience is that because of the invention and rise of screen related technology, more and more the individual is experiencing him- or herself because of the performance of bricolage on the computer:

The computer can be [...] experienced as an object on the border between self and not-self. Or, in a new variant on the story of Narcissus, people are able to fall in love with the artificial worlds that they have created or that have been built for them by others. People are able to see themselves in the computer. The machine can seem a second self.

(Turkle, 1984, p. 30)

The image Narcissus saw by looking into the water can be interpreted in two ways. One interpretation is that Narcissus indeed died because he loved the representation of himself too much. The other possibility is more complex and refers to something *outside the self*³⁹:

Narcissus fell in love with what appeared to him to be another. This image of that other person fascinated him because it objectified a sense of beauty of which he had felt only a vague inner sense.

(Turkle, 1984, p. 156)

In adolescence there is a renewed interest in mirrors and both versions of the story of Narcissus (autoeroticism and attraction to something outside the self) are applicable to this period. Accordingly, in postmodern times, the emergence of computer technology translates the adolescent's interest in the self in seeing the computer as a mirror of the mind (Turkle, 1984, p. 157):

With adolescence, there is a return to reflection, but this time reflection is insistently about the self. The questions of the first stage, What is this machine?, and of the second, What can I do with it?, give way to, Who am I?

(Turkle, 1984, p. 138)

[Adolescents] integrate their computer experience into their developing identities in ways that have nothing to do with becoming computer experts. They use programming as a canvas for personal expression and then as a context for working through personal concerns. They use the computer as a constructive as well as a projective medium.

(Turkle, 1984, p. 139)

To give just one example, she quotes a player of online games being aware of the capacity of the computer for self-reference to make the point that online computer games "are laboratories for the construction of an identity" (Turkle, 1995, p. 184).

You can be whoever you want to be. You can completely redefine yourself if you want. You can be the opposite sex. You can be more talkative. You can be less talkative. Whatever. You can just be whoever you want, really, whoever you have the capacity to be.

(Turkle, 1995, p. 184)

Turkle, however, does not relate the computer as a self-referential object solely to a specific age group. Of course, it can be argued that adolescents are maybe more intensely immersed in this

39 In *Eros and civilization* (1974), Marcuse makes a similar argument, discussing Freud's *Civilization and its Discontents*. "The striking paradox that narcissism, usually understood as egotistic withdrawal from reality, here is connected with oneness with the universe, reveals the new depth of the conception: beyond all immature autoeroticism, narcissism denotes a fundamental relatedness to reality which may generate a comprehensive existential order" (Marcuse, 1974, p. 169).

experience of the self. But this phenomenon, for Turkle, is related to an entire society. Also, Turkle dismisses a one dimensional reading of the story of Narcissus.

Ours has been called a culture of narcissism. The label is apt but can be misleading. It reads colloquially as selfishness and self-absorption. But these images do not capture the anxiety behind our search for mirrors. We are insecure in our understanding of ourselves, and this insecurity breeds a new preoccupation with the question of who we are. We search for ways to see ourselves. The computer is a new mirror, the first psychological machine. Beyond its nature as an analytical engine lies its second nature as an evocative object.

(Turkle, 1984, p. 319)

To conclude, from Turkle's psychoanalytical perspective, the digital screen, like the cinema screen as interpreted by Metz, can also be interpreted as a kind of self-referential object, as something which produces an inward look. Nowadays, the fact that the screen can function as a self-referential object the way Turkle describes it, is perhaps best illustrated by the online social media websites such as Facebook, Twitter, Tumblr and Instagram. On these websites, the screenager can upload self-referential material and this way construct a second self online, across different digital networks. In what follows we will study self-referential practices in relation to the digital screen.

The selfie: an objectified real-time image of the self who is looking at the self

Nowadays the screen no longer operates only as a surface onto which moving images are shown to an immobilized spectator, like in the case of the cinema screen. With the smartphone and tablet-PC, one is no longer just sitting and watching anonymously at what happens on the screen, rather, as we saw in the second chapter, the digital device asks and invites the screenager to do something with the screen amidst the everydayness of life, constantly drawing attention towards its surface, to one or multiple windows that it displays. In terms of (moving) images, this implies that one is no longer merely a consumer, but a potential co-producer as well. Also, the screen becomes a device equipped with technology that can create and receive data in the form of text, photographs, audio and video. Consider that according to a study of the *Pew Research Centre* 56% of American Internet users uploads photos or videos, either as image creator (46%) or as image curator (finding images or videos online and reposting them (41%)) (Rainie, 2012).

Uploading photos and films on digital spaces has thus become a habit for a large number of people, which shows that because we lack cinema's regime of watching, nowadays there is no clear-cut divide anymore between director, actor, spectator and cameraman. Today the individual and the collective have a specific freedom to broadcast a wide variety of expressions, utterances, gestures and opinions via moving images and sound recordings. Moreover, by commenting on videos and other blogs or blog-like websites users co-construct meaning. An example of this is how the YouTube community subscribes to particular channels and videos posted in this medium. Everybody is always potentially author of images, sound and text and everybody and everything a potential object to be

registered by equipment which is easily accessible to the vast majority of people living in Western society. Also, it takes little effort to upload images and thus to show them to other people on a global scale. As long as there is a device at hand that can register images, text and sound, digital spaces like YouTube allow that what appears in the frame of a camera can become part of a digital archive that is growing as we speak. This means that with the digital screen, the everydayness of life is at all times and everywhere a potential screen-event.

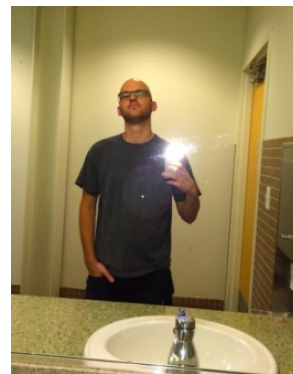


In this photograph⁴⁰ the woman is holding a tablet-PC, most probably to take a picture of the panda. This is possible because of the camera at the back of her device. As a side-effect, the tablet-PC becomes a real mirror in which the woman's face is visible. Only for us and the photographer, who are looking at the tablet screen from a specific angle. The woman most probably can't see the reflection of herself. Holding the screen the way she does, it can be assumed the screen functions as an electronic window that gives access to the reality behind the frame of the screen.

However, nowadays the camera has also turned inward as smartphones and tablet-PCs are equipped with a front-faced camera. Accordingly, digital screens become self-referential objects; activating the front-faced camera allows the screenager to see the own body. So unlike Metz' cinema spectator, the screenager now can see the own body on the screen. Turkle's second self, accordingly, can be taken literally. The digital screen invites the screenager to look at and make photographs and videos of the self. The by now famous *selfie* is the result of the abovementioned technological innovation and, importantly, the increasing access to the Internet. A selfie is a self-portrait usually taken with the camera of a smartphone. To take the picture one either has to stretch the arm or use a selfie-stick in order to be able to photograph the self using the front-faced camera, or stand in front of a real mirror, this way taking a photograph with the camera situated at the back of the mobile device. Both techniques are illustrated in the pictures below⁴¹.

40 Image retrieved from De Waegeneer, G., http://www.standaard.be/cnt/DMF20140403_01053349?pid=3198565, on 03/04/2014.

41 Images retrieved on 03/04/2014 from <http://www.tweaktown.com/news/41738/live-video-broadcasting-new-selfie-2017-gartner-predicts/index.html> and <http://i2.wp.com/www.findingdrishti.com/wp-content/uploads/2013/11/awkward-bathroom-selfie.jpg?resize=473%2C600>.



It is tempting to interpret looking at what the front-faced camera shows as a mirror-experience. Is taking a selfie the way the woman does not the first experience in which the screen's ability for self-reference should be taken literally? There is, however, no mirror-image in the strict sense. Looking at the screen to take a selfie, the subject has a different experience of the self than when looking into a bathroom mirror. First of all, a real mirror offers a reflection of the self, whereas the digital screen produces an electronic image, there is a live streaming representation. Only in the picture with the panda, when the screen is pitch black, does it accidentally function as a real mirror. Secondly - and this is the fundamental difference between screen and mirror - a real mirror allows the individual to look into the own eyes, which the combination of a screen and front-faced camera cannot, because screen and camera do not coincide, the camera is situated just outside the frame of the screen. As a consequence, *looking into the eyes while looking at the screen, the individual sees a pair of eyes that are not looking back, but that are looking down*. To take a self-portrait with a smartphone in such a way that in the photograph one is looking back at the spectator, the screenager has to look at the lens of the front-faced camera, this way losing sight of the image of the self⁴².

In short, while taking a selfie, the screenager who is confronted with the electronic image of his or her body can never experience the self like in a real mirror. However, something else becomes possible: If, when taking a selfie, the spectator does not look into the camera lens outside the frame of the screen, but at the screen itself, the individual sees an electronic image that offers a real-time representation of the self *who is in the act of looking at an objectified real-time moving image of oneself*.

42 In the same sense, when having a video conversation with someone using the program Skype or FaceTime and thus using the front faced camera to be able to look at each other, *it is impossible to look into each other's eyes*. To allow the other person to look into the own eyes, one must look into the camera lens, this way losing eyesight with the other person. When looking at the camera, the individual allows the other to look into the eyes, but one cannot look back, this way always avoiding real-time eye contact with each other.

Selfies and other self-referential material are up- and downloaded on the Internet

The selfie, however, cannot be discussed only in terms of what it objectively captures, namely an image of someone in the act of taking an image of oneself. In the previous section, the selfie is vacuum coated from the Internet and online social networks. Taking a selfie implies that the self-portrait the screenager takes has a high probability of leading a life online. The selfie is

a product of a networked camera. The selfie consists not only of a self-portrait photograph, but also of the metadata, generated automatically and by the user, of the chosen platform of sharing it as well as the following comments, 'likes,' and re-sharing by other users.

(Tifentale, 2014, p. 11)

In short, the selfie has to be related to the fact that the photograph is put online, onto the Internet, to be shared with friends and family by means of different social networks. Also, the screenager continuously uploads these pictures, to be liked, disliked and commented on by other screenagers. So an important reading of the selfie is that because it takes a snapshot of (a part of) the body, it is the strongest self-reference the screenager can put online, as the body is literally present on the photograph. Also self-referential is the act of uploading pictures of one's pet, dinner being served at a restaurant, the glass of beer one is drinking on a sunny day, the shadow of one's own body, a poster of the marathon which one just completed, etcetera ... Although no selfies in the strict sense, these kind of pictures relate to the personhood of the individual in a similar way. More precisely, the experience of the screen nowadays involves to a great extent that the individual is taking pictures of his or her own body, of objects that relate to the personal life, and activities the individual has experienced, is experiencing, or will experience in the future. These representations of oneself and the life one is living, is then uploaded on social network sites. Accordingly, the individual is actively part of a screen culture in which the "I" or "me" or "self" is up- and downloaded on social network sites, illustrated by the motto of "You-Tube", namely *Broadcast Your-self*. The screenager is thus exposed to selfies and other self-referential representations of oneself and others. In other words, the selfie, which can be regarded as an objectified snapshot of the self - because it connects to the Internet - is at once a *psychological image* producing a subjective, second self in interaction with a digital community.

On the website *selfiecity.net*, 3200 selfies are categorized according to age, city, pose of the head, open or closed mouth and open or closed eyes among other things. On 574 photos, the eyes of the individual are closed. When the eyes are open, however, it appears that most of the people look right into the lens. Because the website *selfiecity* offers the possibility to rapidly watch one selfie after another within the same frame one can experience the fluid merging of one image into another. The impression is that although so many different people with different characteristics and looks pass by at a rate of two or even three pictures per second, a pair of eyes are looking back at us, even though time and again they belong to a different person. This is the result of the fact that the screenager taking the selfie is conscious of the virtual life one is participating. At the moment

the snapshot captures the self, most photographers of selfies stop looking at the image of themselves, and this because the selfie should be related to the online community, which can only look into the eyes if the act of looking, while taking a selfie, shifts from the screen towards the black hole of the camera. The self-consciousness is of course similar to how, when being photographed by an analogue photo camera in a pre-digital age, one was conscious of the image that would be produced once the photo film is developed. The afterlife of a photograph was the family photo book, for example. However, in an age of digital screens, images are being uploaded on the Internet as we speak, creating a galaxy of (moving) images which stay online forever. Accordingly the self-consciousness when looking into a camera lens nowadays has a specific character, constituted by digital screen culture, its devices and the ease with which the screenager is connected to the Internet.

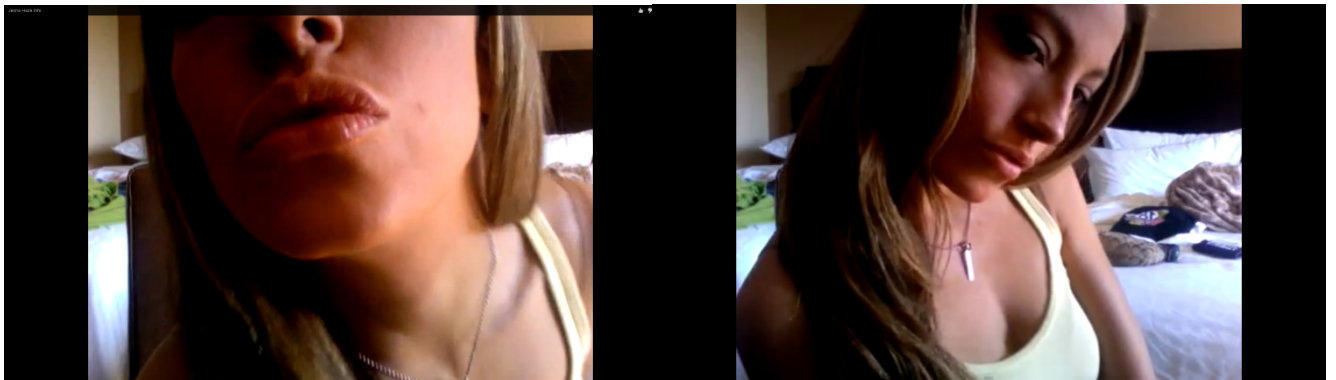
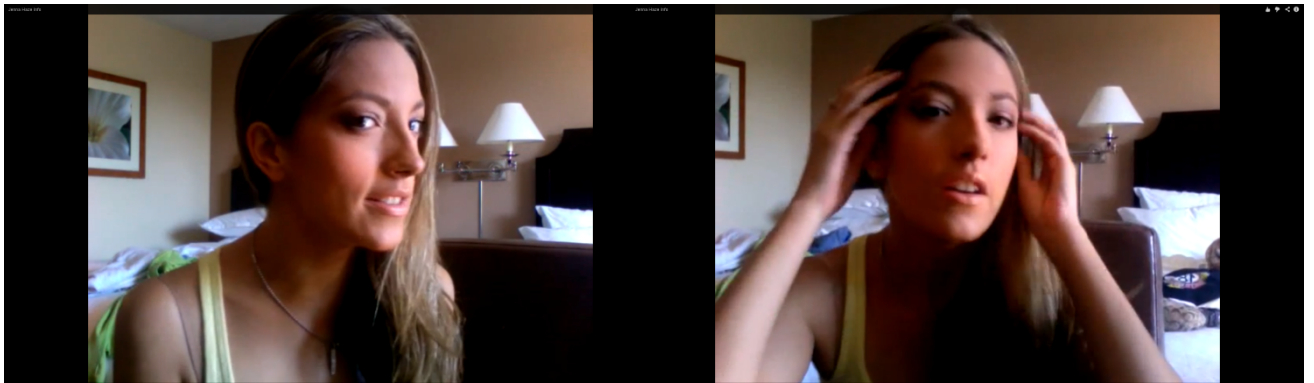
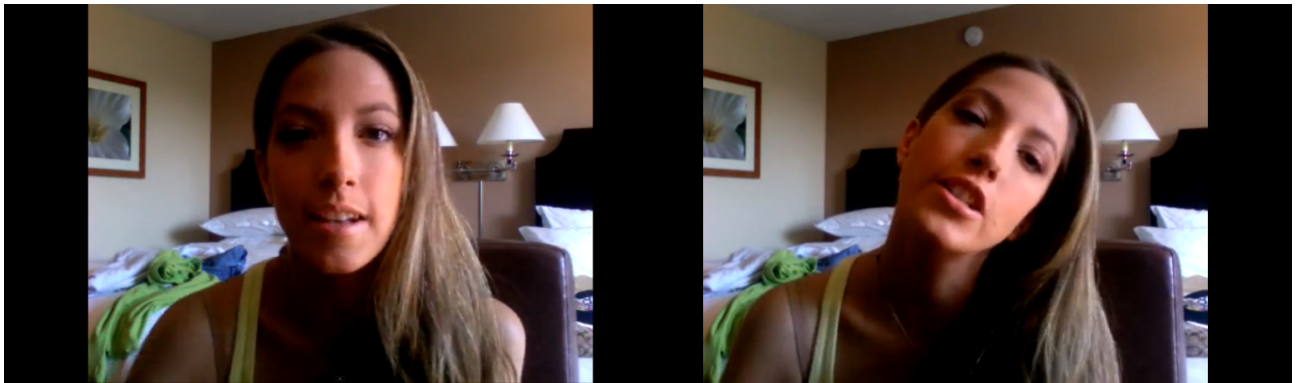
The question coming to the fore is what kind of experiences selfies and other self-referential data in the form of digital photographs and comments, for example, produce in the long term, what screen-subjectivity becomes (im)-possible. In the following sections I will therefore discuss the screen's capacity for self-reference by giving examples of (audiovisual) selfies and the way the selfie is received by both academics and non-academics. The general hypothesis of this chapter is that "*Look, this is who you are*", the psychological self-reflection which the psy-sciences produce both in academic theory and concrete psychological practices such as therapy, has extended in popular image culture. Taking a selfie and uploading it onto a social media website - "*Look, this is who I am*" - will be studied in the following sections in relation to psychological theory, which, it will be argued, is not only used by academics, but also by different non-academics who, when giving their opinion about selfies and the relationship of the screenager with digital technology in general, heavily psychologize the screenager.

Examples of the screen's capacity for self-reference

An example of an individual image creation is the YouTube video *Jenna Haze Info* (2011)⁴³, in which a young woman warns her online-community that there is at least one fake social network identity with her name active on the Internet. Consequently she repeatedly sums up her real virtual identities on the social network sites Facebook, YouTube, MySpace and Twitter. Or, to put it differently, she lists up the channels where the *real* Jenna Haze is broadcasting herself by uploading self-referential material (e.g. videos, photographs and digital text). She says that there are a lot of fake identities, which she explicitly wishes to distance herself from. The short video, however, is not only about establishing and protecting her online identities, as her message is much more physical than linguistic, showing herself self-consciously as she poses before the camera while she is speaking. In fact, it can be argued that she is not only saying onto which different channels she is broadcasting herself, the video is also literally broadcasting her body.

⁴³ Retrieved online on YouTube on 14/03/2013.

What we see is an audiovisual variant of the selfie. In a “normal”, photographic selfie, the person taking the selfie prepares to be captured by digital photography. So there is a moment of preparation in which the individual becomes conscious of the pose that is achieved and what the result of this pose will be at the time the snapshot is taken, that is, when the sound of the “click” is being produced. This is why, I argued above, at that moment most screenagers stop looking at themselves, because they have the end result and the digital community in mind. The self-consciousness can be interpreted as a psychological relationship with oneself, how the person wants to be seen and appear in front of the community. Unlike in a normal selfie, however, an audiovisual selfie *has no click*. So there is no snapshot in the near future (five seconds, for example) in which the individual can prepare in relation to the result. In contrast, the self is immediately and constantly exposed to moments of representation. Hence, the audiovisual selfie shows a subjectivity in constant awareness of the self. In line with this, the young woman seems to be taking a kind of *video pose*, staging herself before the camera in different positions, of course not preparing for a click, but continuously and fluidly changing the shape of her body and face as she is presenting herself before the camera. She is permanently staging herself and exposing her body from one beautiful pose to another.



Another example of audiovisual selfies on YouTube is a whole series of video clips titled “Am I pretty or not?”, in which young girls upload short videos in which they ask the YouTube community whether they are pretty or not. Basically every young girl literally asks the same thing in the same way, often explicitly asking the spectator to leave a comment that will make them feel good about their looks. The language itself, however, is not the only thing that repeats itself in a stereotypical way, but also the act of taking a video pose, which is quite often similar to the video pose of the young woman we just discussed.



The blunt remarks below the videos of these girls range from “You’re an attention whore” to “You’re not attractive at all”. These comments are then disputed or reacted to by other people (who comment that the girl in the video is pretty, that people shouldn’t call children ugly etcetera) and they usually end their remarks by giving advice to the girl. The conversations below this kind of videos recognize, problematize, laugh with, are concerned with ... the self-centeredness the girls seem to copy from each other. Of course, this is an extreme example of a particular genre or “meme”, which does not represent the selfie-culture as a whole or the online culture of virtual identity. It does present, in an extreme way, that when relating to the culture of self-representation the individual stages him- or herself.

In this regard it should be noted that there are many different self-referential subcultures to be found online, each with different filters, rules of conduct and regimes of watching. Typing the word “selfie” on the social network site Tumblr, which unlike Facebook has very little restrictions concerning nudity, produces mainly pornographic images, naked women staging themselves in front of a bathroom mirror looking back at the anonymous spectator, selfies taken during sexual intercourse, pictures of genitals and so on. Or consider the social medium of *Snapchat*, where pictures can be uploaded only to be watched for ten seconds, after which they disappear forever. Creating the idea that uploaded pictures are not archived results in an image culture where pictures of oneself are hardly censored and uploading pornographic selfies, sometimes without hiding one’s face, is considered quite normal. Of course, although Snapchat has no archive, the individual can

also take a picture of a photograph appearing on Snapchat and publish it online by means of another digital platform.

On Facebook, up- and downloading selfies is strictly regulated; there can be no or little nudity and it is a space where family and friends watch each other's representations. This is why youngsters, apart from being on Facebook, where friends and family reside, also and anonymously upload pictures on sites like Tumblr and Snapchat, digital spaces one can compare with an attic or some hidden space in a public park, places of secrecy where youngsters go to, to avoid parental supervision, to smoke their first cigarette, so to speak. What the Facebook culture vis-à-vis selfies and the YouTube videos of the girls have in common, however, is that a particular intimacy is made public, albeit in accordance with the specific culture of the respective websites. Also, in the different videos of the young girls, it seems that a particular grammar is copied from each other. The way of talking to and looking at the screen exhibits the child almost in an erotic way; the gaze plays a central role in the staging of this intimate question whether they are pretty or not to the YouTube community, a community which, by means of the comments below these videos devours the girls' subjectivity and laughs aggressively with their public videos. Extreme examples of selfies, so Tifentale argues, can create a kind of loss of self-awareness. She discusses the subgenre of selfies taken in front of a bathroom mirror. "The most intimate place for narcissistic contemplation, the room with the mirror - a bathroom for example, - becomes in this context the most common of places, where every distinction of the self is in the end abolished" (Tifentale, 2014, p. 9).

How should we interpret the gaze with which the screenager looks at the screen, takes a photograph of this gaze and uploads this way of relating to the screen on websites such as YouTube, Facebook and Instagram? The examples of self-reference can be related to Guy Debord's *Society of the Spectacle* (1983), a study which Birman applies to our present condition in *Je suis vu, donc je suis: la visibilité en question* (2011). Birman argues that the social spaces have transformed into a large theatre scene and that the subject of the spectacle society, in order to exist, ceaselessly has to *perform*. The actions of the subject have to be understood in terms of *mise en scène*; to be seen, so the argument goes, the subject has to perform, without which he or she absolutely cannot exist (Birman, 2011, p. 49). In the dance performance *Antithesis, the future of the image* (2014), dancer and performer Michiel Vandavelde also makes explicit use of Debord's theory by referring to it in a self-written text that is projected for the audience to read. This is alternated with dance, as Vandavelde experiments with the possibilities and limits of staging the naked body in different shapes.

By transferring those movements (everyday movements that dominate public space are coming from advertisement or video clips) from commercial context to the theatre, it becomes clear that they are not that 'everyday' at all but rather hyper-constructed.

(Vandavelde, 2015)

Kristof van Baarle, a PhD student who writes in relation to *Antithesis*, says that in everyday life the spectacle penetrates the real, “it both produces the real and infiltrates in it to such an extent, that the difference between the real and the virtual becomes difficult to tell” (van Baarle, 2015, p. 33). He further argues that nowadays this spectacle is not something the spectator merely consumes, but something that the spectator also *produces* herself. This can easily be related to the act of taking a selfie and uploading this on online social networks. Less strong, but in the same way, pictures of one’s dinner, pet, garden, etc ... are staged realities to be uploaded infinitely onto the Internet. The “Am I pretty or not?” YouTube videos, the comments below these videos, the video of the young woman, the search results on Tumblr when typing “selfie” ... all illustrate what Devos describes as “the public becoming flooded by the private”, or put differently: the private space folding over into the public (Devos, 2012, p. 83). “Via photos and videos posted on websites or blogs, in Internet forums and chat rooms our intimacy becomes, to use a Lacanian neologism, *extimacy*” (Devos, 2012, p. 83).

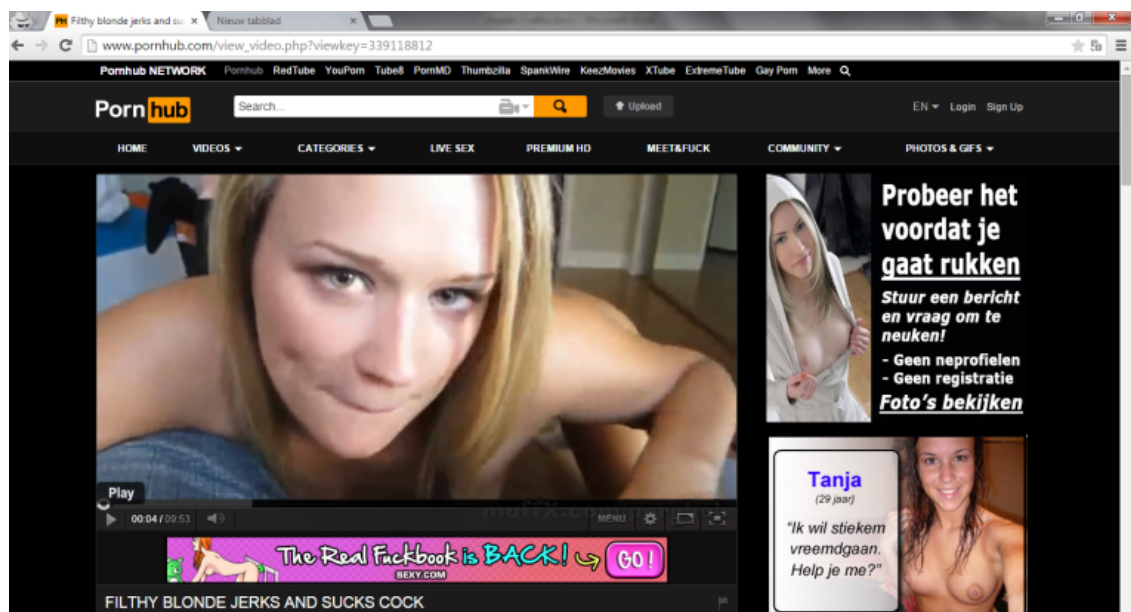
Agamben’s discussion of the female gaze in pornography

Therefore I would like to return to Monika’s gaze in Bergman’s film, with which the gaze of the young woman and the young girls can be associated with. Staring into the lens of the camera for thirty seconds, this gaze, at the time it was shown in the cinema auditorium, was a blunt provocation. Nowadays, however, it seems that this gaze - someone being filmed or photographed directly looks into the camera - is omnipresent. The abovementioned videos and other (audiovisual) selfies testify of this fact. In *Profanations*, Agamben argues that nowadays Monika’s gaze has been rendered banal, for example in contemporary pornography. “In the very act of executing their most intimate caresses, porn stars now look resolutely into the camera, showing that they are more interested in the spectator than in their partners” (Agamben, 2007, p. 89).

In pornography the female gaze is an important catalyst of the sexual arousal on behalf of the spectator. Agamben connects the act of watching pornography to Benjamin’s words: “If there is anything sexually arousing here, [...] it is more the idea that a naked body is being exhibited before the camera than the sight of nakedness itself.” (Benjamin, in Agamben, 2007, p. 89). The gaze of the female pornstar looking into the lens of the camera, is explicitly making contact with the anonymous spectator. It is a blunt affirmation of “the solitary and desperate consumption of the pornographic image” (Agamben, 2007, p. 91). Or to put it differently, the female gaze of a porn actress produces that the spectator consumes the image and the sexual drift that watching a staged sexual act brings about.

This is exemplified to the extreme by particular genres of contemporary Internet pornography where the point of view of the camera - a point of view with which according to Metz the spectator identifies herself - coincides with the point of view of the male actor who is looking at the female gaze while simultaneously performing sexual activities. In the picture below the woman is looking

into the camera held by the male actor whose pants she is about to unzip⁴⁴. This camera position strengthens the vicariousness of watching pornography: the spectator's position coincides with the body of the performer who is holding the camera. To this must be added that the female porn stars being filmed often talk to the camera as if it is not an object, but a sexual subject looking back at them, this way directly addressing the spectator. Watching the film, the screenager is therefore, vicariously speaking, in the position of the person having intercourse with the woman. In that position, the gaze of the female pornstar captures the gaze of the spectator, who, in line with Agamben's argument, consumes, not the naked body and the intercourse, but the *staging* of intercourse and naked bodies. In the act of watching pornography, the female gaze thus plays a pivotal role. This is exemplified in this video by the ratio with which the woman looks into the lens - approximately ten times per minute - and by the fact that after the male actor ejaculates on her face, the female gaze explicitly and, like Monika, for a very long time, looks into the lens, something which is actually noticed in the comments below the video: "Love the end where she just stares at the camera". This is not coincidentally what the two women depicted next to the video are doing. Looking right into the lens of the camera, they are seducing the Internet user to click on the erotic advertisement.



The female gaze we see in threefold in this picture can thus be interpreted as an affirmation of consumption. Pornography makes the most private experience public. One reading of this practice is that it makes the spectator consume the staging of nakedness, this way making the most intimate actions banal. An important aspect of the apparatus of pornography is the face, and more specifically the gaze looking into the camera. Browsing on Google Images, we only need to type in

⁴⁴ Video and image retrieved from http://www.pornhub.com/view_video.php?viewkey=339118812 on 27/07/2015.

the brand of a perfume, for example, to experience this female gaze looking right at us⁴⁵. This gaze, according to Agamben, actually blocks pornography into becoming what he calls “a new collective use of sexuality” (Agamben, 2007, p. 91). With the gaze the staged nakedness becomes something to be consumed to enjoy the sexual drift. The gaze plays with the fact that the screen can function as a self-referential object. It directly looks into the lens, this way addressing the screenager as the spectator of the event that is unfolding. This way, when the private is made public, in Agamben’s words, the possibility of use is already captured for a fixed goal. The screen, here, functions as a self-referential technology in relation to consumption, not only de-subjectifying the actors in the video, but also the spectator watching this event.

One particular female porn star, Agamben argues, confronts the spectator with this. Her face, Agamben continues, is explicitly filmed while performing sexual intercourse. However, aware of being filmed and looked at, the actress stoically refuses any contact of her gaze with the actor or the spectator, this way ignoring the conventions of pornography. “Her impassive face breaks every connection between lived experience and the expressive sphere; it no longer expresses anything but shows itself as a place without a hint of expression, as a pure means” (Agamben, 2007, p. 91). In short, according to Agamben the porn actress’ gaze disrupts the exhibition before the camera. By categorically refusing to look into the camera, this porn star produces a state of exception. It can be argued that paradoxically, avoiding to look into the camera and this way avoiding any eye contact with the spectator, reproduces the effect of Monika’s gaze. Now I repeat myself, but the gaze of Monika, looking into the camera, had the potential of producing a shock, an awareness, a critical distance about spectatorship itself on behalf of the cinema spectator. It was a confrontation with the act of seeing in the cinema auditorium and thus with the own gaze. However, in digital screen culture precisely this gaze seems to be omnipresent. In pornography, according to Agamben, it functions to seduce the spectator into consuming the experience. By inverting Monika’s gaze the pornstar actually allows that the effect this gaze produced can resurface. This because the actress simply avoids to look into the lens. The pornstar’s face, like in other pornographic images, is the central focus of the camera. Explicitly showing her face but refusing to look into the camera at the same time, this particular pornstar makes inoperative the gaze which is seducing the spectator to consume. Her face, Agamben argues, functions like a naked landscape, she makes inoperative the dominant grammar of pornography, the apparatus of pornography that captures the individual behavior for a particular, one-dimensional use.

Having studied two examples of audiovisual selfies and Agamben’s reading of the gaze in pornography, the question we could ask is how to interpret the act of taking a selfie or staging oneself in front of a digital, networked camera, looking into the lens and uploading this material online. The selfie, international word of the year in 2013, has received worldwide attention. Not only can selfies of famous people become world news, the act of taking a selfie has become the

⁴⁵ In *Ways of Seeing* (1972) John Berger’s third essay deals intensively with the female gaze, recognizing a particular way of looking at the spectator which can be traced back to the Renaissance period.

object of debate, both in academic circles, Internet discussions and newspaper articles. Tifentale sums up some of the most common remarks, which all seem to take into account that selfies intrinsically imply that the self-referential way of relating to the screen will appear on the Internet, to be seen by others:

Selfies have been called ‘a symptom of social media-driven narcissism,’ a ‘way to control others’ images of us,’ a ‘new way not only of representing ourselves to others, but of communicating with one another through images,’ ‘the masturbation of self-image’ and a ‘virtual ‘mini-me,’ what in ancient biology might have been called a ‘homunculus’ - a tiny pre-formed person that would grow into the big self’.

(Tifentale, 2014, p. 5)

Even the academic and non-academic comments that attempt to explain selfies without judging them, focus on the individual from a psychological perspective. They range from “it makes the person feel good” to “it’s an experiment with different identities” or “it’s a way of having an active control how you appear on online social networks”⁴⁶. Although not all pictures on the web are selfies, the selfie might indicate that one of the most important habits of screenagers consists of using and experiencing the screen in a self-referential way. American teenagers, for example, share a large amount of information about themselves online. Of those studied, 91% post photos of themselves - up from 79% in 2006 (Pew Research, 2013). In the public debate about screens, the conclusion seems to be that the screenager takes too many selfies, or, more in general, uploads too many self-related photos. It is someone who exposes herself too much or excessively, too sexual, a plain narcissist, belonging to a generation which cannot cope with living in an age of screens. Using terms and phrases like “virtual “mini-me”, “the masturbation of self-image” and “a symptom of social media-driven narcissism,” psychological theory seems to be put into practice, to diagnose the screenager as a potential narcissist. In short, it appears that to give meaning to this digital reality, our society uses a psychological discourse.

However, according to an extensive research on selfies, only 3-5% of the images analyzed could be defined as selfies, which shows that the importance of selfies should not be exaggerated (Tifentale & Manovich, 2014). Also, I claim that staging oneself online by means of selfies cannot be reduced to narcissism or plain seduction, although surely these examples can be found on the Internet. In what follows I will reflect on the psychological remarks on the selfie and virtual life in general, in order to look at the gaze which photographs itself in a different way.

The psychologized gaze within the experimental zone of Reality TV

In this section we will study the culture of Reality TV as discussed by Devos, as here the relationship between the image and psychological theory might be exemplified best. Devos argues that the

⁴⁶ BBC new article on 07/06/2013, retrieved from <http://www.bbc.com/news/magazine-22511650> on 27/07/2015.

concept of Reality TV can easily be seen as a *psychologized* screen practice. I consider this section crucial to understand what it means to say that the crisis within postmodern sciences has reached the daily life of the screenager. “*Look, this is what you are*” is a mode of introspection which came to full practice with the theory of psychoanalysis. The introspective gaze can be traced back to psychological theory that historically arose together with the Enlightenment⁴⁷. Reality TV, on behalf of the participant of this genre of television, can be regarded as one of the strongest immersions in this introspective look. However, in a similar way this inward look seems to be present on social media as well, and the selfie, I argue, literally confronts us with this.

In Reality TV, the participants of television shows like *Big Brother* are situated within “an experimental zone”, be it a house, an island or somewhere else. This experimental zone is full of cameras and the participants are informed where these cameras are located. The fact that they are being filmed everywhere and anytime is not seen as an obstacle. Or to put it differently, while being filmed, Devos argues, the people on the screen *remain themselves*, although this is of course a staged attitude. “What we see we believe to be the manifestations of the personal psychology of the participants and of social psychological mechanisms” (Devos, 2012, p. 73). “We cease to see the mediation”, that is, the script and the camera. In relation to this, Devos refers to Benjamin’s theory of the illusion of an equipment free reality (Devos, 2012, p. 74). It could be argued that like the cinema spectator forgets the idea of a film set and the whole off-screen apparatus that made the film possible, watching Reality TV, we also cease to think about the images as belonging to a staged event.

This is what celebrity culture shares with reality TV: everyone is aware of the manipulations and machinations but one still thinks to see at least a glimpse of the real authentic thing.

(Devos, 2012, p. 78)

What is more, making use of scientific terminology and focusing on issues like “*self-realisation, self-actualisation and taking one’s place in the social hierarchy*”, Reality TV is an example of a cultural practice that runs on a *psy-script*, (Devos, 2012, p. 73). Accordingly participants, the presenter of the reality show and the audience put into practice terminology of the psy-sciences (Devos, 2012, p. 73). Reality TV can be understood as a kind of micro-cosmos where the psychologized gaze is omnipresent and dominates the experience. What is shown is a human zoo, where *homo psychologicus* is put on display, knows he or she is there for that reason and accepts this condition. Devos refers to the strategy within the culture of Reality TV to let participants look at a screen, together with the presenter, to psychologize the actions that took place inside the experimental space. The participants, while still part of the show, are being filmed in the act of looking at moving images of themselves. “*Look, this is what you are*”. And, so asks the presenter/psychologist of the show: “*How does that make you feel?*” These kind of prompts, Devos

⁴⁷ For a thorough analysis of this movement from within psychological theory towards, among other things, contemporary image culture, see Jan Devos, *Psychologization and the subject of late modernity* (2013).

argues, steer the participant of Reality TV to look at the self and contemplate about this, while being watched by an anonymous crowd. In short, the participant exposes him or herself to the different lenses of the cameras and to the psy-script that belongs to this genre of television. In other words, the TV-spectator of reality shows is looking at moving images which are significant because in those images someone is looking at oneself in playback. It can be argued that Reality TV is a commercial subculture that puts *psychologization* most clearly into practice. Not because the participants of the show look right into the camera as a sign of awareness that they are being watched, but because the act of looking inwardly, at the self, is what the show is all about. The participants, who know and accept that the anonymous voyeuristic gaze of the spectator is watching them, look inwards, at themselves and their own behavior.

In TV-shows like *Britain's Got Talent* the situation is somewhat different, although it boils down to the same thing. Here the gaze and the event compete with each other in terms of importance. In this show ordinary people can present what they are good at in front of a jury as they sing, dance or do martial arts among other things. During the performances the camera constantly shifts between the act of the participant and the jury's faces, who are producing clear emotional states in the face of the event. They are explicitly crying, laughing, looking stoically and indifferent, among other things. It can be argued that the script of such talent shows focuses on emotional states of different faces, onto which the camera frequently zooms in, this way making the spectator look at a program that is relevant *because* people are looking at the event the spectator is also looking at. The event itself, i.e. the performance of the individual, although necessary and not unimportant - the face has to have some staged event to look at to be able to become emotional - is in danger of becoming secondary in the sense that its function is to give the gazes of the jury a seemingly authentic emotion.

On television nowadays one can see a particular kind of filming: the camera zooms in on people who are in the act of looking while they are spectators to the subject of the program. Not just in Reality TV, but during interviews, group discussions, game shows, documentaries and so on, the camera zooms in on the face and gaze, shows someone *because* that person is looking at something. In that line of thought, when something happens, the camera often does not zoom in anymore on the event that is taking place. Not so much to maintain a general overview, but rather to not lose sight of the reactions of the people present at the event. This means that spectatorship itself is something the TV-camera focuses on as a meaningful aspect in itself. In fact, sometimes, halfway the experience, the camera turns away from what is happening and simply zooms in on someone's face, where an expression can be seen in relation to what is happening just outside the frame of the camera.

Another example are television programs about television culture in which people are filmed as they are watching television themselves. In Australia, the program *Gogglebox* records ten groups of people sitting in front of their TV-screen. Watching *Gogglebox*, the viewer accordingly sees TV-

spectators watching the shows that aired the week before⁴⁸. This way, the “authentic spectacle” that unfolds itself is ordinary man watching a spectacle on the domestic screen. The self-reference, *look, this is what you are*, accordingly, is very straightforward as the TV spectator watching this program sees someone looking at a TV-screen, thus performing the very act the TV spectator is performing him- or herself.

But why? Why is it that in these examples spectatorship itself explicitly enters the frame of the camera, not by accident, but as a cultural phenomenon across different programs? In Reality TV, the participant of the experimental, staged event, analyses him- or herself while still being part of the event, to talk about how one feels while being part of the program. In talent shows, the jury stages their “authentic” emotions while looking at the performance. Watching TV-programs that film how people watch TV at home, even vacuum coats the screen from anything that has nothing to do with the gaze itself, the spectator is looking straight into a mirror. It seems that in our culture, because of the omnipresence of screens, the act of *looking* has become a kind of cultural mode with which we are saturated to the extent that it is a habit we are no longer aware of, although all the time we consume images that are significant because those images show someone in the act of looking. This camera technique is a signature of film director Steven Spielberg, who applies this in many of his films. The camera slowly zooms in on the gaze that is faced with the spectacular the spectator has not yet seen, but is about to see: a dinosaur, a shark, a spaceship, an invasion of enemy troops. Precisely this kind of camera technique is omnipresent on the TV-screen nowadays, not only vis-à-vis the spectacular, but also in relation to everyday things, even watching TV itself, this way creating a culture of looking at the act of looking.

The TV-spectator, from within the private sphere of the household, consumes this introspective gaze. Yet, nowadays the screenager also actively produces this gaze on the Internet, by uploading representations of oneself. Consider the fact that the act of uploading images of oneself while watching a movie has become a hype on Twitter, where people upload pictures or videos which depict their face the moment they witness something spectacular. Also, there is a genre of audiovisual selfies in which the screenager films him- or herself with in the background something funny, weird, disgusting ... Watching this kind of audiovisual selfie, one goes back and forth looking at the event that is taking place and looking at the expression of the person holding the smartphone, who is showing self-consciously that he or she is aware of what is taking place in the background.

To give just one more example, nowadays television blends in with life on the Internet, where this idea of watching people who are watching the screen is very popular. In the popular TV-series *Game of Thrones* - which a lot of people watch by downloading it on their PC - there is a famous episode called “The Red Wedding”. During this episode a lot of important characters gruesomely get killed

48 Retrieved from <http://junkee.com/gogglebox-the-tv-show-about-watching-people-watching-tv-is-actually-a-compelling-display-of-the-ordinary/52916> on 27/07/2015.

in one scene. After this episode aired on television, as a reaction, YouTube videos got uploaded which show people watching this specific scene in their living room. While watching television, the spectator thus aims the video camera at oneself, to record how he or she is watching TV or PC. Afterwards this moving image is uploaded onto the Internet. What is more, after these images appeared on YouTube, the author of the books on which this TV-series is based - so the person who is responsible for this scene - appears in a television show. During an interview he watches the reactions people uploaded onto YouTube in relation to the violent scene. This implies that when one watches this interview, the TV spectator is looking at two people who are looking at a screen onto which spectators are seen who filmed themselves looking at a television screen⁴⁹.

It can be argued that because of the Internet and digital screens all possible combinations are possible ad infinitum, as the example of *The Red Wedding* illustrates. In the words of Jan Devos, it seems that the screenager is caught in a hall of mirrors, a situation that is not something only to be found in Reality TV anymore. Devos argues that the psychologized gaze - the fact that the subject is invited to look at the self - came to its fullest realization with a technological shift that allows looking at the self in real time. "In one[']s actions one already looks at the screen capturing the events" (Devos, 2012, p. 84). That is to say, the script of Reality TV - the participant enters an experimental zone in which all actions are being filmed and he or she is aware of this - can be considered as a global condition the screenager finds him- or herself in. With Internet and the latest revolutions in digital technology, it can be argued that this script - *look, this is what you are* - has gone viral on the virtual networks across the globe. Social network sites like Tumblr, YouTube, Twitter and Facebook can accordingly be regarded as "experimental zones" to upload not only the personal subjectivity of participants of Reality TV, but of each and every one of us. This subjectivity, however, copies the same psy-script used by Reality TV: the screenager stages authentic events, although - as Vandeveldt points out - these contemporary images are rather hyper constructed (see page 142).

The digital screen's mobility and the easy access to the Internet turns the concrete reality into a particular experimental zone. But this reality, in which one or multiple screens are present, can become scripted like Reality TV, as if existence only becomes meaningful *because* the subject uploads (moving) representations of the time and space he or she is in. As Virilio argues: "Our contemporaries no longer want to see but only to be seen by all the tools of audiovisual televoyance" (Virilio, 2010, p. 89). This does not imply, however, that selfies can only be interpreted as uncritical images in which the screenager consumes and produces self-reference. Isolating the selfie and problematizing this screen-practice, can even be considered as problematic. It is not just about the desire to be seen by others, but about being seen while in the act of looking back at a virtual mass-community who are potentially looking at these images in the way the

49 In that regard it is interesting to know that the spectators' reception of the television series *Game of Thrones* influences the writer, who admits that he takes into account reactions in relation to the television series when writing the next book in this series. Moving images retrieved from <https://www.youtube.com/watch?v=azr99OfKLxk> on 27/07/2015.

spectator of Reality TV is watching the participants residing in the house of Big Brother. Selfies can confront the screenager with how, in digital screen culture, the gaze is caught in a hall of mirrors.

The overflow of psychology into the public and cultural sphere

So far we have addressed the way the screenager produces and experiences a particular kind of *psychologized* subjectivity that arises vis-à-vis the evolutions in digital technology. In this section we will study how in the public debate the screenager is dealt with and looked at. On the basis of Devos' theory I will argue that the debate on the influence of technology on subjectivity potentially de-politicizes the individual by re-psychologizing him or her.

Two years ago the Flemish newspaper *De Standaard* published a series of columns that illustrate a particular kind of concern of society with the individual and the different generations⁵⁰. A column of the Dutch writer Oscar van den Boogaard, *Twenty-year-olds in crisis* referred to academic research which states that this generation is going through an identity crisis. While he expressed deep concern he was careful not to subscribe one particular theory. He was rather presenting the claims of academics; here and there affirming the diagnosis by describing experiences he has had with this age group. His column, however, was interpreted as a provocation: his inbox "exploded" with emails from angry youngsters belonging to the generation he described in his column. One respondent criticized him for wrongfully labeling his age group and he stated that van den Boogaard actually belonged to the generation from which twenty-year-olds inherited the very crisis van den Boogaard mentioned.

Another twenty-year-old's reaction, however, confirmed van den Boogaard's point of view. What is more, in *Kill your ego, darlings*, she analyses her own generation as not being able anymore to enjoy the café latte they have ordered without first taking a picture of it and posting it on Facebook or Twitter. Or, whilst traveling, the camera of the smartphone dominates the experience, as this generation is concerned with the question how this or that picture would be interpreted by Facebook friends. This columnist thus refers to what we have studied so far, digital screen culture and the self-referential practices it generates. Also, she clearly psychologizes the self-referential experiences her generation is having vis-à-vis the digital screen. This generation, she concludes, must prove that they are more than a social time bomb, narcissist and only interested in looks, kicks and networks.

50 Columns were retrieved from http://www.standaard.be/cnt/dmf20130322_00514602,
http://www.standaard.be/cnt/dmf20130329_00523563,
http://www.standaard.be/cnt/dmf20130329_00523193,
http://www.standaard.be/cnt/dmf20130327_00520583,
http://www.standaard.be/cnt/dmf20130326_00518908 and
http://www.standaard.be/cnt/dmf20130407_00532246 on 24/04/2015.

Two days later, the column *Dear twenty-year-old, show a little bit of character* affirms everything the young woman criticized about her own generation. The author's argument was that when this generation was still watching *SpongeBob*, her generation, when in their tweens, was also going through a crisis. What is more, nowadays every generation is in a crisis, so she continued. One week later the argument that an existential crisis has reached *all generations* is exemplified in yet another column, this time by someone in her thirties who said that unlike the digital natives born after 1985 or the generation now in their forties, she grew up standing with one leg in the analog world, and with another in the digital world, which was also very difficult to cope with. At first the columnist of *Dear twenty-year old* analyzes society for causing the particular pressure the individual has to cope with. *Anyone who isn't wearing designer clothes isn't hip. Anyone not travelling the globe is a nerd. Sixty-year olds that don't go waterskiing are old fashioned and eighty year olds who don't use Twitter are considered dead ...* The pressure coming from society, she argues, is indeed very difficult for the individual to cope with. This analysis of how society has an impact on the individual is then all of a sudden followed by therapeutic advice when this columnist directly addresses the individual twenty year old:

Unless you yourself choose something else. Unless you don't want to be überhip per se. Unless you are able to genuinely like an empty calendar or if a Skoda car is sufficient for you. Unless you show a little bit of character, dear twenty year old, and make your own choices, averse to the imperatives of social media and trendzzz. And above all: without making others responsible for what is not within reach.⁵¹

Although at the onset this columnist analyzed society as a whole, with this quote we see a language that all of a sudden zooms in on *the individual*. In other words: in the discussion in newspapers and the public domain in general, a particular kind of *inward look* which is present in the practice of taking selfies, for example, is not only recognized, but *re-psychologized* as well. Accordingly the debate shows that there is a continuous doubling up as the discussion is caught in a psychological loop. More precisely, the debate shows that this inward, psychologized gaze of the screenager is de facto recognized from a psychological perspective, hinting that the screenager has to be put on the couch or at least needs to get rid of particular kinds of self-centeredness. Paradoxically, the so-called narcissist screenager who cannot give meaning to reality without posting what he or she is doing on social networks, thus has to look at oneself and psychologize that self. As if objectively one has to take a certain distance from who one is, to change oneself and become fully responsible for what one does (or does not do) in life. "*Look, this is what you are*": someone who is potentially too pre-occupied with his or her online representations. In short, there is a psychological analysis that, although it takes the culture of the screenager into account, nevertheless zooms in on each individual, who should be able to cope with the pressure that society produces. Accordingly, the public debate testifies to a re-psychologization of the screenager and a very one-dimensional reading of cultural practices in which self-reference is the guiding force of the event. Consider how

51 Retrieved from http://www.standaard.be/cnt/dmf20130329_00523193 on 24/04/2015, free translation.

Devos describes what he calls the illusion of an equipment free, real psychology:

This apparent disappearance of mediation is not only at work in reality TV, which encourages us to disregard the necessary intrusion of technology and purports to show us *life as it is*, but it can also be discerned in the broader phenomena of psychologization. While in almost every sphere of social life one is accustomed to adopting a psychologizing discourse in order to explain and deal with what is going on between people, this strongly mediated approach to human reality is nevertheless experienced as the *real psychology* of man, *equipment free*.

(Devos, 2012, p. 74)

Is this not what the public debate demonstrates? Namely that the self-centeredness which is problematized in the end, is actually and paradoxically, re-affirmed by an invitation to look at the self to get rid of a particular kind of self-centeredness which the individual, although the pressure of society is not denied, should nevertheless be able to resist? In the end, the column *Dear twenty-year-old, show a little bit of character* illustrates what Devos calls “an overflow of psychology into culture”, by giving therapeutic advice to the younger generation instead of critically examining self-referential practices not only twenty-year olds are relating themselves to, but all generations of screenagers. In therapeutic culture, numerous (self-) help books with titles such as *Why is it Always About You?: Saving Yourself from the Narcissists in Your Life* are examples of the same psychological loop (Devos, 2012a, p. 52).

Is this not the crux of psychologization: to induce the psychologizing gaze in the layman? You are offered psychological theory in order to cope with narcissism and narcissists. Psychologization is hence the induction, the interpellation through which the (late)modern subject is called upon not only to adopt the signifiers of psy-discourse but also to assume the position of the psy-expert to look upon him- or herself, the others and the world.

(Devos, 2012a, p. 52)

“Look, *this is what you are*” accordingly does not only surface non-intellectually, so to speak, in the act of taking selfies or uploading other self-referential photographs and videos, or present in TV culture. It is reaffirmed by a criticism of these practices that de-politicizes the issue of individuality in contemporary society by isolating each and every individual or this or that generation. A psychological, uncritical introspective look seems to be the right way to deal with each situation. This re-psychologization of the “self-centered generation” puts a particular kind of self-control into practice, rather than investigating what goes on at a collective level and as a consequence of the intersection between technology and the overflow of scientific discourse into daily life.

Devos’ argument does not allow to problematize the screenager in the way this is done in the columns, because he shows the late-modern subject is caught in a process of psychologization which

is fed by the psy-sciences. In that line of thought Devos, I argue, would not simply problematize the screenager taking selfies, but relate this individual to a culture that is saturated by a psychologized gaze. In fact, the abovementioned remarks about the screenager taking selfies illustrate that beyond the sphere of academic life, our society as a whole *psychologizes* digital screen culture. In the public sphere there is ample evidence to be found, not only of the psychological subject that feels the need to take self-referential pictures, but - and this is very important to understand Devos' argument - of the psychologization of the screenager in general, as the debate above has shown. And precisely this situation is something Devos tries to expose in his studies, namely that our reflections on image culture and ourselves is saturated by a psychologized gaze.

To summarize, the screenager is called upon to interact with the screen as a psychological object, a digital, networked device in relation to which he or she constantly stages the self in a hyper-constructed way. This staged reality, in turn, is re-psychologized by the academic gaze which, concerned, is looking at the inward look from a psychological perspective. This academic gaze often diagnoses the screenager with narcissism and leads to the conclusion that he or she should learn how to deal with a screen-centered life. By focusing on an individual personhood that is not in control of the self, a language comes to the fore that hints that the individual should analyze him- or herself psychologically concerning the behavior that is produced. Or, in other words, the criticism focuses on an "*individual individuality*", an "I" vacuum coated of a "we", in the sense that the screenager is stripped down to the bare self, with little or no reflection at all as to where this self-interest comes from, namely from a scientific viewpoint of the world which has overflowed outside its own sphere, into commercial practices. In that sense, the meta-gaze seems to be deprived of any critical perspective. However, it could also be argued in line with Stiegler for example, that every "I" presupposes a "we" or that, in other words, the individual has no individuality which strictly belongs only to him- or herself (Stiegler, 2011, p. 79-130). Precisely by isolating an individual or a group (e.g. a generation) and by psychologizing this screenager, the "we" across the generations is caught not only in a hall of mirrors, but in a psychologized loop as well. In the words of Devos: images do not come out of the blue, they are mediated. And, so it seems, mediated by a psy-discourse and put into practice far beyond the sphere of the academic world.

A collective "I" caught in the process of psychologization

This leads, in relation to the selfie, that a one-dimensional, psychologized reading becomes predominant and, because of this, the selfie becomes isolated from the hyper-constructed culture it is situated in. Instead, this practice is looked upon from a pseudo-scientific point of view, psychologizing the screenager who takes selfies, thereby not saying that one should not take selfies, but that screenagers, who e.g. upload themselves too much or in a sexual context, cannot cope with the pressure of a practice which apparently only produces social-media driven narcissism. So instead of discussing the selfie as a potential confrontation with the fact that our society is pre-occupied with self-reference and that the screenager consumes and produces a particular gaze

which is not only his or her gaze, but a collective and hyper-constructed gaze, it seems that the individual is called upon to *look at the self* so as to deal with it.

This “I” vacuum coated of any “we”, is criticized by an active selfie-author, the American blog writer Rachel White. In her essay in the shape of a selfie, she says she has to laugh about the people who criticize selfies by relating them to narcissism. She quotes her friend and writer Marie Calloway, who says this criticism “disregards any sense of agency or awareness” on behalf of the photographer (White, 2013). Calloway is the author of the book *what purpose did I serve in your life* (2013), which, it could be argued, is in fact a selfie in the format of a book. The cover of the book includes a big picture of the author, looking right into the lens of the camera. The book reads as a collage of (mostly awkward) conversations and events, both online and offline. Through different short stories and pictures of online events, Calloway displays the actions and thoughts of *Marie Calloway*, showing all her emotional wounds, her doubts, her life as a sex worker, including her online social life. This book makes the most intimate details of the private life of Calloway public, including a photograph with a close-up of her face covered in semen and an online message pasted in the middle of this photograph that says “sorry im not good at getting u off :(” (Calloway, 2013, p. 72).

Calloway offers an uncomfortable account; not only of her body, but also of what goes on in her mind and how digital screen culture makes her relate to both the online and offline world. It is as if the self-consciousness of the person that Calloway is, is put on display with chirurgical gloves by the writer herself. Not only does the book contain texts describing herself while having virtual sex online, she presents a brutally honest account of what is going on in her mind, this way, so to speak, putting *extimacy* on display and trying to push its limits. What is more, the book anticipated stereotypical reviews that could be expected after it was published. By adding psychologically orientated remarks of other people about herself, she incorporates the psychologization process with which reviews would reflect about the book and herself:

There’s absolutely nothing interesting about this girl. She’s half-conceited, half-insecure, moderately slutty in a dull sort of way, fancies herself to be a writer, yet lacks the talent to produce [a] even a decent grocery list ...

(Calloway, 2013, p. 81)

The reason why this book can be valuable is because it does something different with individuality than what is commonly perceived. Not surprisingly, the writer received reviews of feminists giving her the advice to go into therapy. It can be argued that the columns in the Flemish newspaper illustrate a similar psychological loop, in which ultimately the individual is stripped down to its bare individuality, fully responsible for how he or she deals with the pressures of a digital screen culture. This can be conceived as a kind of “cellular power”, in which the collective addresses the individual - each and everyone of us - to accept the controlling gaze by psychologizing and thus objectifying

the own behavior. Calloway's book, on a first level, *psychologizes* the personhood of the individual *Marie Calloway* by staging herself. But, it seems that Calloway tries to reconnect the individual to society, if only by the raw, uncomfortable presentation of an "I" putting itself on display without any restriction whatsoever. This book exposes the reader to an "I" caught in a psychologized world, and a "we" incapable of giving a critical response to this, except by psychologizing Calloway, this or that individual, one particular generation or ultimately, our own self.

Concluding thoughts

In the film *The Truman Show* (Weir, us, 1998), the main character gradually discovers he is the protagonist of a Reality TV-show, although everybody surrounding him, his wife included, are actors that prevent him from discovering that he was chosen without his knowledge to be viewed by millions of people. Realizing he has been on display since he was born, he tries to escape the experimental zone, an island surrounded by water which can be manipulated by technicians. Traveling by boat, barely having survived the virtual yet real storm, he literally bumps into the end of the constructed micro-world he was born in. The director of the reality show, the human demiurge who can create waves, switch traffic lights or command Truman's "neighbor" to interact with him, attempts to convince him to stay by speaking to him through the microphone while half the world is watching on their TV-screen. The film ends with Truman leaving the staged reality, casting off the psychologized gaze by addressing his spectators directly, looking into the lens and saying goodbye. Nowadays reality has in common with this film that the experimental zone Truman was in, is everywhere. Even if one does not have a screen-device or even if one does not relate to social media, one nevertheless belongs to that reality. Primarily because a representation of the body can be uploaded to a social network at all times. Of course, there are still places in the world that are not being surveyed by cameras and screens. However, having become mobile, the screen and its camera increasingly belongs to each and every one of us. As Oosterling says in relation to mobile phones: "When the medium becomes the environment in which we move like fish in the water, our human condition transforms as well because a luxurious article turns into a basic need" (Oosterling, 2012, p. 203, free translation).

Below we see a movie still from a video circulating on YouTube⁵². In this video, we see someone filming a hurricane in an Australian desert while simultaneously driving a car. All of a sudden, when the car approaches the hurricane, it comes to a halt, the camera is picked up by the driver and the moving images shake as this person is running straight towards the hurricane. For a second, the person turns the camera towards himself, with the hurricane in the background, to realize the image we see here.

⁵² Retrieved from <https://www.youtube.com/watch?v=P7aRR86VfTY> on 27/07/2015.



Afterwards we see him running back towards the car. On YouTube, there is a discussion whether these images are fake or not, and how stupid this individual is to approach the hurricane so closely to take a selfie. These are maybe not the most important things to discuss. Authentic or not, what we see is a staged event, even if the man did or did not come close to a real hurricane. The man is cameraman filming the event, actor appearing in front of the camera and spectator at the same time, after which the images were uploaded on Internet. The real, in this particular case a hurricane, becomes meaningful because it is used within the stage the screenager decided to appear in. The real resonates here in the way Baudrillard discusses it:

What happens then to the real event, if everywhere the image, the fiction, the virtual, infuses reality? In this present case, one might perceive (maybe with a certain relief) a resurgence of the real, and of the violence of the real, in a supposedly virtual universe. "This is the end of all your virtual stories -- that is real!" Similarly, one could perceive a resurrection of history after its proclaimed death. But does reality really prevail over fiction? If it seems so, it is because reality has absorbed the energy of fiction, and become fiction itself. One could almost say that reality is jealous of fiction, that the real is jealous of the image ... It is as if they duel, to find which is the most unimaginable.

(Baudrillard, 2001)

The constellation in which the hurricane appears gives it a certain banality if we analyze the selfie in relation to Baudrillard's quote. Instead of a thousand ordinary selfies which exhaust the whole idea of being on a stage, some screenagers might look for the ultimate self-reference out there in the world, which nevertheless receives meaning from within the same perspective: the world becomes a spectacle or simulation for the screenager to be in. Virilio also sees realism in this way, describing individuality as a particular kind of "centre of the earth", which coincides with each individual screenager.

[T]he centre of the Earth is me! Nothing but me, and no longer us, mass individualism never being anything but the (forbidden) fruit of a finite world revolving around the egotism of the 'living-present' of each and every one of us.

(Virilio, 2010, p. 98-99)

In this individualist delirium, I am the whole world, I am the one who is, the one who was, and the one who will be! A fatal demiurgic conclusion whereby humanity, totally confused with the humus of our origins, no longer even distinguishes the expanse of the geophysical environment from its own physiology, in a sort of cult of personality that strikes, this time, not only the tyrant, but the common run of mortals - in other words: each and every one of us.

(Virilio, 2010, p. 103)

In the everydayness of life, the digital screen, it could be argued, produces scripts and algorithms, but also culturally coded, *psychologized* events. To upload the self is an act in which the screenager is seeing the self online while simultaneously sharing this self within a particular online community of family, close friends and digital friends. In *1000 plateaus*, Deleuze and Guattari discuss a specific kind of subjectification which could be related to this: "I believe, I assume, I think ... [...] I suffer, I walk, I breathe, I feel ..." (Deleuze & Guattari, 1987, p. 130). The screen, this way, is an existential surface he or she has an urge to look into, a drive to upload oneself so that one is seen by others. It can be interpreted as a device that allows the individual, by taking a selfie, for example, to get *into* the experimental zone - not out - and show the "I" the way it wants to show itself.

Devos revisits Foucault's concept of the panopticon to discuss the gaze with which the screenager looks at the screen nowadays. Foucault's panopticon shows that in the disciplinary society there is a particular gaze, not of god, but of guards, which may or may not be looking at the subject. This subject, consequently, looks at the self and disciplines that self according to the norms of society. This is, Devos argues, the beginning of the psychologization process in modernity; the gaze of disciplinary powers made man look at himself (Devos, 2012, p. 83). Once inside a particular building, domain or public sphere, discipline functioned according to the specificity of the system. The gaze of the father, the teacher, the guard, the overseer in the factory or officer in the military ... may or may not be watching, so the subject is in continuous awareness of the self. This can coincide with the modern notion of *Bildung* as discussed by Lyotard, a cultural ideal in relation to which the individual had to shape the self and in relation to which the teacher, inside the school building, played a crucial role.

In *Narcissism and the DSM-V*, Devos argues that the birth of "the autonomous State" has to coincide with "the autonomous Individual", two entities which cannot be conceived without each other. "No State exists without the autonomous, rational Individual (the principle of democracy) and there can be no Individual without an autonomous rational State (the principle of the rule of law)" (Devos,

2012a, p. 54). The paradigm shift, moving from a modern towards a postmodern society and thus from a disciplinary society towards a control society, is not that the grip of institutions which disciplined the individual has dissolved. Rather, the impact on the individual no longer functions by means of discipline within the physical boundaries of the different institutions, but by means of perpetual self-control of the individual, anytime and anywhere.

As is well known, the crux of the Foucauldian *panopticon* is that the cruel horror is not the certain knowledge of being watched, but rather the uncertainty of never knowing if or when one is being watched. Ian Buchanan contends that in reality shows such as *survivor*, this anxiety is relieved the minute one knows we are being watched all the time and, with this, the anxiety shifts from an anxiety of being watched to an anxiety that we might *not* be watched.

(Devos, 2012, p. 85)

In that sense, the preoccupation of the individual with him- or herself can be interpreted from a different light than plain narcissism, which in my opinion is an argument that masks how the individual screenager puts self-control into practice. Instead of focusing on an individuality that possibly uploads the self too much, as it was argued in the public debate, it could be argued that the strongest way to control the individual is by means of constant self-observation which the individual is willing to execute. This willingness should not be related to an “I” vacuum coated from any “we”, but to how contemporary individuality is constructed through concrete experience of technology and the overflow of psychological discourse in everyday life. Is this not how Facebook, YouTube, Tumblr, Instagram and many other digital spaces can be interpreted? As the experimental zones onto which the screenager can and is compelled to upload this or that geographical place (*this is where I am*), this or that relationship status (*I a married, I am single again*), this or that event (*I have become a father, I am stuck in a traffic jam, Look at these ugly clothes this person is wearing*) this or that emotion (*I am feeling depressed right now*) ... and all of this into ad infinitum?

Late-modern subjectivity is screen subjectivity. The screen is the cross-road, the only constant factor with the zapping and skipping through Face Book and Twitter, life-blogs and live-blogs. It is thus not a surprise that in late-modern subjectivity the tropes of reality TV and celebrity culture return. For, the basic principle of celebrity - making oneself seen, accessible and available to others on the screen (Dean, 2002, p. 121) - is also the essence of today's blogging and social networksites: we create our own fan-sites and become our own paparazzi. Or, as Baudrillard puts it, what is important today is to resemble oneself, to find oneself everywhere, ‘to be on all movie screens at once’ (Baudrillard, 1988, p. 41). Today we are not so much actors on a stage, we are celebrities on the screen. In the format of celebrity, we make ourselves seen, accessible to others and thus to ourselves.

(Devos, 2012, p. 85)

Taking a selfie, uploading it on Facebook and experiencing how people react to a picture of the self, taken by the self, the screenager seems to be, in the words of Paul Virilio, “the author of a domestic virtuality on a life-size scale” (Virilio, 2010, p. 23). Or, as Masschelein argues, appearing on online social network sites or relating to a screen can be interpreted as a kind of reality check, to see if you are still there, acknowledged by the virtual community. This interpretation is much in line with the analysis of Debord’s *Société du Spectacle*. Both the reality inside the screen and the reality outside become meaningful in relation to a staged individuality. What I tried to argue is that it is crucial that we do not isolate this or that individual image creation to potentially diagnose the particular screenager appearing before the camera and looking into the lens with narcissism. This is in fact what can be read in the public debate about selfies and online social media in general; this or that image testifies that digital screen culture potentially produces narcissist individuals. I do not want to affirm nor contradict this diagnosis, although it could be argued in line with Devos that using an individual psychology can de-politicize the significance of digital image culture. The difficulty in understanding this situation lies in the fact that the individual these days is not merely a consumer of these images, but a producer as well, because now everybody can upload videos, images, text and audio. Accordingly, Pisters’ quote becomes very meaningful as the contemporary spectator is someone who is

embedded or immersed in an audiovisual environment in which filmmaker and camera, characters and spectators, world and screens are all circling and questioning each other and in which we have to ask ourselves constantly: Where is the screen? How do I relate to it? What does it make me see, feel, grasp, do?

(Pisters, 2012, p. 71-72)

Have we not, keeping Pisters’ quote in mind, because of the technological revolutions on the one hand and the psychologization of popular screen culture on the other hand, reached the reverse situation of the Truman Show’s ending? This would then imply that the contemporary subject has a drive, not to leave the experimental zone, like Truman did, but rather to re-enter the different “experimental zones” time and again and show a glimpse of the self in the act of relating to a screen. The selfie, accordingly, can be seen as both an uncritical consumption and production of this reversed panopticon, but also potentially as a cultural practice that confronts the screenager with how he or she looks at oneself, others and the world.

2. Self-regulated learning by means of the screen

In this section the computer’s potential to function as a self-referential object will be developed in relation to education. That is, I will research what kind of innovation might be applied to education and curricula as a result of increased use of the computer screen’s capability to be a self-referential object. What if the screen’s ability for self-reference - *look, this is what you are* - becomes an overarching and fundamental element of the way education is perceived and concretely organized?

In the light of the way education was discussed in the first chapter, namely that it should produce experiences that create SRL strategies, the screen, so we will see, acquires a very direct instrumental value: it works in a self-referential way, confronting the screenager with her (lack of) performative capabilities.

In 1956 a computer program for the first time managed to simulate human behavior in solving a problem (Saettler, 2004, p. 334). An early product in education of this technology is SCHOLAR (1969), “a computer-based Socratic tutor, whereby a student’s answers could be diagnosed and an intelligent response made to any unexpected questions the student might ask” (Saettler, p. 334; Carbonell, 1970). In other words, the computer program did not just ask knowledge about facts and verified whether the student’s responses were correct, it also “reflected” about the individual capacities of the student vis-à-vis the knowledge that had to be acquired. SCHOLAR therefore replicated activities that until then belonged to a human teacher: it reacted to the specific answer of the student, although in a primitive way. Accordingly it offered the student metacognition or knowledge about his or her own thinking process, what knowledge was already acquired and in what fields the student still needed to improve. And thus the computer program rendered the potentiality of computer technology for self-reference into an educational experience. The computer offered the individual information about the self, which then could be taken into account. It goes without saying that the complexity with which computers can produce such experiences nowadays has increased significantly.

Constructing the self with digital tools

In *Constructing the self in a digital world* (Ching & Foley, 2012) a group of authors study the intersection between learning and technology and identity. In the introduction, but also throughout the book, Turkle’s psycho-analytical work is quoted to promote a student-centered pedagogy by means of digital technology. The individual learner in this book is referred to as “the Self”, a concept interpreted from Michel Foucault’s *Technologies of the self* (1988). It is a Self *to be developed*, one that moves away from an “objective/evaluative ‘know yourself’ approach” towards “subjective self-declaration and self-cultivation” (Ching & Wang, 2012, p. 29). This theory connects to Turkle’s idea that the postmodern subject, by means of the screen, can experiment with different selves. The main idea is that “learning about the self is one of the most important kinds of learning that humans do” (Ching & Foley, 2012, p. 3). This should be connected, according to the authors, with technology and screen culture, with (moving) images and social networks on the Internet. In short, the articles in the book explore different examples of how digital technology can function as a tool for the development of different selves.

It is argued that the power of technology

lies in the human side of the equation - in the meanings we create, and in the ways we both welcome and resist technology's presence in our culture, our physical and social surroundings, and our personal lives.

(Ching & Foley, 2012, p.2)

Focusing on how the individual can use digital technology to give a personal meaning to the world, the authors distance themselves from a deterministic approach, where "objective phenomena in individuals' lives" are looked at to predict certain outcomes (Ching & Foley, 2012, p. 19). The educational purpose of technology should not be measured through standardized effects on the individual, so it continues. In contrast to this, a constructivist approach is being used that does not focus on events or phenomena "but rather on how individuals make meaning of them" (Ching & Foley, 2012, p. 19). The authors refer to Piaget's articulation of children's moral development and the work of Erikson (1968), Nelson (1992) and Fivush & Buckner (2003), that each focus on the self in relation to events. The framework that the authors use is a model "wherein identity development within a given context is an endeavour that builds on what came before and will have a significant impact on what comes after" (Ching & Foley, 2012, p. 23). Within this framework technologies for these authors "can become productive tools for the age-related and continuous processes of constructing knowledge and identity" (Ching & Foley, 2012, p. 23).

This book on education is a clear example of a postmodern pedagogy that resists a modern pedagogy in which an adult guides children towards a series of fixed goals that are worthwhile to be acquired. What is more, the objective of the authors is postmodern in the sense that the proposed education is per definition student-centered. In one chapter on digital photography for example, *"This Is Me": Digital Photo Journals and Young Children's Technologies of the Self*, the authors Ching and Wang research how photographic technology might help "to understand the subjective perspectives of young children in their school environments" (Ching & Wang, 2012, p. 31). The authors investigate how technology can function as a medium for social negotiation and personal expression" (Ching & Wang, 2012, p. 31). "Children learn to tell self-focused oral narratives over many years of interaction with adults and peers, through having their stories shaped and focused in a social or familial context" (Ching & Wang, 2012, p. 42). The authors argue that this practice should be integrated in a curriculum as a habitual learning experience. Self-taken photography becomes an "explicit learning opportunity for the subject - a kind of technology of the self" (Ching & Wang, 2012, p. 42).

In making a digital photo journal, children explore and reflect about aspects of the environment which they photograph. Making representations of reality and themselves and reflecting about those representations is interpreted as "a type of developmental identity building through self-narrative" (Ching & Wang, 2012, p. 41)⁵³.

⁵³ Images retrieved from Ching & Wang, 2012.



Figure 1.2a-b. Literal self-representation.

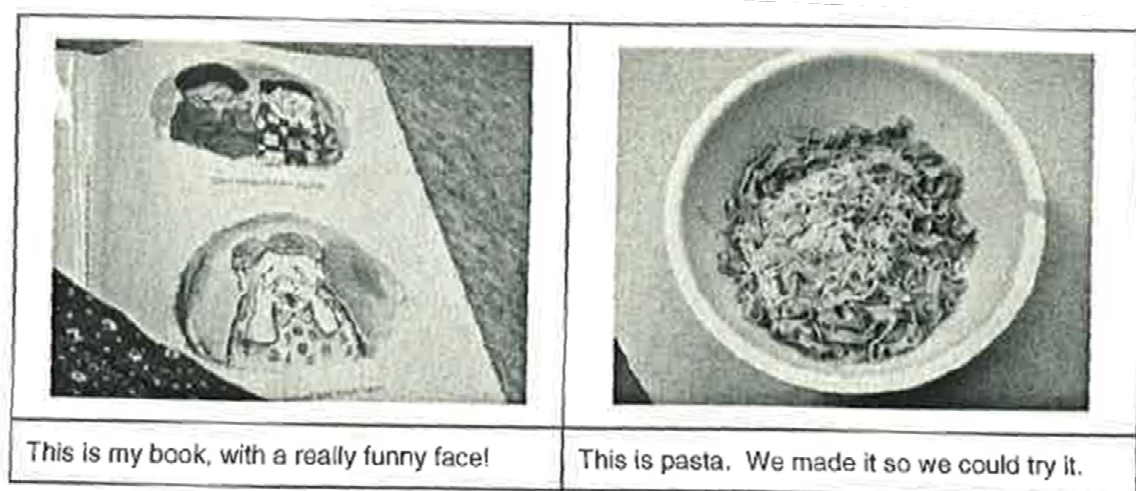


Figure 1.3a-b. Self-representation by personal objects.

In another article, *Digital Storytelling and Authoring Identity*, Davis and Weinshenker discuss a study on multimedia self-expression and digital storytelling. Digital storytelling is described as using “multi-media tools to help ordinary people tell their own ‘true stories’” (Davis & Weinshenker, 2012, p. 47). As digital storytelling connects to youth’s association with screen media, the authors claim, and because the multimodal format “provides a much richer symbolic palette” than written text, this medium might be interesting to implement in education (Davis & Weinshenker, 2012, p. 49). Digital storytelling is about the student reflecting on “events of his or her life”, to create a “coherent narrative that had not existed beforehand as an object of contemplation” (Davis & Weinshenker, 2012, p. 70). The idea is to see individual life as a narrative that can be constructed

by the individual, in cooperation with the (online) community and with the use of moving images, poetry, music and sounds produced by digital technology.

It seems that the initiatives in this handbook experiment with the screen as a psychological technology as such. Accordingly the “results” of the experiments are not so striking because we can read that the individual, when using digital technology interprets reality like a conscious, critical consumer. The environment is evaluated in terms of what the individual likes and dislikes. Or, by using digital technology to reflect about the personal life, the individual discovers that his or her identity changes over time. Digital technology does not really provoke radically new or unique experiences; they rather produce self-reflective experiences similar to the experiences on social media network sites nowadays. However, what is striking to read in these texts is the way the teacher is (not) present in the different experiences. The texts deal with the figure of the teacher either as a person who is completely absent from the experience, or as someone who might hinder the individual in being creative. This seems to align with the postmodern movement in education as described in Lyotard’s hypothesis, moving from a teacher-centered event where the teacher passes static knowledge into the heads of students towards a more dynamic education, where knowledge has a self-constructing nature and originates from inside each individual student. And, what is more, if the teacher has a role to play it surely is not content related. Reading Davis and Weinshenker, for example, the teacher is not portrayed as someone who relates to knowledge and who will use this as the basis for the relationship with the students. The teacher is rather someone who should be attentive to create a psychologically safe environment that allows the student to give meaning to personal life. It is argued that digital storytelling deals with experiences that have personal emotional significance, and therefore requires a “facilitator creating a norm of safe disclosure” (Davis & Weinshenker, 2012, p. 69). Notice how the teacher is described here from a psychological perspective.

It is clear from these two examples that in the educational initiatives portrayed in this book, there is no “lesson” to be learned. Much more it is about constructing an individual and personal meaning about one’s own life, or an act of self-reflection. This results in an education characterized by open-ended and unstructured processes, where the student is almost in full control. Whenever during the process of learning elements appear that “over-pedagogize” the event, authors refer to it today as reducing “potentially innovative practices into restrictive routines for school purposes” (Street, 2005). The focus, so we can read, lies on self-managed projects that use digital technology to explore, to communicate and to give meaning to the world (Grushka & Donnelly, 2010, p. 85). The question can be asked whether this does not imply that the teacher as facilitator should allow each individual to enter his or her experimental zone, in this way copying the mechanisms of social media websites.

However, it seems that this handbook is lacking the performative practice of improving the self in terms of efficiency and effectivity. It provided us with a more or less explorative, experimental

investigation of how digital technology can be used in education to allow the learner to look at the self. Inspired by Turkle's idea that a computer can be interpreted as a self-referential machine, the authors of this handbook defined activities to experiment and theorize about the relevance of self-reference for education. The digital technology indeed functioned as a kind of psychological tool, but did not change the identity of the individual. Rather, it made the individual reflect about the self as he or she pleases.

Computer Based Learning Environments

Unlike in the example mentioned above, the pedagogy produced by self-regulated learning - which obviously entails a particular kind of self-referential activity - clearly sets particular objectives which the learner has to relate to. As we saw in the first chapter, self-regulated learning asks of the individual to self-reflect in relation to performativity and thus to look at the self in terms of efficiency and effectivity. The ability of the screen for psychological self-reference, in other words, cannot translate itself into just about anything or whatever the individual feels like doing, because learning has to be related to the learning output which it is supposed to produce: a performative self. In that line of thought the screen should thus mirror the self in such a way that performative behavior is produced. In a postmodern knowledge economy it is not so much about possessing and being able to reproduce knowledge, but about being able to analyse the self in relation to a specific situation and to be able to self-modify in relation to that situation (see page 89 and onwards). Research, it is argued by developers of SRL, has shown that students that self-regulate have high learning outcomes; students that plan, monitor and use strategies to significantly increase their learning potential (Taub et al., 2014, p. 356).

Although these self-regulated skills enhance learning, research also shows that students, while learning, do not actively use these skills. This, in turn, can be seen as a challenge for educators and researchers to develop experiences in which students learn to learn, and thus, acquire the ability to self-regulate (Taub et al., 2014, p. 356). Taking a closer look at today's Computer Based Learning Environments or CBLEs it is clear that computers can offer self-referential experiences which serve in relation to self-regulated learning. Educational computer programs already exist that, as we will now see, produce a series of events that time and again claim to take into account and interact with the specific point of departure and abilities of each individual learner. Moreover, these computer programs register the behavior of the learner sitting in front of the screen and allow this behavior to influence the way the program responds to the learner. This way, the individual receives personalized feedback about how he or she learns. Trevors et al., for example, suggest to produce SRL-strategies by reiterating four phases. Studying the CBLEs in what follows, it should be kept in mind that screen interaction is situated in such a kind of program:

In the first phase, students form a perception of the learning task, which may significantly differ from one learner to the next. Second, learners develop multifaceted goals for their learning, such as finishing a task by a specific deadline or achieving some level of

comprehension, and then formulate a plan to achieve this goal. In the third phase, students enact their plan by the use of various learning tactics, such as note-taking, generating inferences, or coordinating multiple sources of information. Fourth and last, students metacognitively reflect on their learning. If they deem their learning acceptable they move forward with their task unabated; if not, they exert control by making modifications to some aspects of the previous phases.

(Trevors et al., 2014, p. 509)

Of course, this four-step educational program should not be regarded as *the* blueprint of SRL learning. It can be argued, however, that this program is indicative for how SRL-learning by means of screens is achieved. This is because each of the four steps implies an explicit focus on the individual. Each learner may have a different learning task and develops specific goals and an individual plan. After executing this plan, students reflect about themselves vis-à-vis the task they had set out for themselves.

Academic research distinguishes two different types of CBLEs. On the one hand there are CBLEs that directly instruct the learner to improve self-regulation skills. On the other hand there are the CBLEs that are less instructive and that include the experience of a particular, concrete subject like math, biology or a language. This latter kind of digital environment is characterized by open-endedness, non-linearity and non-sequential structured information (Devolder, 2014, p. 25). This is because, among other things, in such a CBLE there are multiple ways that information is presented: digital technology produces (hyper-)text, audio and video, graphics and animation amongst others (Devolder, 2014, p. 25). As part of her PhD dissertation, Devolder developed a CBLE that corresponds with the latter type. The digital environment produces knowledge in relation to the subject of evolution theory and Darwinism. It goes without saying that any subject matter can be integrated in such a CBLE and interdisciplinary researchers have already developed such programs in the field of biology, physics and ecology (Taub et al., 2014, p. 356). Manipulating such a CBLE, the learner thus learns about Darwinism on the one hand, for example, but combines this with meta-thinking about the self in relation to this environment.

The program asks the learner to use particular learning strategies and to reflect about the way the subject matter is approached. While learning evolution theory, the pupil is therefore confronted with the way he or she learns this content. *Look, this is what you are* thus translates itself into: *look, this is how you learn*, and this while the act of learning is taking place. This kind of CBLE, by using the ability of the screen to produce self-referential experiences, therefore is a practical example of a tool to achieve what is the primary goal of the Flemish curriculum theory (Devolder, 2014, p. 3). By experiencing such a digital environment, the learner is exposed to subject matter on the one hand - and this not only by means of hypertext, but also by means of photographs, videos, illustrations, etcetera ... - and self-referential learning aids on the other. These learning aids ask the student to reflect about the personal learning strategies. Accordingly, each individual learner is

confronted with the way he or she relates to a particular kind of subject matter, and potentially changes the way he or she is learning *while learning*, in line with the program SCHOLAR as mentioned on page 161.

Scaffolding

CBLEs are digital environments that are difficult for students to cope with. Their nonlinear structure gives the student a particular freedom to explore the subject matter according to one's personal interests (Devolder, 2014, p. 25). However, this freedom can be overwhelming: because of the amount of information CBLEs can offer, and the possible distraction as a consequence of "incoherence in the supply of information" and the risk of cognitive overload, the individual not only has to cope with content, but also with the specificity of the system or the way the CBLE works (Devolder, 2014, p. 25). To counteract this risk developers of CBLEs introduce the concept of *scaffolding*. It could be argued that this psycho-pedagogical kind of support is about allowing the individual to be able to cope with the freedom of CBLEs. Each learner has different needs and requires a particular kind of support to be able to interact with such a CBLE, not only to increase SRL-skills, but also in relation to the specific knowledge (such as evolution theory, for example) (Devolder, 2014, p. 4; Levin et al., 2004, p. 2).

Devolder positions scaffolding historically by referring to Wood, Bruner and Ross (1975) and the zone of proximal development of Vygotsky (Devolder, 2014, p. 6). Scaffolding refers to temporary support which, by means of continuous analysis of the skills and knowledge of the learner, should only be provided until no longer needed. Applied to CBLEs, this means that in the case of a good student the open-endedness and non-linearity - information about a topic is offered in such a way that the student has more control and can choose what to look at according to personal interest and goals (Devolder, 2014, p. 25) - is experienced to its fullest extent. Accordingly, the individual student that is scaffold-free, so to speak, is free to move in such a digital environment as he or she pleases, much in line with how the screenager, in his or her leisure time, for example, manipulates the screen the way she wants and explores the Internet accordingly.

Without particular kind of cognitive and metacognitive skills, however, the average learner cannot cope with the demands of CBLEs (Devolder, 2014, p. 25). The resulting pedagogy is based on psychological principles and zooms in on the individuality of a person as a whole of thoughts, feelings and intentions. The individual should have the potential for self-control, without which relating to such CBLEs is too difficult. An important author in the field of CBLEs and SRL learning is Pintrich, who states that personal agency is necessary to be able to control the self and adjust behavior and learning strategies in relation to a task. SRL as defined by Pintrich is "an active, constructive process whereby learners set their cognition, motivation, and behavior, guided and constrained by their goals and the contextual features in the environment" (Pintrich, 2000, p. 453). Or, in other words, what is crucial is that the individual can reflect about oneself in a performative way, to be able to cope with the digital reality, the subject matter present within this digital reality

and the available strategies and ways of learning that are necessary to be successful.

In relation to this it is interesting to read Devos' section on how education is put to use for economical purposes. Devos argues that criticism mostly focuses on technology and how it pervades power structures, but what goes unnoticed, he argues, is that this discourse is heavily influenced by psychological theory.

For the first step in celebrating knowledge is to strip it of its content and shift the focus to attitudes and skills. This brings education directly to the personal and psychological level. The employee in the company, as well as the pupil and the student, is called upon to put their whole personality on the balance. They are obliged to become emotionally involved. Hence, discourses on lifelong learning rapidly evoke an ontology of subjectivity. Unesco puts it in this way; in a knowledge society we should be concerned with 'learning to be' (Faure, 1972). In education and schooling this engenders manifold, highly psychologized, educational methods which could be said to result in a schoolifying of subjectivity.

(Devos, 2013, p. 45)

It could be argued that the assessment concerning the cognitive overload CBLEs produce, also accounts for the human condition which the screenager finds him or herself in in the digitalized world in general. The World Wide Web, the different screens that surround the individual and the information- and communication bombardment, so to speak, expose the screenager to a high amount of different kinds of input. Devolder's argument for example, that CBLEs require a particular kind of agency on behalf of the individual, might thus also be an assessment that can be related to digital screen culture as a whole. In that sense a CBLE can be interpreted as simulating the digital world. The need for a particular kind of agency resonates in the words of De Meulemeester and Verhaaren, for example, who, when defining the broad concept of "digital literacy" write the following:

Digital literacy is not identical to information literacy. The definition, aims and objectives of information literacy are summarized in the ALA guidelines on *information literacy* (ALA 2000). *Information literacy* is defined as "*a set of abilities requiring individuals to 'recognize when information is needed and have the ability to locate, evaluate, and uses effectively the needed information.'*" Standards and performance indicators are set broadly as to stress on 'literacy', which should be the art of critically reading and writing, and becoming 'digital' when enforced by computer technology, but profoundly based on analytical power and synthesis skills, and finally resulting in becoming a well-informed life-long learner.

(Verhaaren & De Meulemeester, 2009, p. 673)

If the screenager, from an early age, is exposed to CBLEs that apply scaffolding by adapting to the individuality of the screenager (age, sex, preferences, learning style, interest, etc.), then, in that line of thought, in the long run education as a whole could be conceived of as a kind of scaffold that allows the screenager to grow up in an age of screens. Or, in other words, education gradually helps the individual to become a digital literate. Although the issue of digital literacy as defined above will not be further elaborated upon, it can be argued that training the screenager to look at the self vis-à-vis SRL strategies is a possible realization of the general idea that citizens must be empowered by becoming digital literates.

Traditionally, it is the figure of the teacher who is responsible for the student's development, be it related to the content or related to learning strategies. Scaffolding would then imply that the teacher provides temporary support until the learner has achieved this or that skill or has acquired this or that knowledge. However, scaffolding "is no longer restricted to interactions between a human expert and a learner" and this due to advancements in technology (Devolder, 2014, p. 55). In line with this, not only humans, but tools, strategies and digital guides can scaffold the learning process as well. It is important to understand that this argument shows that educators are interested in screens because of their psycho-educational potential; the programs which they show do not just produce information which then can be used vis-à-vis a concrete subject, like history or geography. These programs are designed to change the learning behavior of the screen user while learning about content.

This brings us to the question what concretely happens when learning on a CBLE. On the website designed for primary school children in the 6th year (aged 11-12), Devolder developed four different non-human scaffolds. (1) A note maker allows the learner to take notes and write down whatever they want. Also, the learner can write in italics, colour or bold and can underline words and restructure the text (Devolder, 2014, p. 98). (2) A planner shows the goals the learners need to pursue and consists of a check-off box with different sub-goals. (3) When the learner starts a specific learning module, a timer counts down from 40 minutes and informs the learner how they spend their time in relation to different topics and how much time there is left for them to achieve goals (Devolder, 2014, p. 99). (4) There are also guiding question prompts, commands and messages which pop up on the screen according to a fixed time schedule. These prompts relate to the use of the timer, the planner, the note maker and the content.

Researching how pupils made use of these scaffolds, Devolder argues that a large number of pupils relate intensively to these prompts and the scaffolds in general. Throughout four phases in line with the four phases mentioned above (page 165), these scaffolds make the student self-regulate. During the phase of task definition and planning, for example, the planner with its goals provokes self-regulated activities. For one, research indicates that learners activate what they already know about the knowledge, they reflect about how what they don't know has to be taken into account for what will be learnt first or they motivate why they will learn one particular kind of subject matter

first. Also, pupils make reference to the time limit that the website imposes upon them and thus plan what they will learn and how much time they will give themselves to achieve one or different objectives (Devolder, 2014, p. 165-166). The second phase of monitoring involves the use of the note maker, which also produces particular kinds of self-regulated experiences. According to her research, the note makers result in the fact that learners judge themselves in relation to the knowledge content.

Related to these processes, reflections upon how learners should solve possible problems while they are processing the information that needs to be learned were found. For some learners, these reflections again result in decision making processes related to which strategies are most appropriate on the basis of previous reflections.

(Devolder, 2014, p. 166)

The timer, during this process, highly influences the behavior of the pupils. That is, the time moving towards zero produces meta-observation and change of strategy, and the speeding up of the process of learning. The third phase of control is once again related to the note maker, which produces experiences in which for example the learner summarizes content and coordinates and organizes information. This because the learners re-read their notes and highlight what they think is important. The fourth phase, reaction and reflection, produced no scaffolding whatsoever as there was no data to analyse during this phase. Pupils did, however, give affective reactions (Devolder, 2014, p. 169). In short, in the CBLE of Devolder the scaffolding tools accomplish that the learner analyses the own behavior and strategies. This implies that at different times the student should be able to evaluate one's performance in relation to the different goals (Devolder, 2014, p. 170-171). Or, in other words, the pupil relating to this CBLE is confronted with his or her degree of performativity and is invited to improve oneself vis-à-vis this principle.

Pedagogical agents (PAs)

This way of self-regulation by means of computer programming can also take place by means of animated pedagogical agents that appear on the screen, and, according to scientific literature, help increase the interest of college students (Devolder, 2014, p. 65). In the multi-agent, hypermedia-based learning environment MetaTutor, four PAs engage learners in complex science topics such as the circulatory system. As the picture below shows⁵⁴, it contains pages of text and diagrams related to this biology topic. Besides this, there is a timer which functions in a similar way as in Devolder's CBLE. On the right we see a pedagogical agent, which give prompts and feedback to the learner (Khosravifar et al., 2013, p. 415).

⁵⁴ Retrieved from Khosravifar et al., 2013.

Gavin the Guide directs participants in the digital environment. Pam the Planner aids with and focuses on planning. Mary the Monitor specializes in helping the participant to monitor what happens during the learning session “by emphasizing the use of monitoring progress toward goals (MPTG), content evaluation (CE), feeling of knowing (FOK), and judgement of learning (JOL)” (Taub et al., 2014, p. 359). Sam the Strategizer, finally, assists in using effective strategies. These pedagogical agents thus provide the learning experience with scaffolding so that the activity is not an independent one. For example, when the learner sets sub-goals for him or herself that are too general, Pam will then give specific feedback (Taub et al., 2014, p. 359).

What is more, pedagogical agents assist learners by giving feedback, producing problem solving activities and strategy training, for example. Agents are programmed to assist learning about different aspects of self-regulated learning such as planning, goal-setting and metacognitive monitoring (Taub et al., 2014, p. 357).

PAs are rational and effectively interact with human learners in order to help them better self-regulate their Cognitive, Affective, Metacognitive, and Motivational [...] learning processes over time. In a typical learning environment, the intention of the human learner is unknown to a certain extent. To this end, PAs have to try different strategies to effectively deal with a variety of learner-system interaction patterns. Solving this ambiguity is the main challenge of these agents whose objective is to optimize the use of self-regulated learning processes by the students.

(Khosravifar et al., 2013, p. 413)

Apart from the pedagogical agents, MetaTutor also has tools like the abovementioned timer and notebook. The timer is an essential SRL strategy as it “keeps learners metacognitively aware of where and how they are allotting their learning time” (Taub et al., 2014, p. 359).

The pedagogical agents have different strategies to cope with the specificity of each individual. At least, this is what the authors claim, namely that the PAs are sequential decision makers which “follow the best strategy while considering learner’s path through progress of SRL” (Khosravifar et al., 2013, p. 415). How should we understand this? The program’s mathematical framework influences the PAs to the extent that they are constrained by “an adaptive dynamic sequential decision making procedure” (Khosravifar et al., 2013, p. 415). This means that PAs not just randomly provide prompts that are supposed to help the learner. Because of the algorithms of the program, PAs continuously adapt their action influenced by the “learner’s characteristics, prior knowledge, and attitude” (Khosravifar et al., 2013, p. 416). It thus becomes clear that in the example of MetaTutor the self-reference - *look, this is what you are* - is the very concrete result of empirical registration of the digital actions of the learner who, in the form of mouse clicking, typing and making choices, leaves digital traces which the system immediately takes into account. That is, algorithms respond by coding these actions and by relating them to fixed patterns which scaffold the experience by giving pedagogical, individualised feedback to the learner.

The pedagogical agents have a finite set of observations. In short, in accordance with the available technology and complexity of the program, it can only “interpret” the learning behavior to a certain extent. The PAs interact with the learner with a blueprint in the back of their heads. That is, they are programmed to relate to the learner guided by “the best (e.g., most effective in time and learning management) strategy” (Khosravifar et al., 2013, p. 417). In interaction with the learner, they program the individual learner towards the most performative behavior. At least, in relation to the programmed world of MetaTutor, with its fixed subgoals the learner has to achieve.

The goal for a pedagogical agent is to scaffold students to learn in the most efficient way, in order to accomplish sub-goals and engage in effective cognitive and metacognitive processes. The agent does this by assessing students’ performance as they interact with the system.

(Taub et al., 2014, p. 362)

The program therefore selects five sequences of SRL strategies to influence the agents’ behavior, so as to allow them to “investigate the most effective patterns to guide students of different prior knowledge levels” (Taub et al., 2014, p. 362). This way the program produces a series of events that repeat themselves time and again, interacting with the specific actions of the learner based on the five coded sequences. Or, in other words, after a specific amount of time the phases of the program similar to the four phases on page 165 have reached full cycle and can begin again.

The relationship with knowledge

The relation between the individual and the program is used to objectively ascertain that the learner possesses certain pre-fixed goals, in the case of MetaTutor related to the circulatory system (biology). Although the claim is made that learning by means of this CBLE is personal and individualized, the sub-goals in relation to the content are nevertheless fixed and written by the computer program, not by the individual. It could thus be argued that the only freedom the individual has, in relation to the knowledge, is to choose the order with which the sub-goals will be studied. However, here also the individual does not have complete freedom, because when particular combinations of sub-goals are selected, a pedagogical agent will intervene. In a sample of a log-file we can see an interaction between a human learner and a pedagogical agent. After the learner had set up a particular kind of sub-goal, the pedagogical agent replies as following: “That’s good, but it’s too limited for what we need to accomplish. Let’s set ‘Blood components’ as one of our sub-goals” (Khosravifar et al., 2013, p. 418).

“Blood components”, in code language, is depicted by the program as |IDEAL_SUBGOAL|. Accordingly, apart from the many suggestions that the pedagogical agents give, at certain times they also directly set the order of the objectives the learner has to reach, in a way functioning as the all-knowing teacher of the modern society. Also, like in the CBLE of Devolder, learning takes place within a time frame depicted by a clock. When the time is up, the learner has to take a quiz related to the selected sub-goal. The results of the quizzes give the four pedagogical agents objective feedback concerning the metacognition of the learner, which then can lead into meaningful interventions of the PAs vis-à-vis SRL-strategies (Trevors et al., 2014).

The system can see *in what way* the individual is relating to the knowledge and registers the actions of the learner to directly manipulate the SRL strategies. This is achieved by means of algorithms which are the basis for the pedagogical relationship between human and program. For example, if a student is focusing more than 20 minutes on a particular kind of sub-goal, the system will ask if that sub-goal has been completed and if too much time has been spent on this particular goal. Mary the Monitor will then say to the learner “she believes enough time has passed for the current sub-goal” and she will ask the “learner if he feels that he knows enough about the sub-goal in order to complete it” (Trevors et al., 2014, Table 3). Or, when a learner reads a content page that is relevant for the sub-goal he has set out for himself, and, after having read the page for at least 14 seconds, reads another page, the system will become aware of this and interpret this in the sense that the learner does not understand that what he is reading is relevant. Also, if the learner is reading a sub-goal-relevant page longer than the average time needed for that page, the system will prompt the learner to make a judgment about how well they understood the content (Trevors et al., 2014, Table 3). To give just one more example, when a learner reads a page longer than 14 seconds even though this page is not relevant for the assigned sub-goal, the learner will be asked, for example, if the page and image are relevant or not. This strategy is used in one out of five experiences in which the learner reads pages that are irrelevant for the sub-goal longer than 14

seconds (Trevors et al., 2014, Table 3).

In terms of cognitive development, MetaTutor limits freedom to selecting this or that sub-goal, although even this, as we saw, is not always the case. What is more, the relationship with knowledge is not without scrutiny, because particular actions that do not align with algorithms of performativity lead to commands and prompts that interrupt the learner in thinking about and relating to the content. Instead, the individual continuously has to think about metacognitive SRL-strategies vis-à-vis this or that sub-goal.

Emotions and affects

To raise the performativity of the program, MetaTutor not only registers the *digital* actions of the learner, which mostly results in information about cognitive and meta-cognitive skills of the learner. MetaTutor also records behavior of the learner sitting in front of the computer screen, primarily to gather information about the emotional state. MetaTutor registers eye-tracking data and think-aloud data, electrodermal activity⁵⁵, screen recordings of learner-system interactions and facial expressions of participants' emotions (Taub et al., 2014, p. 359). In short, the behavior of the screenager, while sitting in front of the screen, is detected by the program in several ways, which in turn, influences the progress of the learning experience. In other words, the way the system "interprets" the actions of the individual, results in specific, individualized feedback. The program thus creates self-reference beyond the level of cognition and metacognition. The technological abilities nowadays are still somewhat limited, but it is clear that the empirical registration of what the body does and the algorithmic interpretation of emotions already took some significant steps forward. With what theoretical background is the registration of bodily actions of the screenager justified?

Emotions and affects, it is argued, are very important to take into consideration. The learner is not just a cognitive, linguistic being, but also produces behavior that can be related to particular kinds of emotions. The quality of these emotions is important as this can help to predict more efficient and effective learning. Consider the argument that PAs should help human learners not only to better self-regulate (meta-)cognition, but also their affective and motivational aspects. In the experiments organized in relation to MetaTutor, one of the first things participants have to do is complete a series of self-report questionnaires that measure, among other things, their emotions (Taub et al., 2014, p. 360). What is more, during the one-hour learning activity after which the quiz has to be taken, the participants had to fill in an evaluation form about their emotional state every 14 minutes before they could continue (Taub et al., 2014, p. 361). The Achievement Emotions Questionnaire (AEQ) asks the individual to answer questions with a 5-point Likert scale (1=

⁵⁵ "Electrodermal activity (EDA) is the umbrella term used for defining autonomic changes in the electrical properties of the skin. The most widely studied property is the skin conductance, which can be quantified by applying an electrical potential between two points of skin contact and measuring the resulting current flow between them. [...] EDA has been closely linked to autonomic emotional and cognitive processing, and EDA is [...] widely used as a sensitive index of emotional processing and sympathetic activity." (Braithwaite et al., 2015).

completely disagree, 5= completely agree) regarding class-related emotions, learning-related emotions and test-related emotions (Pekrun et al., 2011, p. 39). In the appendix we can see examples of questions of this questionnaire⁵⁶:

Achievement Emotions Questionnaire (AEQ): scales and sample items.

<i>Class-related emotions</i>	
1 Enjoyment	I enjoy being in class (d)
2 Hope	I am confident when I go to class (b)
3 Pride	I am proud of myself (a)
4 Anger	I am angry (a)
5 Anxiety	Thinking about class makes me feel uneasy (b)
6 Shame	I get embarrassed (d)
7 Hopelessness	I feel hopeless (b)
8 Boredom	I get bored (d)
<i>Learning-related emotions</i>	
1 Enjoyment	I enjoy acquiring new knowledge (d)
2 Hope	I have an optimistic view toward studying (b)
3 Pride	I'm proud of my capacity (d)
4 Anger	Studying makes me irritated (d)
5 Anxiety	I get tense and nervous while studying (d)
6 Shame	I feel ashamed that I can't absorb the simplest of details (d)
7 Hopelessness	I feel hopeless when I think about studying (b)
8 Boredom	The material bores me to death (d)
<i>Test emotions</i>	
1 Enjoyment	For me the test is a challenge that is enjoyable (d)
2 Hope	I have great hope that my abilities will be sufficient (b)
3 Pride	I'm proud of how well I mastered the exam (a)
4 Relief	I feel very relieved (a)
5 Anger	I am fairly annoyed (a)
6 Anxiety	I feel panicky when writing an exam (d)
7 Shame	I feel ashamed (a)
8 Hopelessness	I have lost all hope that I have the ability to do well on the exam (d)

Note: b/d/a = before/during/after the situation of attending class, studying, or taking tests and exams, respectively.

These emotions are strongly related to performative language. Consider how Pekrun et al. describe what they call *achievement emotions*. Hope and anxiety, can be linked respectively to the experiences of success and failure (Pekrun et al., 2011, p. 37).

In terms of valence, positive emotions can be distinguished from negative emotions, such as pleasant enjoyment versus unpleasant anxiety. In terms of activation, physiologically activating emotions can be differentiated from deactivating emotions, such as activating hope versus deactivating hopelessness.

(Pekrun et al., 2011, p. 37)

⁵⁶ Retrieved from Pekrun et al., 2011.

Emotions are clearly analyzed psychologically and in terms of use-value, not so much in terms of what these emotions might mean for the individual:

Emotions are thought to influence students' intrinsic motivation to learn which is based on interest and curiosity in learning, as well as their extrinsic motivation related to the attainment of positive outcomes (e.g., good grades) or to the prevention of negative outcomes (e.g., poor grades). Furthermore, emotions are expected to facilitate use of different learning strategies, including flexible strategies such as elaboration of learning material as well as rigid strategies such as simple rehearsal. In addition, emotions can promote different styles of regulation including student's self-regulation versus external regulation of learning.

(Pekrun et al., 2011, p. 38-39)

Accordingly, in terms of self-regulation, emotional states such as hopelessness, boredom, relief, anger, anxiety, shame, enjoyment, hope, pride ... have a performative value in the sense that they either have a positive or a negative value for the learning process. Because of this, researchers believe it would be interesting if Intelligent Tutoring Systems (ITS) were able to "interpret" the emotions of the learner:

An affect-sensitive ITS monitors the emotional state of the user in order to provide intervention, if appropriate. Sensor technology advancements offer a unique opportunity with this approach, as student interactions and physiological variables can be monitored. This allows for an ITS to respond to an individual student's affective needs, which can improve learning outcomes.

(Brawner & Goldberg, 2012, p. 73)

Hence scientific articles can be found with titles such as *Towards Automatically Detecting Whether Student Is In Flow*, *Cognitive Priming: Assessing the Use of Non-conscious Perception to Enhance Learner's Reasoning Ability*, *Automated Physiological-Based Detection of Mind Wandering during Learning*, *It's Written on Your Face: Detecting Affective States from Facial Expressions while Learning Computer Programming* ... Let us have a look at how the researchers of these articles register behavior, how they interpret that behavior and finally, what the consequences are for pedagogical actions of the automaton experience they create.

According to Bosch et al., it is possible to use videos of student's faces to detect affective states (Bosch et al., 2014, p. 39). Based on the position of the brows and particular kind of facial muscle activations and head pose, computer programs can already detect five different emotions: boredom, confusion, engagement, frustration and neutrality (Bosch et al., 2014, p. 41). Or, computers can measure the co-occurrence of two emotions. Happiness and surprise, for example, are emotions that often coincide. In relation to the program MetaTutor, which we already discussed

above, a Microsoft LifeCam was used to record participants' faces. Using a frame rate of 20 to 60 frames per second, the learner's emotions were classified by a program called FaceReader, a software program that analyses and classifies emotional states (Bosch et al., 2014, p. 41). Other ways to register emotions and affects are related to the use of the keyboard and mouse. *What is the average keystroke duration? What is the standard deviation of keystroke duration? What is the average mouse click duration* (Lee et al., 2014, p. 14)? And so on. "The results", the researchers argue,

indicate that the average mouse click duration is positively correlated to boredom, but negatively correlated to flow. Furthermore, the positive coefficient for the number of steps in the model for detecting boredom indicates that the longer the mouse click durations are, the more likely a student is bored.

(Lee et al., 2014, p. 16)

In yet another research, an experiment was set up in which participants had to solve a computer programming problem and engage in a dialogue with a human tutor. While doing this, facial video footage was produced, to analyse the affects produced by the participants (Grafsgaard et al., 2012, p. 53). In the article with the title *Toward a Machine Learning Framework for Understanding Affective Tutorial Interaction*, the coding system automatically detected the following emotional states in the pictures below⁵⁷:

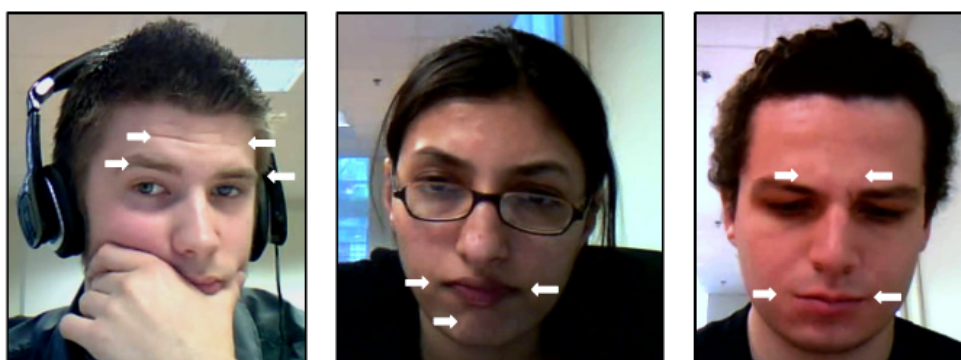


Fig. 1. Examples of facial action units: AUs 1+2 or "surprise" (left), 14+17 or "doubt" (center), and 4+12 or "confusion and frustration" (right). Arrows indicate facial movements.

Accordingly the researchers discovered, by means of an algorithm, that five patterns of affects occurred while the tutorial interaction took place (Grafsgaard et al., 2012, p. 55). What reoccurs in all these articles? Human behavior of the learners becomes an object of interest of automated systems or programs that collect this data and "interpret" it. As the complexity of these automated systems increases, more and more of this data can result in *immediate* intervention. In other words,

⁵⁷ Images were retrieved from Grafsgaard et al., 2012.

when the screenager relates to such a program, different actions and bodily reactions are registered to be able to interact. Sitting in front of the screen, one might frown, sigh, use a particular speed of mouse clicking or have a particular heartbeat. Also, the screenager can make different kinds of gestures while interacting with the screen or adopt different ways of looking at the screen. The screenager, according to some researchers, emits particular neuro-activities that can be registered and interpreted and that lead into pedagogical actions of the program. All of this results in the concrete adaptation of the program in relation to SRL-strategies.

Chen and Huang developed an Attention-Based Self-Regulated Learning Mechanism (ASRLM) to enhance attention of learners who are reading English texts online (Chen and Huang, 2014, p. 959). Sustained attention is necessary for effective learning, the authors argue, as it allows students for example to improve their reading performance (Chen and Huang, 2014, p. 961). Attention control implies, among other things, “clearing the mind of distracting thoughts” (Chen and Huang, 2014, p. 961). “Thus, how to help students control their attentions by removing stimuli that may cause distractions and help them build up their attention spans” (Chen and Huang, 2014, p. 961)? We already discussed this research question during this PhD dissertation, as both Lancaster and Münsterberg address the question of attention and its different states. What is more, Lancaster and educators that developed cinema education directly implement theories about attention to manipulate classroom experiences. However, the technology which steers the discussion of what attention itself is and how to manipulate it to achieve a particular goal, nowadays allows researchers to empirically analyse aspects of the individual that go beyond interpretation influenced by the five senses of human beings.

Attention, authors argue, can be measured in many ways: they refer to five ways of measuring attention so far explored by scientific research: an EEG or brainwave signal, eye movement, electrocardiogram, blood oxygenation and heart rate variability (Chen and Huang, 2014, p. 964). To experiment with the measurement of attention in this highly sophisticated way, Chen and Huang experimented with a device called MindSet earphone made by the company NeuroSky, which detects human electroencephalogram signals. This led the researchers into developing the ASRLM, a program which allows “learners to set SRL goals, monitor SRL status and reflect SRL outcomes according to individual learning plans associated with sustained attention” (Chen and Huang, 2014, p. 962). During what the researchers call “autonomic learning”, the individual reads texts online while the ASRLM is running in the background as the learner is wearing the MindSet earphone. The earphone measured the degree of attention of students that were reading English texts online (Chen and Huang, 2014, p. 966).

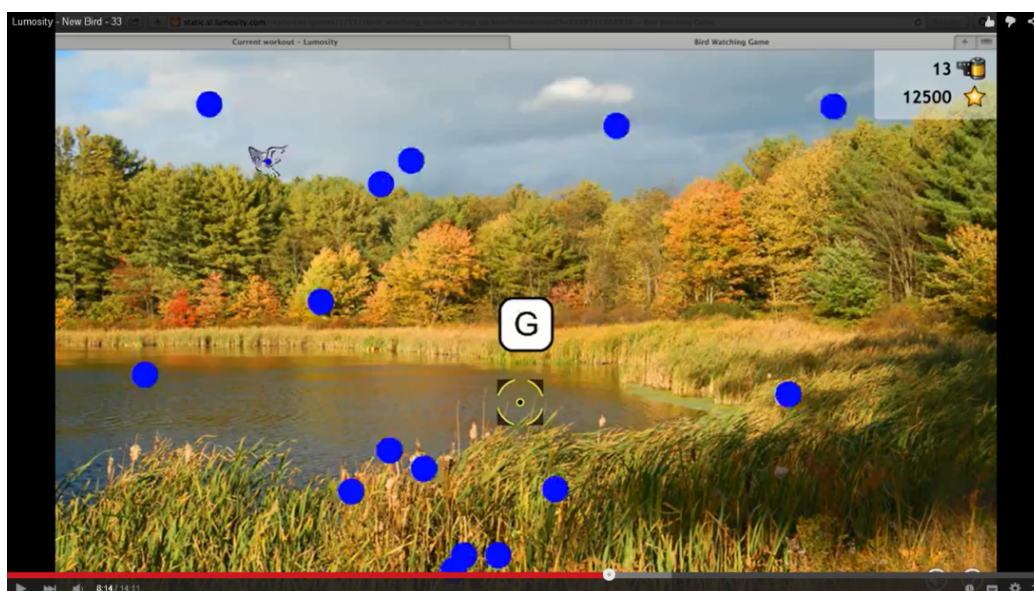
The MindSet earphone, which resembles a standard stereoscopic wireless earphone, uses a comfortable noninvasive dry electrode, with which the user merely wore an earphone and placed the earphone’s forearm on his or her forehead to measure an attention value with a range of 0-100 based on collected real-time EEG signals. The attention value, identified by a

patented algorithm developed by NeuroSky, was wirelessly transmitted to a computer with a brainwave receiver [...]. Based on EEG-based sustained attention detector, this study measured the attention value of learners who read annotated English texts online to acquire quantified attention-based index values, including values on the learner time achievement index, sustained attention index and effort index, for developing an attention-based SRL mechanism.

(Chen and Huang, 2014, p. 969)

As a result, one of the interventions of this program is that when according to the algorithm's logic the reader's sustained attention dropped, the learner received prompts such as "Pay more attention! Cheer up!" (Chen and Huang, 2014, p. 968). This way, the learner became aware of a loss of attention and was stimulated to concentrate on the reading activity. It can be argued that this intervention is similar to the act of a teacher who detects a student is staring through the window and brings the student back to the reality of the lesson by calling his or her name or making some kind of sound, for example.

What is striking about Chen and Huang's research is the pilot study they organized to confirm the reliability and validity for the way sustained attention was measured by means of EEG. I will relate this pilot study to the distinction Hayles makes between hyper and deep attention, as discussed in the second chapter of this part. In the pilot study an attention training game *Birdwatching* was used, of which we see a screenshot here⁵⁸:



⁵⁸ Image retrieved from <https://www.youtube.com/watch?v=vphRDrzgZWU> on 27/07/2015.

The goal is to score points by accurately identifying a letter in the center of the screen, while simultaneously detecting the location of a bird graphic in the periphery. The level of difficulty was adjusted automatically by decreasing the stimulus duration (range: 30-200 ms), increasing the eccentricity of the noncentral stimuli and increasing nonrelevant information (distractors).

(Chen and Huang, 2014, p. 970)

So at first, the letter in the middle is shown for quite a long time. Simultaneously, when a bird appears on the screen, the screenager has ample time to click on the bird. Also, distraction in the form of nonrelevant information is not omnipresent. When the level of difficulty rises, however, the amount of nonrelevant information rises, it becomes a matter of microseconds to see the letter and to simultaneously locate and click on the bird while still being attentive for what letter will appear in the middle of the screen. In short, the gamer has to be extremely attentive and divide attention, between the letter that will appear and the bird. What is more, the individual also has to focus on not being distracted by a third element, namely the nonrelevant information - the blue spots as depicted in the picture - this way actually splitting attention three ways.

As we saw, the researchers claim their program is designed to train pupils in clearing the mind of distracting thoughts. At first sight this objective seems to align with one of the objectives of modern cinema education, where it was the intent to keep distracting things out of the classroom so that deep attention in relation to one particular subject becomes possible. This was achieved in practice by drawing the attention to the front of the classroom, where either the teacher and the blackboard or the cinema screen presented the knowledge. In the pilot study above, however, it is clear that the researchers seem to be interested in a particular kind of attention that has nothing to do anymore with the attention which was important in a modern education.

The students playing this game were wearing a MindSet earphone to measure what the authors call sustained attention. I will leave aside whether attention can indeed empirically be validated by this type of tests. More important (and maybe problematic) is that these researchers are interested in this particular kind of attention as a measure of the skill of reading digital texts. The nature of attention produced by playing the game *birdwatching* is very similar to Hayles' description of *hyper attention*. Is this kind of attention - which the authors relate to a desired form of attention in relation to learning content - not similar to the attention of the gazelle, that, while grazing, continuously scans the area for predators? Also, the attention produced by the game *birdwatching* is similar to the nature of attention produced by digital screen culture in general as discussed in the second chapter. Ascertaining how the mind is able to cope with a bombardment of stimuli and using this as a parameter for a mental condition that is pedagogical, these researchers show that they are not interested in developing *deep attention*, but that they are rather focused on hyper attention as a desired mental state for pupils to be able to self-regulate. This raises the question whether and to what extent the specificity of the knowledge the student relates to is still important because by

splitting “sustained attention” over different aspects, deep attention becomes impossible. In developed societies, Hayles argues, educational institutions have always focused in creating environments where deep attention is the norm.

Educational institutions have specialized in these environments, combining such resources as quiet with an assigned task that demands deep attention to complete successfully. So standard has deep attention become in educational settings that it is the *de facto* norm, with hyper attention regarded as defective behavior that scarcely qualifies as a cognitive mode at all.

(Hayles, 2009, p. 188)

Sustained attention seems to make deep attention impossible, although for long it has been conceived of as the necessary mode of attention to be able to study something. Let us return to the fact that in terms of intervention and self-confrontation: it is clear that sophisticated programs today already are able to detect all kinds of behavior and that this can lead to direct interventions. In relation to the response of screenagers vis-à-vis pedagogical agents, Baylor & Kim (2005) go so far as to conclude that “learners apply the same social rules and expectations to human-agent interactions as they do to human-human interactions” (in: Hayashi, 2014, p. 116). Hayashi uses this assumption to let the pedagogical agent concretely intervene when two human learners are trying to define different concepts to each other while sitting next to a computer screen on which an intelligent program with a pedagogical agent is running:

For example, if the system detects a constant rate of some keywords (phrases) related to ‘explanations’ (e.g., ‘for example,’ ‘this means’, etc.), then the system would generate (1) encouragement suggestions like ‘Yes!! Keep on like that and keep up with explaining. Try to use some original ideas too. Good job!!’ If a constant rate of keywords (phrases) related to ‘trouble’ (e.g., ‘don’t know’, ‘help’, etc.) were detected, then the system would generate (2) metacognitive suggestions from the database such as ‘I know this is a tough one. Why not explain it using examples from a daily situation.’

(Hayashi, 2014, p. 119)

In short, if we take into account all possible technological measurements of what the learner is doing while in the act of learning, it seems that emotions are a critical part of human behavior and thus of learning. Hence, the correct processing of the behavior of the learner who is relating to an intelligent system can be used to enhance the performativity of the learning process. And so physiological sensors can, according to these researchers, measure boredom or curiosity. Or, an eye gaze can be used to detect affects and to predict learning gains (Jaques et al., 2014, p. 30).

Researchers in this particular field of interest also state that it is important to be able to use not just one form of data collection, but different forms of data collection of the behavior of the

learner, to combine the different data and this way increase successful analysis. It is obvious that these researchers use the information about the emotions and affects of the individual to improve the capability of intelligent systems to adapt to the individuality of a person:

Understanding the student's affective state, the ITS can use that information along with other student data (e.g. knowledge and progress toward goals) to select instructional strategies (e.g., direction) to optimize learning and performance.

(Sottolare & Proctor, 2001, p. 101)

Conclusion

While registering the individuality of the screenager, it can thus be concluded that the authors do not only focus on cognition, but also on emotions, affects and attention. They do this because behavior of the body which the system can register, can lead into a scaffolding which confronts the learner with oneself in a particular way. Not only does the program analyze the cognitive performance, it also gives feedback to the individual on the specific "mood-state" which the researchers claim the program can recognize, this way producing self-referential experiences by sending prompts, for example, that make the learners adapt their behavior in accordance with the performativity principle. As a consequence CBLEs control the screenager beyond what we saw earlier, namely beyond what to learn and when to learn it. So on the one hand these programs, as the authors and developers argue, indeed focus on the individuality of each and every one of us. On the other hand, however, this raises the question to what extent learning and education still allows a personal relationship with knowledge to materialize (which seems to be functioning like a kind of resource) and to what extent these programs - even though they actively confront the self with the self - have anything to do with the individuality of a person. In sharp contrast to the modern pedagogy which focused on the edification or *Bildung* of a person - shaping the character, relating the individual to certain ideals and morals, in short, attempting to bring the child towards adulthood and thus making itself unnecessary, it seems this postmodern pedagogy is about educational engineering which produces performative selves. This means that everybody should reflect about oneself while in the act of learning, an experience which the computer algorithms concretely produce by registering the overall behavior, comparing it to ideal behavior scripted according to the performativity principle and scaffolding the individual so that this person reflects about the self in that way.

Or differently put, the specificity of the relationship this or that individual has with a particular aspect of the world (in the form of knowledge) is at best secondary and should first and foremost be understood in terms of performativity. It could even be argued that knowledge threatens to become mere fuel to run the program. Likewise, it could be argued that who a person is, although the program takes into account the individual behavior, the expression on the face and the different cognitive strategies among other things, does not really matter. As long as one looks at oneself in a performative way, something for which digital technology seems to work perfectly.

3. Repositioning the figure of the teacher

Humans need not apply

The ability of the digital screen to produce self-referential experiences of course does not imply that researchers and educators follow only one specific road to experiment with screens in educational contexts. Nevertheless, there is an indication that when screens produce experiences in which the individual is confronted with a particular, *performative* self, educators conceive this as educational in nature. This not only fundamentally repositions the figure of the student (chapter 1) and the role of the classroom (chapter 2), but also the figure of the teacher. Let's consider how two researchers of the Department of Psychology and Institute for Intelligent Systems describe their idea of the ideal students.

They formulate learning goals, track progress on these goals, identify their own knowledge deficits, detect contradictions, ask good questions, search relevant information sources for answers, make inferences when answers are not directly available, and initiate steps to build knowledge at deep levels of mastery. Their 'meta' knowledge of cognition, emotions, communication, and social interaction is well honed, so-self-regulated learning (SRL) is easy.

(Graesser & McNamara, 2010, p. 3)

What is necessary, Graesser and McNamara argue, is a tutor who encourages SRL and who does "not lecture incessantly and steamroll the sessions" (Graesser & McNamara, 2010, p. 3). It is someone whose questions lead into self-exploration. Oddly enough they argue for a "long leash", which allows the student active exploration in the learning environment, without, however, being too long, as this would make the student flounder too much (Graesser & McNamara, 2010, p. 4).

The worst situation a student can find himself or herself in, according to these two researchers, is this "extreme case" where the lecturing tutor - a human in a normal classroom - is delivering monologues (Graesser & McNamara, 2010, p. 4). Research, they argue, has proven that this way of teaching is inferior to human tutoring, which involves interaction between the two parties characterized as dialogue (Graesser & McNamara, 2010, p. 5). At the other end of the continuum, they continue, "the student takes control in student-centered tutoring by selecting topics and problems, actively working on solutions, and asking questions - all vestiges of SRL" (Graesser & McNamara, 2010, p. 6). This situation in which the learner is completely independent, it is acknowledged, rarely happens, because research shows that students fail in assessing their comprehension of the material, show little initiative to ask questions and lack the ability for strategy and planning (Graesser & McNamara, 2010, p. 6). This analysis coincides with Devolder's remark that although students with high SRL skills are the most successful, students rarely show these skills when they relate to CBLEs.

Graesser and McNamara show that unlike in a modern pedagogy predating the 1950s, there is no real legitimation to be found anymore in the postmodern, performative perspective on education for a reality in which one generation filters the world and shapes the younger generation in relation to the perspective behind this intervention. What Graesser and McNamara call a radical tutor-centered experience is the situation in which an all-knowing teacher passes static knowledge into the heads of the pupils. Declining this way of teaching, they affirm that *Bildung* belongs - or should belong - to bygone days. Between the experience of a radical tutor-centered education (which according to them serves as a discourse function) and a radical student-centered learning experience (which is not realistic) - there is a dialogue between tutor and student which converges “on the sweet spot of optimal scaffolding; the student is actively engaged as the tutor subtly steers the interaction to productive learning activities” (Graesser & McNamara, 2010, p. 6).

It is obvious that the guiding force for the pedagogy they propose explicitly runs on efficiency and effectivity. “Tutoring researchers are currently exploring how to manage the interactive dialogue in a fashion that optimizes learning, motivation, and adaptation to individual learners” (Graesser & McNamara, 2010, p. 6). In short, the performativity principle guides this research into exploring the possibility to create the perfect dialogue. In order to achieve this, they use non-human pedagogical agents to “educate” the human learner.

We are convinced that pedagogical agents hold considerable promise in optimizing interaction-centered tutoring and training. The dialogue strategies of the agent can be consistent, precise, complex, adaptive, and durable. This is in sharp contrast to human tutors who rarely possess these desirable features [...] It is extremely difficult to train a human tutor to systematically apply a strategy that goes against the grain of his or her natural conversational inclinations. It is nearly impossible to train a human to perform complex quantitative computations that precisely track student characteristics and that formulate dialogue moves that optimally adapt to the learner. And of course, human tutors get fatigued, whereas computers are tireless. Although there allegedly are advantages of human over computer tutoring in promoting learning, the gap has appreciably narrowed, if not been eliminated, between human tutors and some intelligent tutoring systems with pedagogical agents.

(Graesser & McNamara, 2010, p. 7)

It is argued that a human tutor rarely allows students to correct their own error, but involves students in a dialogue that anticipates good and bad answers (Graesser & McNamara, 2010, p. 9). The argument is that on a cognitive level, the feedback from human tutors is not strategic enough, nor in tune with the cognitive state of the student (Graesser & McNamara, 2010, p. 11-12). On top of that, according to the authors, emotions are also important to take into account. They refer to the INSPIRE model which

[...] encourages the tutor to be empathetic and attentive to the student's needs, to assign tasks that are not too easy or difficult, to give indirect feedback on erroneous student contributions rather than harsh feedback, to encourage the student to work hard and face challenges, to empower the student with useful skills, and to pursue topics the student is curious about.

(Graesser & McNamara, 2010, p. 12)

These “sophisticated affect-motivated strategies” which are clearly psychological in nature, are, according to their own findings, rarely produced by human tutors. Computer tutors like pedagogical agents, however, “can quantitatively track the student's knowledge, skills and emotions” (Graesser & McNamara, 2010, p. 13). What is more, agents can play different roles, such as mentor, tutor, peer, ... The system, it continues, can even measure to what extent the human learner has acquired “the metacognitive skill of taking a critical stance” (Graesser & McNamara, 2010, p. 17) by means of relative frequency and accuracy of verbal answers the learner produces. While the learner browses web pages, the system for example asks itself the following question about the behavior of the student: “What is the relative frequency of verbal expressions that match experimenter-defined codes on critical stance for each page?” (Graesser & McNamara, 2010, p. 17).

In dialogue with AutoTutor, students have to speak out loud using 3 to 7 sentences per conversational turn. There are between 30 and 100 conversational turns and during those turns AutoTutor

attempts to get the student to articulate the expectations by generating pumps⁵⁹, hints, prompts, and feedback, but resorts to generating assertions with correct information when the student has trouble. The tutor corrects misconceptions that students express during the dialogue.

(Graesser & McNamara, 2010, p. 19)

In another system called *Operation ARIES!*, a student interacts with two animated pedagogical agents. One agent is the guide, an expert in scientific inquiry, and the other non-human agent is a fellow student (Graesser & McNamara, 2010, p. 22). This way a *trialog* takes place, “in natural language” (Graesser & McNamara, 2010, p. 23). This trialog

is sensitive to the student's performance. When the student is performing poorly, the student [...] will observe the two agents interacting with each other - a form of vicarious leaning [...]. When the student is performing extremely well, the trialog manager gets the human student to teach the student agent [so the non-human student], with the tutor agent periodically stepping in - a form of teachable agent.

(Graesser & McNamara, 2010, p. 23)

⁵⁹ Examples of pumps are “What else?” and “Keep going” (Graesser & McNamara, 2010, p. 9).

The experts - i.e. the human agents who wrote this article - conclude that both on a (meta-) cognitive level and emotional level, human tutors have limitations in promoting SRL, which computerized systems can rectify. Below we can read an example of a dialogue between an AutoTutor and a human student (Graesser & McNamara, 2010, p. 36-37).

Table 1. *Example AutoTutor-student dialogue with classified dialogue moves of AutoTutor, classified speech acts of the student, and comments.*

AutoTutor-1: *The sun exerts a gravitational force on the earth as the earth moves in its orbit around the sun. Does the earth pull equally on the sun? Explain why.* (MAIN QUESTION)

Student-2: *I don't know.* (A Metacognitive speech act that expresses what the student knows.)

AutoTutor-3: *Could you at least try to give me an answer? That way, we'll have something as a starting place to work from.* (PUMP. This dialogue move encourages the student to say more, but does not direct the student to express particular information.)

How does Newton's third law of motion apply to this situation? (HINT. This dialogue move leads the student to articulate a particular sentence, clause, or proposition.)

Let's move on. (DISCOURSE MARKER)

What can you say about the magnitude of the force that the earth exerts on the sun? (HINT)

Student-8: *What is the difference between a force and a vector?* (Student question.)

AutoTutor-9: *Force is any influence that tends to accelerate an object; a push or pull; measured in Newtons. Force is a vector quantity and vector is an arrow whose length represents the magnitude of a quantity and whose direction represents the direction of the quantity.*

(ANSWER. This answer is fetched from the textbook)

Okay, I bet you can get this! (DISCOURSE MARKER)

What is going on in this situation between the earth and sun? (HINT)

Student-10: *The sun is pulling on the earth because it is bigger.* (Student misconception).

Student-4: *Does Newton's law apply to opposite forces?* (This is a YES/NO Verification

Question; the student wants confirmation that the idea is correct.)

AutoTutor-5: *Yes, right!* (ANSWER. AutoTutor answers the student's question.)

Hum. (DISCOURSE MARKER. This connects different dialogue moves within a turn.)

There's still something missing from your explanation. (DISCOURSE MARKER.

AutoTutor lets the student know more is expected.)

Newton's Third Law refers to the forces exerted by one body on another _____?

(PROMPT. This dialogue move encourages the student to fill in a particular word or phrase.

Prompts are needed for students who have lower knowledge and verbal ability).

Student-6: *body* (Short Answer)

AutoTutor-7: *Bravo!* (POSITIVE FEEDBACK)

Student-10: *The sun is pulling on the earth because it is bigger.* (Student misconception).

AutoTutor-11: *No.* (NEGATIVE FEEDBACK) *the forces are equal in magnitude. Um, well, for*

every force there is a reaction force, such that the two forces constitute an action reaction

force pair. The two forces have opposite direction and equal magnitude. No matter how

different the masses of the two objects are, they will exert reaction forces on each other in

the same magnitude. (CORRECTION AutoTutor corrects the student's misconception.)

Do you understand? (COMPREHENSION GAUGING QUESTION)

Student-12: *Yeah. I see.* (Metacomprehension judgement)

To conclude, these researchers problematize and short-circuit the intervention of a human teacher vis-à-vis a human student: they cut the link between the generations (i.e. the link between the teacher and the student) and replace it by algorithms written by educational engineers. Here Devos' analysis in relation to Reality TV-shows is helpful to understand what is going on. Devos argues that we cease to see the mediation, one becomes oblivious to the fact that Reality TV is a staged act. Instead the spectator believes to be witnessing true emotions of an authentic human being reflecting about and realizing herself, forgetting the fact that cameras are everywhere and that there is a script. Replacing the human by a computer the researchers create a reality in which we also might cease to see the mediation that clearly runs on performativity:

It is conceivable that these agent-based systems have the best of both worlds. They can have human-like conversations, but can go a step further by being consistent, precise, complex, adaptive, and durable.

(Graesser & McNamara, 2010, p. 24)

It is not so clear what is meant with the best of the human world, but the world of computers, it seems, clearly has the advantage of outperforming humans in understanding each other. Arguing for this "education", these researchers do not act a-historically, because we saw with Lyotard that the roots of this way of thinking can be traced back to the 1950s. They do, however, celebrate the end of human history as the learner, it seems, would be "free" from the chains of the older generation. Accordingly, these researchers do not even consider the learner as a child anymore that needs to be educated by teachers and parents. In short, when it comes to education, humans need not apply. In contrast, the human agent who needs to learn can be programmed by educational engineers who are trying to bring to perfection the software on which this society is running. This is not science fiction, a kind of future "Brave New World" because concrete experiments with students have already taken place.

Towards a repositioning of the figure of the teacher

How to interpret the image created by these two researchers in the previous section? Of course, educational innovators in favour of digital screens, self-regulated learning and the development of CBLEs can argue that this kind of radical move towards the computerization of the figure of the teacher is not at all what digital education is or should be about. As we saw in the second chapter, most probably the impact of the screen will not mean the end of school, classroom and teacher. Today, a moderate innovation of education that builds on an enthusiasm to incorporate screens intensively will probably not result in the kind of script described above. The transformation that is taking place is less spectacular, because the experience of CBLEs might coincide with flipped classroom experiences and blended learning, alternating between individual, self-referential activities in relation to screens on the one hand and collective experiences in real-time, with fellow learners and teachers on the other.

The most important thing to discuss, then, is how the figure of the teacher operates in this digital curriculum. In research about the micro-event of experiencing a CBLE in relation to self-regulated learning, the human teacher most often is completely absent. This does not imply, however, that the researchers make a plea for an education without teachers. The absence of the teacher in these CBLEs is due to the fact that the programs often combine the experience of learning SRL strategies while relating to knowledge at the same time. These CBLEs are still more or less experimental, and it can be argued that accordingly the presence of a teacher would make it very complex to discuss the educational potential of these digital environments. In relation to the CBLE she developed, Devolder for example argues that to increase the reliability of the study, “teachers were asked not to provide external support or scaffolding of the learners” (Devolder, 2014, p. 193, p. 225). “Nevertheless,” Devolder continues,

we acknowledge the supportive role teachers should play in the use of CBLEs. When the CBLE is implemented on a broad scale in Flemish education to foster the acquisition of domain knowledge and SRL processes, the role of the teacher will be central. Both prior to and during the use of the CBLE, it will be the teacher who provides soft scaffolding to the learners. Soft scaffolds are customizable and negotiable scaffolds that are provided by an expert (Saye & Brush, 2002; Sharma & Hannafin, 2007).

(Devolder, 2014, p. 225-226)

In a curriculum which takes SRL as its core pedagogy, the digital screen is thus used as the central point of departure for the learning experience of both domain knowledge and the acquisition of SRL strategies. Yet, Devolder interprets the teacher as crucial in this student-centered education:

Labelling the teacher as an expert in this field implies that designers must provide sufficient support for teachers such that they can meet this demand. Teachers must be familiar with all aspects of the environment in order to support learners in exploiting the opportunities offered through CBLEs (Yelland & Masters, 2007). In this respect, the role of the teacher will be of such importance that in some classes the success of the CBLE will depend solely on the capabilities of the teacher at the level of SRL.

(Devolder, 2014, p. 226)

But what is it then that a teacher concretely does in a screen-oriented curriculum that more and more focuses on SRL strategies, individualized learning and teachers that do not teach, but who allow the students to learn? In the second chapter of this part, when discussing the flipped classroom, we already saw that the teacher’s position nowadays is shifting from performing a role in a teacher-centered pedagogy towards being part of a student-centered education. Clearly, the figure of the modern pre-war teacher has no place in the suggested curricula of the twenty-first century. Traditional learning experiences in which a teacher guides a group of learners in a conventional classroom and according to modern principles are conceived of as being artificial,

unnatural, not fun and not connecting to the life world of the child or youngster. In short, the teacher should give the pupil a particular kind of freedom which verbal, teacher-centered education cannot guarantee.

If we apply the performativity principle on the figure of the teacher, we can find ample scientific research that describes the teacher in postmodern terms. De Naeghel et al., for example, measured the way in which the teacher's behavior stimulated intrinsic reading motivation (De Naeghel et al., 2014). It was measured to what extent a teacher stimulated reading engagement and reading skills, to what extent teachers implemented structure and scaffolding strategies and how involved the teacher was with the students (De Naeghel et al., 2014, p. 1552). The aim of the study was "to identify teacher behavior positively associated with adolescents' intrinsic reading motivation" (De Naeghel et al., 2014, p. 1559). "This suggests that teachers should be encouraged to support their adolescent student's inherent psychological need for autonomy, competence, and relatedness during reading activities in order to create an optimally motivating classroom climate" (Deci & Ryan, 2000). The teacher here, functions as a *facilitator* or someone who optimizes, for every student, the conditions that are necessary so that learning can take place. This is a psycho-pedagogical role in which the teacher offers structure, makes sure that the student's wellbeing is optimal and that every learner has confidence that the task at hand is something that can be tackled.

The teacher's behavior, accordingly, should and can be measured, in terms of its productivity for wellbeing on behalf of the student. One of the research questions of Van Petegem et al. is which kind of interpersonal teacher behavior enhances student wellbeing (Van Petegem et al., 2008, p. 282). The authors discuss teachers according to a four behavioral quadrants: dominant-cooperative, submissive-cooperative, submissive-opposite and dominant-opposite. It is argued that a good teacher is a competent teacher who has "the natural ability to slide into any of the four behavior quadrants as the situation demands" (Van Petegem et al., 2008, p. 289). It could be argued that from this perspective, the teacher is in the position of a learner (of teaching) who constantly self-reflects vis-à-vis a concrete experience and adapts oneself as an emitter of this or that behavior, because in the specific context, one of the four behavior quadrants is more successful.

In the abovementioned examples, the teacher's effectivity was related to the role of facilitator and was discussed in direct interaction with the pupils. It is argued that his or her behavior has an impact on psycho-pedagogical conditions which are necessary so that individualized, student-centered learning can take place. Because of digital technology, the teacher as someone who constantly adapts his or her behavior - so as to be effective - has to deal with another complexity: because of the way technology is used inside and outside the classroom, both teacher and technology are perceived as facilitators of the learning process (Park et al., 2015, p. 316). Of course, this was already studied in the previous section, where the computer quite drastically even replaced the teacher. But, in a modest, technology and student-centered pedagogy, the teacher

shares his or her pedagogical role with digital technology in a hybrid environment (Park et al., 2015, p. 316). This is in fact what SRL by means of CBLEs shows, namely that by means of prompts, a digital timer, the registration of student behavior, etcetera, software gives the student self-referential information and support, both (meta-)cognitively and emotionally. But, this computer-student relationship is not a stand-alone event, as there are also student-teacher and student-student events, or experiences of online learning, for example, where students interact with each other and/or the teacher by means of networks and software. Accordingly, because of the rising importance of the screen, the teacher has to wear different types of hats, so Park et al. argue. Drawing on Berge (1995), who discusses the teacher in relation to online environments, these authors recognise the teacher as having *pedagogical, social, managerial and technical roles* to fulfil (Park et al., 2015, p. 317). It could thus be argued that the teacher remains a facilitator, but in a much more complex, hybrid experience which crosses the boundaries of different (digital) learning environments.

The paper *What Is Technological Pedagogical Content Knowledge?* (Koehler & Mishra, 2009) might give us insight into a general description of the role of the teacher in a twenty-first century education and specifically in relation to digital technology. Teaching implies being able to cope with high complexity and dynamics and has to integrate “knowledge of student thinking and learning, knowledge of subject matter, and increasingly, knowledge of technology” (Koehler & Mishra, 2009, p. 61). The TPACK framework the authors refer to consists of the three components that comprise the knowledge of the teacher: content, pedagogy and technology (Koehler & Mishra, 2009, p. 62). To understand TPACK as a form of knowledge one should look beyond a separate discussion of these three components.

[...] TPACK is the basis of effective teaching with technology, requiring an understanding of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face; knowledge of students’ prior knowledge and theories of epistemology; and knowledge of how technologies can be used to build on existing knowledge to develop new epistemologies or strengthen old ones.

(Koehler & Mishra, 2009, p. 66)

Accordingly, to teach successfully in relation to technology, the authors argue that “creating, maintaining, and re-establishing a dynamic equilibrium among all components” is required (Koehler & Mishra, 2009, p. 67). Or, consider how Lim et al. describe transformations in education as a consequence of technology, which aligns with Lyotard’s shift in the meaning of knowledge moving from a modern towards a postmodern knowledge society:

These transformations include a shift in the role of the teacher from being the sole source of information to a more complex role of negotiating lesson objectives with students, providing a varying degree of support for different students, monitoring students' progress, and encouraging reflection on classroom activities.

(Lim et al., 2013, p.59)

The role of the teacher, we can read, becomes more complex and multifaceted. What is more, these authors conceive the school as an ecological system that continuously evolves and depends on other, larger systems such as society and the education system it belongs to. Schools, in that line of thought, also have to respond to the latest technological innovations that have an impact on all of these systems. In short, it is required that teachers, students and school leaders continuously and dynamically co-adapt with transformations of technology and systems the school connects to (Lim et al., 2013, p. 62). The question that kind of ad-hoc flexibility brings with it, is whether and how a long-term pedagogy can be developed under such circumstances and what role the teacher has to play in this kind of curriculum. In its most radical acceptance, the self-referential capacity of the screen, as we saw, introduces the disappearance of the teacher. In reality, however, it seems that contemporary innovators do not have such a “pedagogy” in mind, and, in contrast, believe the teacher to be pivotal for the learning experience. To allow a school system to continuously adapt, one of the crucial questions that needs to be asked is what effective teaching consists of. It is argued however that this is a controversial and complex question because, among other things, the characteristics that are being used to measure the effectivity of a teacher, are open for debate (Lim et al., 2013, p. 64).

Lim et al. give the teacher a high degree of autonomy and importance. Ideally, they conclude, schools do not just implement the national curriculum, but “develop a school-based technology plan” to “stimulate a dialogue among school managers, teachers and parents about technology use in the curriculum” (Lim et al., 2013, p. 65). What is more, “the subjective meaning-making process of individual teachers as to how and why they will respond to technology use in class” should be fostered (Lim et al., 2013, p. 65). The point of view of these authors is thereby interesting, because it opens up the possibility to discuss technology, not just in terms of how it can help to achieve a prefixed goal, but in what way it potentially changes the perception on education. The school that comes to the fore in this text, however, is conceptualised as a “learning organisation”. This raises the question whether and to what extent the school as eco-system - as this is how the authors conceive schools - is in fact based on the business model as conceived by Deleuze, the model which according to him replaces every institution, school included. Or, do these authors, in contrast to what this model requires, try to open up the debate whether a school should be merely conceived of as a sub-system subjugated and influenced by its society and the national curriculum of a country on the one hand, and the latest changes in technology on the other? In terms of performativity, of course, implementing the latest technology and coping with external systems requires a learning organization “to continuously revise and refine current practices, and provide timely support

(Tondeur et al., 2008; Lim et al., 2013, p. 63). This ad-hoc flexibility and integration of the most vital and latest technological developments is, of course, a necessity when related to non-educational profit sectors where economic survival is at stake. In relation to education, however, the question in relation to the digitization of society might come up whether schools that are successful in adopting this kind of entrepreneurial attitude vis-à-vis technology, apart from being effective, are also *good* schools.

Concluding thoughts

Screen technology can produce self-referential experiences, which, when radically embraced, replaces the figure of the teacher completely. Innovation, however, should be conceived of in a less spectacular way, which will strengthen the teacher's role as facilitator and add complexities to the learning experience which teacher and school should be able to cope with. It is clear, however, that because of the digitization of society, innovation is steering towards experiences in which, less and less, a teacher introduces specific knowledge to a collective of students in a classroom. In the role of facilitator it seems that the teacher reproduces the dominant economic model of the postmodern society, in which the learner is conceived of as a consumer of learning needs. This learner should be able, first by means of psycho-educational scaffolds, ultimately all by herself, to manage, control and change, if necessary, the personal learning trajectory. In short, the individual should be able to self-regulate.

The teacher also cannot escape life long learning. As Vansieleghem argues, the teacher also should self-reflect like a learner with his or her own needs and problems, which should be made transparent so as continue to work on becoming a professional (Vansieleghem, 2010a, p. 101). This means that the teacher should operationalize first and foremost a productive self-reflection which is put into service so that each individual learner can realize his or her personal learning trajectory. In the above, this particular professionalization of the teacher was shown, as he or she, for example, should produce this or that behavior in accordance with the performativity principle. Implementation of the digital screen in education is likely to accentuate and accelerate the importance of this kind of self-management on behalf of the teacher and the student, unless the overall goal of education - to prepare each individual for lifelong learning in the knowledge society - is questioned.

In relation to what she calls the professional learning community, Vansieleghem describes the teacher first and foremost as a metacognitive guide that keeps facilitating behavior at the disposal of each student, so as to be able to optimize the learning activity (Vansieleghem, 2010a, p. 103). In relation to the digital screen, this implies that together with this technology, the teacher will provide scaffolds for each individual learner. However, the different competencies a teacher should acquire to fulfill this role of facilitator, can also be achieved by the combination of digital equipment and algorithms. In short, as the complexity of computers is still rapidly progressing, computers in the future can easily outperform the teacher in her role of facilitator by functioning as

a self-referential tool that individualizes its program for each learner. In that sense, the implementation of the screen as a self-referential tool can be seen as an opportunity to rethink education. Not in terms of performativity. Rather, because of the rising complexity of digital technology, the question comes to the fore what it is, exactly, that a teacher does which a computer cannot do. It is clear that moderate innovators nowadays do not argue for the disappearance of the teacher. However, there is little suggestion to be found to consider the teacher differently than someone who facilitates by providing psycho-educational scaffolds.

Part 4

Challenging the assumptions in view of educational experiences

General Introduction

In the introduction of this PhD dissertation I argued that the 1984 Apple commercial presents a duality between the masses on the one hand, and the singular individual on the other hand. The blond woman who smashes the screen with a hammer could be metonymic for an empowered, educated person who is capable of giving meaning to the screen related reality that we are living in. Instead of being indoctrinated she consciously rebels against a totalitarian regime, which uses technology in a deterministic way. In contrast to a passive, immersed, almost cataleptic group of people staring at the cinema screen, we see resolute and technocentric actions. This duality - in relation to which this part will formulate an alternative - is important to discuss.

The commercial shows our society believes that a particular kind of individuality is the “way out”, for each and every one of us, to avoid being subjected to power and to become empowered instead. Since the Enlightenment different projects of emancipation have arisen, within the fields of psychology and educational sciences, for example. The three previous parts of this study have shown how educators think about education and organize it on a mass scale, to make every subject look at oneself in a particular, Enlightened way, to reach autonomy and critical thinking. I also specifically studied how educational reform of the modern, disciplinary society and educational innovation of the postmodern knowledge society respond to the cinema screen and the digital screen. In relation to the duality present in the Apple commercial, reformers and innovators instrumentalize technology to reach predetermined educational goals that help developing what society conceives as an emancipated individual.

Technology and the modern, disciplinary society

In modern society, education tried to build or shape this individual through collective experiences in schools. The all-knowing teacher⁶⁰ disciplined pupils in relation to pre-fixed goals. The paradox is that these experiences were guided by standardized ideas about what it means to be an active, critical thinking person who participates in society in a constructive way. Technology played a vital role in this teacher-centered education. Consider how in England, from 1844 onwards the Committee of Council on Education in England decided the blackboard was a necessity and that schools could draw on state funds to install them in their classrooms (Wylie, 2012, p. 260). In her article “Teaching manuals and the blackboard” (2012), Wylie analyses blackboard pedagogy in late-nineteenth and early twentieth-century England. Inside teacher manuals distributed to teach

⁶⁰ In relation to the first part of this study it should be noted that Lancaster, although historically situated at the beginning of the Enlightenment period, developed an education in which the material, not the teacher, was the pivot of the learning system. Because of this, I argue his Monitorial System has more in common with a post-modern education than with a modern system. The role of the teacher was fundamentally different from how it was conceived in the first half of the twentieth century.

writing, reading and arithmetic, Wylie found that all subjects were to be taught by means of a repetitive pattern. “Manuals advise teaching traditional subjects by a repetitive pattern of the teacher’s demonstration, children’s imitation, teacher’s correction, and children’s practice” (Wylie, 2012, p. 260-261).

According to teaching manuals, handwriting lessons should focus on a demonstration of how to make the letter [...]. The teacher drew it on the blackboard while narrating the technique. Then children practised the letter themselves, while the teacher walked round the room making corrections. Next, the teacher corrected common mistakes using the blackboard in front of the class.

(Wylie, 2012, p. 262)

What the manuals seem to indicate, according to Wylie, is that an imitation-based method was installed by means of the blackboard, in which the teacher acted as a model, demonstrating a specific skill on the blackboard, after which the students practiced, followed by corrections of the teacher on the blackboard (Wylie, 2012, p. 264). Here, a teacher-centered education is clearly not to be interpreted in the sense that he or she incorporated a creative, personal and independent method to teach class. Rather, the manuals, step by step, give specific instructions to the teacher. But as a human being, the manuals indicate, the teacher is literally the model in relation to which the pupils or students had to look at themselves. As Depaepe and Henkens state, “teachers always educate towards a specific image they have in mind, which makes “imagining” an important dimension of the educational process” (Depaepe & Henkens, 2000, p. 12). In that sense the blackboard can be seen as a teaching machine that realized an image or *Bild* in relation to which the figure of the teacher showed the correct way to relate to. In the second part of this PhD dissertation I studied how the cinema screen was used in the modern classroom in the USA. Its surface played a role that was similar to the blackboard pedagogy as it is described above. By means of the blackboard or the cinema screen, the teacher brought the student to the point which society wishes the student to arrive at. To put it differently, the materiality of technology received a particular role in the sense that the way it mediated knowledge, was in line with the grammar of the disciplinary society.

Technology and the postmodern knowledge society

Today teachers, students and technology do not interact anymore in relation to a modern, disciplinary pedagogy as we saw it materialize in the second part of this study. If we browse websites of schools for example, and specifically read the section where every school explains what they stand for, we find a postmodern language that consciously refers to old-fashioned words like “routine”, “structure” and “tradition”. It is argued that these words, which were pivotal in both the blackboard pedagogy and the use of cinema education, should be replaced by “creativity”,

“flexibility” and the “talents inside the individual”⁶¹. The language of innovation holds the promise that we have cast off the modern paradox of the disciplinary society, in which a pre-conceived idea of what it means to be an emancipated individual led to standardized experiences. In fact, it is as if today the student has been or is about to be freed from the chains of collective practices, in which, in accordance to the image created in this Apple commercial, the grey masses have to accept what this or that teacher has to say. Instead education is about discovering the girl with the hammer in each individual, or, in other words, about allowing everybody to become whoever they are (Vansieleghem, 2010a, p. 105).

Instead of making everyone relate to knowledge, norms and values in a uniform way and using educational technology like the blackboard or the cinema screen to accomplish this, individuals are now required to self-regulate as a consequence of the crossroads where student-centered educational theories have met the latest screen related technologies. It is argued that by experiencing the digital screen, students can learn at their own pace and according to how they best learn. Or to put it differently, at first sight this “I” postmodern education puts forward, seems to be an entrepreneur of the personal life project, much in line with the blond woman in the Apple commercial. However, having described three characteristics of the digital screen in the third part of this PhD dissertation, it can be argued that the crossroads between self-regulated learning and screen-related activities might actually result in something different than an entrepreneurial, student-centered education.

From the 1950s onwards, a shift took place from modern disciplinary societies towards postmodern control societies. Discussing this historical shift is crucial to understand *what particular kind of individual* is at the centre of education today. The focus clearly shifts away from the collective experience, guided by the all-knowing teacher, towards personalized and flexible learning systems in which the specific learning needs of each individual are facilitated by the teacher and, more and more, by the (use of) the screen. Educational innovation in a postmodern world clearly paves the way to instrumentalize the digital screen as the successor of the blackboard and schoolbooks. This means that innovators affirm that screens enable huge amounts of data that operate as economical resources. The response is a reconfiguration of the student, from someone who should learn sets of facts and understand their significance, towards someone who should be able to extract the data he or she needs at this or that particular moment. The student should look at the self in a performative way, self-regulating the own behaviour in order to survive the knowledge society, rather than having a profound relationship with the specificity of the knowledge itself. Secondly, the digital screen is “always on” and therefore blurs the line between different environments; it constantly pushes the screen-user into interacting with off- and on-screen realities in the form of multitasking. Educational innovation responds to this by affirming the already mentioned pedagogy of self-regulated learning, but also by transforming the constellation of the classroom. Instead of interpreting this space and time as a withdrawal, a movement away from daily life, it is conceived

61 Retrieved from <http://www.sintpaulusgent.be/nl/sterk-voor-iedereen-105.htm> on 26/08/2015.

as a learning environment amongst other learning environments as everywhere and anytime, learning can and should take place. Thirdly, the screen is a self-referential object, which makes it the technology par excellence to put into practice self-regulated learning. Education is about following the prompts of scripted programs and the streams of information. Moreover, as was shown from page 183 onwards, this entails that computer programs self-regulate the individual, rather than allowing the individual to self-regulate. In that sense today's language of educational innovators clearly moves away from a disciplinary pedagogy in which a teacher strongly imposes this or that specific experience upon the individual and the collective. But rather than creating entrepreneurs of the individual life project, it seems to be putting into practice what Lancaster could only dream of, namely a kind of collective teaching machine in which digital technology, not only inside a classroom, takes over certain processes of decision-making. This kind of scaffolding, I argue, habituates or familiarizes the individual with the habit of governing and controlling oneself according to the principle of performativity and by means of concrete screen-related activities.

There is a particular kind of danger involved in the postmodern discourse on education. That is, it is as if we have reached a point in history where each and every one of us can start with a clean slate (or tablet), as if there are no more power discourses anymore. Or, that if there would be, they are related to the teacher-centered education of modern, disciplinary times, this way of thinking about education we are liberating ourselves from nowadays. The pitfall could then consist of believing that societies have learnt a lesson from the way the modern perspective on the duality between active, critical thinking and passive, uncritical non-thought realized problematic ways of being. That by radically emphasizing on self-regulated learning, the contemporary way of looking at and conceiving the duality liberated us from the paradox that surrounded a modern, disciplinary pedagogy. Yet, is there not at least the possibility that by emphasizing self-regulated learning and using the digital screen to instrumentalize this pedagogy, the paradox that haunted modern society simply returns, but in a different constellation, which is closer to Lancaster's Monitorial System than to a teacher-centered, modern perspective? And, in that line of thought, could it not be argued that the duality between the blond woman and the grey masses only holds if we are satisfied with a particular, limited interpretation of emancipation? In other words, an emancipation which is already *situated*. It seems that today educational innovation is about being guided and steered by information, rather than about developing an attitude of care for the relevance of the specificity of knowledge and the way the digitization has changed our relationship with knowledge. Educators affirm the screen in their curriculum in order to prepare the individual to become an active, economic participant of the knowledge society, which clearly runs on soft- and hardware. Where and when, however, do we discuss and question the potential shadows of this way of looking at education?

The duality of the Apple commercial can be conceived of as metonymic for how we, both in modern and in postmodern times, stand in the light in such a way that rationality and scientific ways of looking at the world blind us to the extent that we do not see the shadows anymore that every light

unquestionably produces. The light that comes from the postmodern focus on individualized, screen-centered learning trajectories, I argue, is a similar kind of light as the one produced by the modern, disciplinary regime. It is also a light produced by the Enlightenment, which, in general, made the individual look inward in a particular way. The disciplinary regime made us look at ourselves in terms of discipline and standardized norms and values. Acquiring *true* knowledge, the norms and values of the society were in“corp”orated inside the body and the mind. Today, the postmodern regime is not about acquiring knowledge anymore, but about productive behavior as a consequence of the learning activity, and specifically the prompts and commands the digital screen imposes on the individual. Learning simultaneously implies that the screenager looks at the self, not in terms of discipline, but in terms of performativity. Accordingly self-regulated learning by means of the digital screen is not at all student-centered and individualizing, but rather about creating docility by following the steps the digital screen imposes upon the learner. Furthermore, the relevance of the knowledge itself is at best secondary, to the point that the individual has no personal, subjective relationship with knowledge anymore.

Towards a different relationship with technology

What I propose is first and foremost a discussion about technology and the purpose of education in general, to think about education in an age of screens in an alternative way. This way I propose an education in which the point of departure is not a set of competences, skills or a standardized list of knowledge in the service of performativity. Accordingly education should shift its focus, away from the performativity principle, towards a more general approach in relation to knowledge and the way technology mediates this knowledge. Also, instead of instrumentalizing technology, education could generate critical awareness of the specific experiences technologies co-produce. The digital screen, apart from involving risks and opportunities in terms of performativity, also puts education at stake. By this I mean that in the light of a collective and intense relation of our society to multiple screens, education is open for change.

This should not necessarily be considered as problematic, although an attitude of care and interest for screen technology might be crucial, given the screen’s omnipresence in our lives and the kind of attention it generates. However, if innovation is preoccupied with education solely from the principle of performativity it is impossible to develop such an attitude, both on the level of the individual, but also collectively, as a society. Schools, pre-service teacher institutions and universities are potentially the public spaces where a research and debate could materialize, in the form of concrete practices that allow both the individual and the collective to reach this point where aspects of the world, the role of education and screen technology included, are put forward as a question. The omnipresence of the digital screen might actually be an opportunity to rethink anew certain elements of education. The role of education would then be that it offers the general ability to study how the screen changes our relationship with the world, each other and ourselves, and how, both on an individual and collective level, we want to respond to this human condition

produced by the rapid changes in technology and the screen's omnipresence.

In that line of thought, teacher training in terms of learning and instruction - that is, the concrete instrumentalization of theory into practice, could coincide with a particular kind of research. This is not a self-centered focus in terms of personal strengths and weaknesses which, applied to the student-becoming-a-teacher, means that the student maps positive and negative aspects of the self on an axis or in a model, to analyze what kind of teacher one is and how teaching behaviour can improve. What we share with one another, what we have in common today, is that we are living in an age of screens. This means that the screen can be the starting point for a collective discussion what the role of education could consist of. Moreover, one of the main questions is how the screen can potentially be used in education. To be able to study these questions, I argue, it is necessary that we try to think differently than in terms of performativity. This implies that we should not restrict our view about the teacher, the student and the time and space in which education takes place strictly in terms of efficiency and effectiveness. Due to the screen's presence we saw that respectively the figure of the student, the constellation of the classroom and the figure of the teacher re-enter our attention. That is, their self-evident positions, because of the screen's presence, become objects of transformation and the question of the role of education in an age characterized by a multitude of screen events is raised.

In what follows, I will not argue for the need of a particular talent, a competence or specific knowledge or skills. I will study the importance of a particular kind of ethos or willingness, which surpasses the duality between active thinking and passive non-thought and which education could help developing. The relevance of this ethos is that it helps the teacher and the student to have deep attention for an aspect of the world. How does the digital screen change our relationship with the world? Can it, apart from self-regulating each and every one of us, create a personal and profound relationship with a particularity of the world? And if so, how does the way the screen mediates our relationship with knowledge co-construct the experience? What way of relating to the digital screen allows reflection, dialogue, the development of ideas, in short, experimentation which allows the individual and the collective to grow and change?

In the first chapter, I will propose that it is precisely technology and a particular relationship to technology that can produce this ethos, which education could help developing. In what follows I will research different perspectives on technology in general and, it goes without saying, the digital screen in particular. Ways of looking at technology that we might overlook, forget or ignore because we believe them to be unimportant as they have no straightforward, added value from the perspective of performativity. In the first chapter authors will come to the fore who, in my opinion, are inspirational to see both the screen and education in a different light. Philosophers like Bernard Stiegler, Jean-Luc Nancy, Walter Benjamin and Gilles Deleuze will be discussed alongside with the anthropologist André Leroi-Gourhan. These authors have one particular thing in common: a particular way of looking at, standing in or reflecting about the world. The thoughts of these

authors are not guided by a division between active, conscious and critical thinking on the one hand and passive, consumerist and problematic non-thinking on the other.

In other words, thought can think only as a consequence of surpassing the duality as presented by the Apple commercial. Consequently an important question that will come to the fore in this chapter is what experiences allow us to arrive at this point. It is precisely technology, and the digital screen in particular, that can help us to concretely research this question. Remember Duhamel's words when he spoke about his experiences in the cinema auditorium: "*I can no longer think. The thoughts in my head have been removed by moving images*". In what follows, instead of interpreting this reflection as technophobic - which is how it was intended, because Duhamel hated the cinema, in his opinion it took away his ability to think - I will interpret Duhamel's quote as a technocentric invitation to experiment with the screen. In other words, I will conceptualize what it means to think as a consequence of finding oneself in a situation where thought *thinks through a non-thought* and as a consequence of the experience of technology. This way, I argue, the screenager can lose the performative language of today - to see a part of the world either as a resource, or something in relation to which one has to be performative - so as to be drawn to an aspect of the world in terms of care, interest and concern.

In the second chapter of this part, I will discuss the role of education in an age of screens. I will respectively discuss the figure of the student, the role of the classroom and the figure of the teacher to rethink the role of education in an age of screens. The role it could have, I will argue, is that it refuses the principle of performativity as its blueprint, and that, in contrast, it creates activities in relation to the ethos as discussed in the first chapter.

Chapter One

Putting the screen in a different light

1. Technology co-constructs meaning

The first perspective I will study in this chapter relates to technology in general and came to the fore while reading *Le Geste et la parole*. Here the French anthropologist Leroi-Gourhan argues that from a particular point in prehistory, “the central jet that gushes human-ward” is intrinsically connected to the concrete experience of technology, *before which* a human consciousness did not exist (Leroi-Gourhan, 1993, p. 58). By literally *using* body and mind in relation to the specificity of a technological object a particularly human way of relating to the world could materialize. This technocentric point of view leads Leroi-Gourhan into interpreting tools as external, artificial organs, both on an individual level, vis-à-vis the person wielding the tool as well as vis-à-vis the society as a whole, across different generations. As a consequence, important technological transformations produce ontological changes. “Some species change takes place whenever human kind replaces [...] its tools” (Leroi-Gourhan, 1993, p. 247). This is in line with how Joris Vlieghe discusses the words “tool” and “support”. “They are not merely having an instrumental significance, but rather play a *constitutive* role: they are not only things we use, but also things that form us, and decide on who we are and what we can do and think” (Vlieghe, 2015a, p. 7).

In what follows I will first introduce the way Leroi-Gourhan interprets human evolution from a technocentric perspective. His anthropology can be seen as an invitation, not to look at technology as a mere instrument for a fixed or designated purpose, but first and foremost as something which always has had the ability to produce a particular kind of ethos. This perspective also comes to the fore in Nancy’s reflections about the origins of art. The relevance of this particular ethos is that education could consist of activities in which one goes beyond the duality as described in the general introduction this PhD dissertation, which the Enlightenment period has accentuated until today, either in relation to a modern, disciplinary discourse or a postmodern discourse of control which runs on performativity. This means that from the perspective that is discussed in this chapter, education that is technocentric should experiment with the materiality of technology and create experiences which allow the general ability to reflect about what digital screen make us do, instead of using them for a pre-fixed goal.

Leroi-Gourhan’s technocentric view on humanity

In relation to human evolution, Leroi-Gourhan clearly opposes a cerebral consciousness in full awareness and control of the self and technology. Neither, however, does he describe mankind as completely passive, as if technology is shaping us without the possibility of any kind of reflection

and autonomy. The Apple commercial, it could be argued, produces both images next to each other, by depicting the blond woman with the hammer and contrasting her to the passive, uncritical masses who seem absorbed by technology, yet oblivious to its mediation. Leroi-Gourhan argues that for long the incorrect image that the brain set humanity in motion dominated the domain of anthropology. Long before we reached a brain of a certain complexity, however, crucial elements were set in place that made us evolve into what we are today. Yet, in the twentieth century there were still anthropologists that seemed to be looking for this subject characterized by an active consciousness and with which they could identify the first human (Leroi-Gourhan, 1964, p. 9-37).

As if all of a sudden, like with a flash or a bang, from one point in history onwards, a human thought was thrown into the world to start re-organizing its natural order, much like God in the first chapter of Genesis. Scientists would rather have accepted quadrupeds with highly developed brains, than this first biped humanoid of which we know now that it had the brain capacity of a monkey, also when it started to fabricate and use technology (Leroi-Gourhan, 1964, p. 128-129). Leroi-Gourhan sees the evolution of the brain as an incident that occurred rather late in the long road towards humanity. Although he does not minimize its importance, he believes nevertheless that the brain profited from a series of biomechanical and later biotechnological liberations rather than the other way around. In this way, Leroi-Gourhan flips the image of the scientists of his time, but what is more, as we will see he enables the discussion of the relationship with technology in other terms than active control of technology versus passive, unconscious mediation (Leroi-Gourhan, 1964, p. 47).

Pithecomorphism: the grasping hand allows a becoming-technical

Leroi-Gourhan's study shows that in the evolution towards humanity there are first of all important biological and mechanical liberations which were acquired over a period of millions of years. Human evolution can be traced back into oceanic life of the Palaeozoic Era (541 to 252 million years ago) (Leroi-Gourhan, 1964, p. 58). Leroi-Gourhan discusses among other things *ichthyomorphism*; fish have a kind of frame which holds their teeth together and provides a base for muscles to connect to (Leroi-Gourhan, 1964, p. 38-39). A second crucial characteristic, which took place in the Devonian period, is that the entire body moved away from the liquid element: it moved from water to land. At a particular moment, fish in muddy waters survived because they were able to draw the necessary oxygen from the air (aerial respiration) (Leroi-Gourhan, 1964, p. 40). However, at a certain point in prehistory, bio-mechanical liberations such as moving from water to land and transforming from a creature walking on all fours towards standing on two legs, more or less stagnated when the body, roughly speaking, received a form we more or less have today. From a particular period onwards we must focus on *bio-technic* transformations. In what follows, I will first discuss one particular bio-mechanical liberation because it explains how humanoids became *technical*.

The becoming-technical is the result of a transformation which took place more than 60 million years ago: walking on all fours consequently two limbs were liberated from the task of moving the body. No longer being instruments of locomotion, their function became vacant and this offered the possibility of *pithecomorphism* or the ability to grasp things. Humans share this capability with some other animals, like monkeys or elephants. At that point in prehistory, while the brain was still underdeveloped, two limbs slowly progress into hands, the bio-mechanical elements of the body that we need to focus upon to understand our human and technical relationship with the world. The ability of hands to grasp is one of the most important factors that led to the ability to speak. Leroi-Gourhan quotes a passage of Gregory of Nyssa's *Treatise on the Creation of Man*, written in the fourth century, which is worthy of reading at length:

Yet it is above all for the sake of speech that nature has added hands to our body. If man had been deprived of hands, his facial parts, like those of the quadrupeds, would have been fashioned to enable him to feed himself: His face would have been elongated in shape, narrow in the region of the nostrils, with lips protuberant, horny, hard, and thick for the purpose of plucking grass; the tongue between his teeth would be very different from what it is, fleshy, resistant, and rough, so as to crush his food together with the teeth; it would be moist, capable of allowing food to flow down its sides, like those of dogs or other flesh-eating animals, which allow food to flow through the interstices between their teeth. If our body had no hands, how could the articulated voice form inside it? The parts around the mouth would not be so constituted as to meet the requirements of speech. In such a case man would have had to bleat, bark, neigh, low like the oxen, or cry like the ass, or roar as the wild animals do.

(Nyssa, In: Leroi-Gourhan, 1993, p. 35)

With this example we can see that Leroi-Gourhan interprets human evolution as the result of concrete liberations, as gesture set the mouth free of certain tasks, with as a consequence the possibility of speech - "*la main qui libère la parole*" (Leroi-Gourhan, 1964, p. 40). Pithecomorphism not only allowed the possibility of speech, however, but also the potential of certain animals to become technical (Leroi-Gourhan, 1964, p. 56). The *Zinjanthropus Boisei*, for example, lived between 2.3 and 1.2 million years ago and already grasped objects. Nevertheless, it had such an underdeveloped mental capacity that we could never identify with this creature. "The discovery of Zinjanthropus has taught us that technicity is present even in the most rudimentary of human forms" (Leroi-Gourhan, 1964 p. 83). Interestingly, at the time technology comes into play as a consequence of pithecomorphism, the cerebral activity is still extremely limited.

There is a general characteristic that returns throughout Leroi-Gourhan's entire study, namely that from the beginning onwards, the line of species that evolved into humanity escaped specialization. Neither the teeth, hands, feet nor finally the brain evolved into an overspecialized limb or organ. This trait comes to the fore most radically, and in the form of a paradox, as a consequence of

pithecomorphism. In relation to this we could contrast human development to that of the bat, for example, which overspecializes in echolocation. It emits ultrasonic sounds, which produce echoes that return to the bat's auditory system. This results in the creation of a detailed image of the surroundings, even in complete darkness. The human line of evolution, however, has no such specialization: "*Il est resté capable d'à peu près toutes les actions possibles*" (Leroi-Gourhan, 1964, p. 168). In that sense, what is ontological about humanity is a *fundamental openness* in relation to the world, a trait which technology continued to emphasize by making it cultural:

[...] tortue lorsqu'il se retire sous un toit, crabe lorsqu'il prolonge sa main par une pince, cheval quand il devient cavalier, il redevient chaque fois disponible, sa mémoire transportée dans les livres, sa force multipliée dans le bœuf, son poing amélioré dans le marteau.

(Leroi-Gourhan, 1964, p. 48)

A tortoise when we retire beneath a roof, a crab when we hold out a pair of pliers, a horse when we bestride a mount. We are again and again available for new forms of action, our memory transferred to books, our strength multiplied in the ox, our fist improved in the hammer.

(Leroi-Gourhan, 1993, p. 246)

"*Il redevient chaque fois disponible*". In the hands, literally, from a particular point onwards, lies a technical ability of humanity to relate to the world through the object or tool it fabricates and manipulates. With a hammer it hits, with a needle it pierces, with a knife it cuts and so on. So the hand functioned - and still does - as the biomechanics through which the world time and again can be approached in different ways, as with each tool it offers a different way of relating with the world. When it no longer limited itself to grabbing food, but when it also manipulated objects for other more complex things, it paradoxically became a bio-mechanical element of the body that specialized in avoiding specialization. Here I would like to emphasize the relevance of this anthropological perspective for education. A bit further in this text I will discuss this more elaborately, but for now I wish to emphasize that education could also be perceived as such, that is, as a general introduction to and development of a human relationship with the world which avoids specialization, but which is nevertheless intrinsically related to the dominant technology of a particular time. Today this would imply a screen-centered education which relates to technology in such a way that our relationship with this tool (and thus with the world and ourselves) remains open. In that sense, the dominance of the principle of performativity and the instrumentalization of the digital screen as a tool in the service of this principle can be conceived as un-human because it fixes the relationship with the world in terms of effectivity and efficiency.

The constitutive role of technology began rather one-dimensionally, with the *pebble-culture*: one stone serves as a hammer and another as the object that receives the blow (Leroi-Gourhan, 1964, p.

92). The *chopper* is a tool manufactured by simply hitting one stone against another stone at a 90 degree angle, this way producing one cutting edge to work with, like a pocket knife *avant-la-lettre*. This gesture with which the chopper was fabricated, which certain monkeys today still perform albeit in a rudimentary form, was repeated for four hundred thousand years before a more complex technique was acquired (Leroi-Gourhan, 1964, p. 98, p. 134). This abyss of time contrasts with the idea of anthropologists that at one point in prehistory we “crossed the cerebral Rubicon” (Leroi-Gourhan, 1964, p. 94). Leroi-Gourhan’s study also disputes the contemporary idea that to understand what is specifically human, we must look *inward* or at the *insides*, at what goes on in the mind and body. The surge, nowadays, of what is called *neuroexistentialism*, which lies at the basis of books like *Touching a Nerve: Our Brains, Our Selves* (Churchland, 2014), shows that we are still tempted to equate human consciousness with the grey mass inside our heads. The idea that the essence of a species is to be found inside, however, would be supported by the development of animals such as a bat, for example, but not in relation to the line of creatures which are on the developmental path to become humans. In relation to its environment, the bat’s body developed echolocation. But it seems that humanity in contrast slowly secreted from the body and mind, which, Leroi-Gourhan argues, sweat it out *in relation to and as a consequence of this rudimentary tool*, the first culturally fabricated object. “*Son cerveau et son corps les exsudaient progressivement*” (Leroi-Gourhan, 1964, p. 151).

We perceive our intelligence as being a single entity and our tools as the noble fruit of our thought, whereas the Australanthropians, by contrast, seem to have possessed their tools in much the same way as an animal has claws. They appear to have acquired them, not through some flash of genius which, one fine day, led them to pick up a sharp-edged pebble and use it as an extension of their fist (an infantile hypothesis well-beloved of many works of popularization), but as if their brains and their bodies had gradually exuded them.

(Leroi-Gourhan, 1993, p. 106)

Leroi-Gourhan’s assumption is confirmed by current research which indicates that the increase in the volume of hominin brain size coincides with the moment the culture of stone tool making became a common practice (Davidson & McGrew, 2005, p. 808). In other words, anthropologists hypothesize that through the experience of making and using this technology, the way we relate to the world, ourselves and others *very slowly* became cultural and human. Humanity, then, is not a logical possibility that was waiting to be discovered, and which all of a sudden got switched on. It can be argued from this perspective that the very first technological object shaped body and mind and co-constructed meaning for the generations of humanoids that wielded it.

A human ethos: using the “I”

Ontologically speaking, Leroi-Gourhan’s theory produces an image about humanity which is intrinsically connected to technology. As a consequence of technology, *before which* a human consciousness did not exist, the species from which we descend got pushed into the kind of beings

that we are today. And precisely because of that Leroi-Gourhan sees tools as external, artificial organs which prolong the biological liberations vis-à-vis the environment. As already mentioned, “some species change takes place whenever human kind replaces [...] its tools” (Leroi-Gourhan, 1993, p. 247). To be clear, according to Leroi-Gourhan this process was produced through the concrete experiences of body and mind in relation to the fabrication and the use of choppers, an act which repeated itself for ten thousands of years before a first *difference* came about. I would therefore like to describe the extremely long period where technology was there, but humanity not yet, so to speak, as a prehistory where there were no “I’s” and “we’s”, there were no individuals, neither a collective, at least not in the sense that the species could be conceptualized as human, that is, as having a language and a culture. As Leroi-Gourhan argues, two million years ago, creatures like the Zinjanthropus Boisei already wielded tools, but clearly should be conceived as animals.

Leroi-Gourhan’s theory proposes that by literally *using* body and mind in relation to the specificity of an object, one particular jet gushed human-ward by which this “I” came into being. It was secreted through the “becoming-we” across generations, which passed on a particular way of relating to technology. Yet it seems that instead of looking for this cerebral active consciousness, one should rather interpret humanity as an unhurried awakening of the “I”, produced successively by important biomechanical and then biotechnological liberations *across the generations*. The genesis of human consciousness, then, is this evolution in which technology, body and mind together almost sluggishly became pregnant with the realization of being itself, an “I” part of a “we”. I would like to relate Leroi-Gourhan’s theory to Nancy’s interpretation of the “moment” that man is brought into the world. A particular ethos distinguishes humans from animals, Nancy states, which first and foremost is produced by a becoming-technical. That is, Nancy interprets the dawn of man as the interruption of “the continuity of being” (Hörl, 2013, p. 15), an interruption as a consequence of the becoming technical of existence. Nancy interprets the 30,000 year old cave paintings that were found on the walls of caves like Lascaux and Chauvet as manifestations of a particular kind of awareness of the self in the world which animals do not have: a

self outside the self, the outside standing for self, and he being surprised in face of self.
Painting paints this surprise. This surprise is painting.

(Nancy, 1996[1994], p. 69)

It would show nothing if it did not show itself showing. It shows in a stroke the stranger that it is, it shows the strangeness of the world to the world [...].

(Nancy, 1996, p. 70)

So the eye, which up until then had done nothing but perceive things, discovers itself seeing. It sees this: that it sees. It sees that it sees there: it sees that there is something of the world that shows itself.

(Nancy, 1996, p. 79)

The “eye” coming to the fore in these quotes of Nancy, is a particular kind of self-consciousness. This self-consciousness should maybe at once be considered as a flux or state, an ethos *in-the-middle-of-something*, not a fixed identity or defined way of being, neither a self-centered “I”, but rather an awareness of the self in the world, outside the self, *using itself* to paint its surprise. Of course, it can be argued that this is a contemporary, philosophical guess we can never verify because it deals with a past so far away that it might just as well be a wild stab in the dark. Yet, Nancy’s argument can be connected to Leroi-Gourhan’s idea on evolution which is based, not on this cerebral consciousness, but rather on the specificity of the world and more precisely the experience of becoming-technical as a consequence of grasping objects in a way that is inherited, yet characterized by a fundamental openness, because no specialization fixes humanity in the way echolocation determines the bat. A particular ethos thus comes to the fore, in relation to and as a consequence of the specificity of the tool that is being wielded.

The relevance of this ethos, when thinking about education in an age of digital screens, is that concrete activities in relation to the screen could interrupt the continuity of being and realize a becoming conscious of oneself, others and the world. This interruption does not imply that we have to be against progression or the continuity of being interpreted in terms of merely learning how to use this or that tool. Rather, this interruption is a specific experience of the continuity of being as a result of the relationship with technology. To describe this experience a different word than *learning* is necessary, like the Dutch word “*vorming*” or the German word “*Bildung*”. Aside from the fact that these words relate to a modern, disciplinary discourse, they can also be used in relation to the concrete experiences of both the individual and the society with technology and through that technology, with the world and each other. This experience of growth or becoming mature involves that one has the capability to reflect about the continuity of being, rather than just being part of it.

In the series *Technics and Time* Stiegler discusses the work of Leroi-Gourhan extensively and he elaborates on what he calls the techno-genesis that precedes the socio-genesis. This generally implies that mankind, in contrast to animals, shows a lack of origin or being. Mankind, Stiegler indicates, is not endowed with natural qualities, which means characteristics have to be acquired. Everything about humanity, in that line of thought, is thereby artificial. The human condition is consequently only possible *because of* technology, which is why Leroi-Gourhan conceives tools as artificial organs and our hands rather than our brains as the biological organs in which our essence resides, so to speak. This essence, however, is ontologically speaking always undefinable, because from a particular moment onwards, historically speaking, it coincides with the artificial prosthetics literally *at hand*. And these prosthetics, as we know, never stop transforming.

It is important to keep in mind that for Nancy, “art presents itself in a world that is resolutely technical” and that technology “historically paves the way for the appearance of ‘art-technique’” (Hörl, 2013). When we study cave art, there is an abundance of “negative hands” amongst the other drawings of animals and different signs. That is, by means of a template, the outlines of hands were

created as depicted in the picture below. Interestingly, the hands become visual although in a way they are not there. What is drawn, is everything outside the hand, so literally no hand is being drawn, but rather everything that surrounds it. This could testify, not of an ego avant-à-la-lettre, but rather, of this “I” outside itself, using itself in relation to the world in a bio-technical way.



The hand posed, pressed against the wall, grasps nothing. It is no longer a prehensile hand, but is offered like the form of an impossible or abandoned grasp. A grasp that could as well let go. The grasp of a letting go: the letting go of form.

(Nancy, 1996, p. 72)

The ethos I wish to conceptualize in relation to Leroi-Gourhan’s technocentric anthropology and Nancy’s interpretation of the origins of art relates to an interruption of “the continuity of being” as a consequence of a becoming-technical, something which animals don’t have. Even if animals grasp tools, like certain monkeys still do, the letting go of form does not interrupt the animals’ being-in-the-world. In this context I would like to make the distinction between the interpretation of tools as mere tools and tools having the potential to become *artefacts*. Merely a tool refers to the way we might conceive technology most of the time, that is, as a (handmade) object made by humans with a particular use in mind. There is a saying that when one holds a hammer, everything else becomes a nail. This is a very specific image about technology which refers to the instrumentalization of this or that particular technology, because the nail refers to the fixed purpose or object we associate the hammer with. This view on technology only goes halfway, that is to say, it presupposes a world

that is given, in the way the bat will use echolocation.

The principle of performativity, onto which postmodern society is running, aligns with this. It does not open the world, it closes the world and reduces our being-in-the-world. Translated to the world of screens this would imply that in terms of productivity, we know what it can be used for, and that we can specialize ourselves in particular skills that make us successful vis-à-vis the dominant technology of the society we are part of. Time and again, according to this reading, we are flexible in the sense that we can always learn new and better ways of relating to technology. On 15,000 year old archeological sites, evidence is found of debris produced by both skilled and unskilled workers which indicate that a culture of craftsmanship existed in which novice workers copied and learned techniques from skilled workers, a practice which was passed on over so many generations (Davidson & McGrew, 2005, p. 809). Until what time in pre-history this particular basic form of learning can be traced back will probably remain unknown.

However, learning in the narrow sense is not what defines us, because animals can learn as well and even pass on certain techniques to another generation, although with less complexity. The misinterpretation here, in my opinion, would be to situate Nancy's idea that the hand always can let go of a tool within a performative history of humanity, in the sense that letting go means "thinking out of the box", adding a different, more efficient technique or inventing a different tool or system that will allow humanity to better control the world. In that interpretation, the human is a super-animal that, by means of technology, can wield the sum of all specializations and can successively grasp this or that object. Of course, such a history can be written, but the danger is that in this way we interpret every human experience, like the utterance of language or the artistic performance in caves or the burying of the dead, as acts that either stabilize the chaos or create new opportunities, in short within a very narrow Darwinian interpretation of human history. What comes to the fore by reading Nancy and Leroi-Gourhan, however, is something totally different, an interruption of being as a consequence of a specific relationship with technology.

The word *artefact* hints at a more specific and deeper experience of the world *because of* the tool being handled. Typically human, then, is not that the hand time and again closes itself around a different, better tool. What Nancy and Leroi-Gourhan suggest is that tools always have had the capacity to strike us with a particular attitude. They can create a particular consciousness or shock which leads into arte-factual or unnatural behavior, which goes beyond "right" or "wrong", and which has nothing to do with either efficiency or effectivity in terms of survival. The word "ethos" then comes to the fore and refers, not to a kind of realization of how to improve life, but rather, a perplexity as a consequence of the artefact, which apparently led into a necessity to draw, to symbolize, to make abstractions and particular kinds of gestures unseen in the animal world, to imagine, to give words to a particular kind of awareness, in short, using the "I" as a manifestation of perplexity. This perplexity is nothing more or less, according to Nancy, than the realization of being outside the self.

The interpretation of Nancy of the negative hands coincides with Leroi-Gourhan's description of humanity as a species that specialized in avoiding specialization: *a grasp that at any time could let go as well*. This means that the concrete fact that the hand's characteristic in relation to technology is that it literally remains open, might also imply that humanity itself is something which cannot be defined. Rather, it shows itself to us by means of a particular ethos or awareness, a surprise in the middle of the everydayness of life. The essence of this surprise is produced by the specificity or the materiality of technology, in relation to which humanity thus has to invent itself time and again. The ethos conceptualized in this part will be further developed by referring to it as "using the 'I'". Using the "I" means shaping or forming oneself as a result of the concrete experience of the dominant technology of a society, and I interpret it as educational in the broad sense that it allows to reflect about being in the world, rather than just being in the world.

2. The screen is an automaton

Towards a new kind of (wo-)man

To be clear, we know very little of prehistoric wo-man, let alone of this period in which (s)he received a state we somehow would be able to identify with. As Leroi-Gourhan argues, to interpret these first steps can be compared to studying the button of the clothes of a seventeenth century soldier to say something about the battle he fought in. However, our interest does not lie with the specificity of the prehistoric chopper, rather with the specificity of contemporary technology and the digital screen in particular, which I will now study in relation to the ethos I discussed above.

Digital technology can be studied in relation to Leroi-Gourhan's concepts of "*machine automatrice*" and "*machine automatique*". In line with the technocentric point of view of Leroi-Gourhan, I would like to suggest that the screen is an *automaton* and that exploring this concept can help us imagine an education in relation to the screen in which the idea of using the "I" becomes more concrete. The word "automaton" was already introduced in the first part of this PhD dissertation, when studying Lancaster's system of education. It stands for "automatic device" and seems to originate from the seventeenth century. Definitions refer to a mechanical figure constructed to act as if by its own motive power; a robot. In his study, the French psychiatrist and philosopher Pierre Janet explains the French word *automatisme* by referring to a mechanical doll, which moves in and by itself, in contrast to a manual pump which receives its movement from a force outside the object (Janet, 1889, p. 21). Psychiatrists of the nineteenth century bluntly refused that this state of being could be linked not only to dolls, robots, animals or machines, but also to human beings (Janet, 1889, p. 34-40).

This in contrast to Leroi-Gourhan, who argues that the *machine automatique* is capable of creating a new kind of human, "completely artificial, who will react with a speed, a precision and a force without limits" (Leroi-Gourhan, 1965, p. 51). With the development of mechanical clocks and more complex machines in the nineteenth century, and although there is not yet a type of nervous system

as in contemporary computers, from a technological perspective everything is there to develop “*un appareil à mémoire*” (Gourhan, 1965, p. 55). The importance of this possibility, according to Leroi-Gourhan, cannot be underestimated. In general it can be said of technology that it takes over certain tasks of man or that it allows man to do things that the body by itself cannot accomplish. With an axe, a “*machine manuelle*”, man chops down a tree, for example. However, the fact that technology takes over certain processes of decision-making is something that is uniquely connected to industrial and post-industrial societies and their “*machine automatrice*”, of which the nineteenth century steam engine is the first of many (Leroi-Gourhan, 1965, p. 49).

The invention of “*machines automatrices*” puts the relationship with the world upside down in the sense that the liberation results in an exteriorization of the human muscle, which, according to Leroi-Gourhan, might even lead to a regression of the hand as the bio-mechanical organ through which we conceive the world anew with each tool it holds. Vis-à-vis the steam engine the hand no longer grasps, but merely pushes a button, after which an automated process is put in motion in and by itself, because of its basic program. The factory worker of the nineteenth century, however, is still faced with a machine without brains or hands. “*Son système nerveux n’a ni cerveau, ni main*” (Leroi-Gourhan, 1965, p. 49). The factory worker is still the brain that gives the force utility, and the hand feeds the fire that gives energy to the steam engine, it presents the material to the machine (Leroi-Gourhan, 1965, p. 50).

Unlike the “*machine automatrice*”, however, the *machine automatique*, the more complex development of automatisms which today has led to the use of digital computers, may produce a completely different species. According to this idea the twenty-first century is the dawn of a new kind of (wo-)man characterized by an *automatic* consciousness. This post-human has been referred to in this text as *the screenager*. Not the teenager interacting with a screen, but more broadly, this “I” and “we” living in an age of screens. And this because its external organs, its prosthetics, are radically new apparatuses in relation to which body and mind sweat out a different kind of relating to the world.

Libéré de ses outils, de ses gestes, de ses muscles, de la programmation de ses actes, de sa mémoire, libéré de son imagination par la perfection des moyens télé-diffusés, libéré du monde animal, végétal, du vent, du froid, des microbes, de l’inconnu des montagnes et des mers, l’homo sapiens de la zoologie est probablement près de la fin de sa carrière.

(Leroi-Gourhan, 1965, p. 266)

Freed from tools, gestures, muscles, from programming actions, from memory, freed from imagination by the perfection of the broadcasting media, freed from the animal world, the plant world, from cold, from microbes, from the unknown world of mountains and seas, zoological *Homo sapiens* is probably nearing the end of his career.

(Leroi-Gourhan, 1993, p. 407)

Walter Benjamin's industrial consciousness

What does it mean to say that the screen is an automaton? What is so specific about this automaton-experience and how we should understand what it means to say that the "I" is being used in relation to it? In line with Leroi-Gourhan's technocentric anthropology, this implies that the act of thinking as a consequence of technology goes beyond a dualistic distinction between active use of thoughts on the one hand and passive absorption or problematic non-thought on the other. In what follows, the automaton-experience will be further researched in relation to Walter Benjamin's thoughts about photography and cinema and Deleuze's notion of cinema as a spiritual automaton. In line with the theories of Münsterberg as studied in the second part of this PhD dissertation, Benjamin and Deleuze ask the question in relation to photography and the cinema screen what it could mean to be able to think in relation to them and as a consequence of their materiality, which shapes how we conceive ourselves and co-constructs how we look at the world.

We will first discuss Walter Benjamin's essay *The Work of Art in the Age of Mechanical Reproduction* (1999[1936]), in which he imagined how thought thinks because of photography and because of cinema. In doing so, we research the automaton vis-à-vis the ethos that came to the fore discussing Leroi-Gourhan and Nancy, which implies a willingness to experiment with what technology makes us do. It can be argued that Benjamin's discussion of photography and cinema shows the awakening of an industrial consciousness, something which Deleuze also develops in his books on cinema.

These authors have in common that they are interested in the art of photography and the spectator of cinema because of the involuntary attention being produced. This defines the spectator as being in a state of a distracted critic, an oxymoron that juxtaposes the girl with the hammer and the uncritical masses as presented by the Apple commercial, to create a post-human thinker-diver. With Benjamin a cinema spectator will come to the fore who, paradoxically, thinks through a non-thought. Deleuze also affirms cinema in this way, as he specifically conceptualizes it as an automaton, and the task at hand is not to tame it, but to render the automaton into a spiritual one. Or to put it differently, the person relating to photography and cinema, does not coincide either with this determined individual barging in the room smashing the screen, nor with the grey zombie-like masses that passively accept the screen's commands.

I will first study how Benjamin perceives the potential of photography and cinema. With Benjamin, the concept of attention resurfaces, which appeared in the case-study on Lancaster, Münsterberg's theory and the cinema education of *The Visual Instruction Movement*. What interests me most in Benjamin's text is the qualitative nature he attributes to both technologies. Benjamin's text presents the awakening of an industrial consciousness, that is, the recognition of a particular human condition as a result of the presence of industrial arts such as photography and cinema. Their lenses mechanically capture everything that appears before them and their products - the photograph and the film - can endlessly be reproduced and distributed on a large scale. It can be argued that

Benjamin's text is an attempt to find a way to affirm the specificity of these arts which are designed for and brought to the masses. In the light of the intellectual positions of Duhamel, Giroux and Dale as described from page 63 onwards, Benjamin's essay is very important. Vis-à-vis the question what it means to think under the conditions of an industrialized society with technologies such as radio, cinema, television and the cultural products that they produce, Benjamin offers an alternative view. Rhetorically, Duhamel asks, how is it possible for the subject to have a kind of critical distance? I will now try to show that for Benjamin this requires a renunciation of the duality or bifurcation of active, critical thinking on the one hand, and passive, consumerist non-thought on the other hand.

Benjamin's reading of the photographic image

Benjamin compares the work of a painter with what a magician does, and the work of a photographer with what a surgeon does. In his text the painter and magician thus refer to a pre-industrial way of producing art and examining reality, whereas the photographer and surgeon are figures Benjamin uses to conceptualize the specificity of the work of art in the age of mechanical reproduction, an age where the screen is situated. The painter, Benjamin argues, is like a magician who tries to heal a person by holding his hands above the body, not touching but trying to face the totality, man to man, of the patient (Benjamin, 1999, p. 233). Like the magician, Benjamin's painter comes close to reality, but he never enters this reality, he always represents it, this way also maintaining a natural distance from reality.

At the introduction of photography the figure of the painter was quite influential. It is not accidental, Benjamin states, that an important focal point of early photography was the family portrait. Taking pictures of the family came down from the art of a particular kind of painting that captured people in a beautiful pose, in a way they wanted themselves to be seen. The photograph gave them cult value, remembering them the way they were represented in the photograph (Benjamin, 1999, p. 226). This melancholic, painting-like praxis is different from the relation of man with the photo-image that Benjamin is interested in. In Benjamin's text, the eye turns away from the easel towards the lens and the frame that this lens offers. The naked eye discovers that it does not see everything there is to see, whereas the camera, a superhuman filter, captures everything that is being framed before the lens. What is more, the human hand of the painter has to touch the canvas in the way the sculptor has to chisel the stone to make a sculpture. The photographer, in contrast to the painter or a sculptor, does not have to touch reality, he registers it. Around 1900, Eugène Atget, for example, started photographing deserted Paris streets (Benjamin, 1999, p. 226); streets that appeared as matters that cannot escape the precision of the mechanical equipment:

It has quite justly been said of him that he photographed them like scenes of crime. The scene of a crime, too, is deserted; it is photographed for the purpose of establishing evidence. With Atget, photographs become standard evidence for historical occurrences,

and acquire a hidden political significance. They demand a specific kind of approach; free-floating contemplation is not appropriate to them. They stir the viewer; he feels challenged by them in a new way.

(Benjamin, 1999, p. 226)

In this quote we can read that photography does not relate to the praxis of the painter anymore. The aura of things is destroyed and replaced by the universal equality of whatever appears inside the frame or before the lens. In this way the photograph of a mountain, Benjamin argues, brings that mountain closer to us, spatially and humanly, than when we look at it from the mountain side (Benjamin, 1999, p. 223). We could say that within the frame the mountain is presented with equal importance as the air that surrounds it, for example. The operator of a camera, Benjamin claims, is like the surgeon who does exactly the reverse of the magician; the surgeon cuts into the patient who becomes an object. Instead of dealing with the totality - like the magician who faces the patient man to man - the surgeon on the other hand zooms in to deal with the specificity of the organs in which he makes an incision (Benjamin, 1999, p. 233).

Like the surgeon, the cameraman also penetrates reality with his mechanical equipment. The photo-image cuts, allowing us to not face the totality of reality anymore like the painter and the magician do, but to penetrate it (Benjamin, 1999, p. 233). This direct presentation instead of an indirect representation of things is the qualitative nature of photography that makes us relate to the world in a specific way. Benjamin's essay suggests that we venture on this road. Photography can easily be used, however, as a means for representation, to copy a desired reality in the way a painter paints an important person. A photograph of a family then establishes, for example, the dominance of the father in a certain period or a specific culture. Nowadays a painted portrait or photograph would perhaps represent the democratic relationship between parents and children characterized not by authority, but by negotiation.

What Benjamin (2008[1977]) says, however, is that the photographic image can emancipate itself from a parasitical dependence on the ritual. The photograph then does not refer to a world outside the photograph, the way a picture of a skinny girl could refer to the concept "poverty", for example. It simply presents a part of the world in a frame, thus penetrating into reality instead of maintaining a distance from reality like Benjamin's painter does. However, the strength of the photographic image does not lie in the fact that its superior eye helps us to see more and better how the world works so that we can understand (and manipulate) it. It has not perfected the art of painting, but makes us relate to the act of seeing as going beyond the representation of thoughts, ideas and opinions that are given. With Benjamin, "to see" becomes much more than recognizing "the dominant father of the twentieth century" or "the democratic family of the twenty-first century". It is not, in terms of attention, a recognition of what one already knows. It is not visually recognizing thoughts one is already familiar with, but on the contrary, an act of pushing thought beyond its limits.

In this sense, photography allows us to escape from a pre-established order of things towards a “willingness to see, to register but most of all to lose the self in the image” (Vansieleghem, 2010b, p. 121, free translation). Furthermore, an active relating of subjectivity is renounced and “in the photographic image subjectivity sees itself disarmed” (Vansieleghem, 2010b, p. 121, free translation). Consequently, “losing the self in the image” should not be interpreted in the sense that one becomes de-subjectified as a consequence of the image, in the way the classroom technology of Lancaster had the potential to de-subjectify the individual. This position of the subject in relation to photography has a significance that neither Duhamel, Dale nor Giroux ever recognized. A disarmed subjectivity only has a problematic connotation in their discussions. This also seems to be the position of Benjamin’s student, Theodor Adorno, who never agreed with the argument in *The Work of Art in the Age of Mechanical Reproduction*. The interesting Adorno-Benjamin debate is nicely elaborated upon by Susan Buck-Morss’ in *The Origin of Negative Dialectics*:

The constant theme of Adorno’s criticism had been that Benjamin tended to eliminate the role of the active, critically reflective subject in the cognitive process. It was manifested in Benjamin’s affirmation of the empirically existing consciousness of the proletariat, as well as in the surrealist methods which he borrowed, with their stress on the subject’s passivity. It was behind Adorno’s warning that citing facts without commentary caught Benjamin at the crossroads between magic and positivism. Adorno interpreted this ‘extinction of the ego’ (*Erloschung des Ichs*) within method as a reflection of modern man’s incapacity for experience, which in turn was the cause of his political impotence (*Ohnmacht*). Adorno’s subsequent work in social psychology was largely a demonstration of this problem as it manifested itself in the individual’s passive conformism, his consumption of mass culture, and his simultaneous reverence for positivist ‘facts’ on the one hand and for the magic of demagogues and horoscopes on the other. The problem, expressed in philosophical terms, meant that the subject was incapable of sufficient distance from the object to experience it dialectically, that is, critically as a nonidentical other, and identity itself became synonymous with the impotence of the subject and his domination by the social system.

(Buck-Morss, 1977, p. 171)

Adorno’s doom scenario is portrayed best in *Dialectics of Enlightenment* (1944), in which he, together with Max Horkheimer, radically opposes a mass culture and its products like cinema, which result in modes of being that destroy the possibility of thought. However, what Benjamin’s essay shows is that “to see” precisely involves a kind of disarmament of subjectivity, the impossibility to think what we want to think, as thought thinks “photographically” or, as we will now see, “cinematographically”. This is in line with Leroi-Gourhan’s idea that technology has ontological consequences and Nancy’s point of view that the origins of art lies in technology.

Benjamin's reading of the cinematographic image

The moving image has in common with the photographic image that it cuts into reality. Industrially it presents a series of photographs. Surgeon-like, the camera produces images at a rate of 24 per second. Different qualities hit us repeatedly and finally present a cinematographic whole when the experience has exposed us to its last photo-image. But, it has its own cinematographic potential that cannot be reduced to the idea that cinema is basically the sum of subsequent photographs. Just like the photograph has its own qualitative potential as described in the above, so does the moving image have its own specificity. Cinema's unique characteristic shows us, for example, a muscle of the body contracting or the miniscule actions that constitute the movement of drinking a cup of coffee. Or cinema presents the gallop of a horse and the exact positions of the four hooves during this movement.

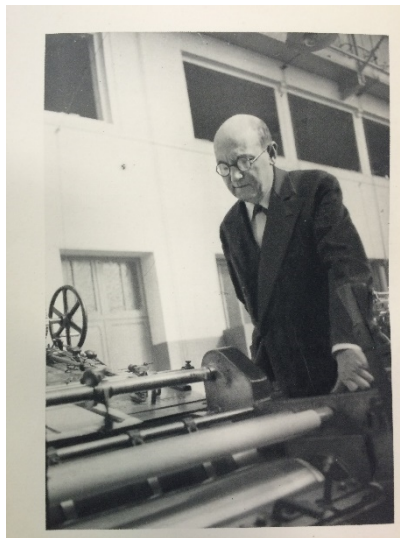
Dziga Vertov's film *Man with a Movie Camera* (Soviet Union, 1929) is a perfect illustration of what a movie camera is capable of. The factors of movement and time are captured by a camera, which adds to the image its own nature, zooming in or out, giving speed to the image or slowing it down, shooting from different angles or itself in motion with the speed of the train upon which it is mounted. Vertov's film shows that cinema does not just add movement to photographic art. It introduces an essentially new art form Vertov and other directors are experimenting with. The nature of cinema forces the viewer to see, over and over again and brings him in to what Benjamin calls a particular state of distraction. I interpret this state of distraction as similar to Münsterberg's concept of involuntary attention, a mental state that was the result of the systematic exposure of the spectator to cinema (page 50). For Benjamin, it is a matter of accepting and following this industrial repetition and consequently not a matter of intellectually blocking and resisting the moving image. It is not the refinement of the art of representation and thus does not show poses of beauty even more pure as a preindustrial painting does. The qualities we call movement and time are, for Benjamin, the catalysts of an experience in which thoughts in our heads have been suspended. Our consciousness responds to a work of art in a way that we can only understand as cinematographic in nature; there is a presentation by the cameraman-surgeon of a moving image that literally pushes thought into motion, making it impossible for the spectator to have free-floating associations.

For this reason, Duhamel criticized and feared cinema. And Giroux's film pedagogy seems to be about blocking the effect of cinema by breaking into it. Benjamin, however, shows that the very nature of cinema produces an experience in which the act of thinking cannot be understood from the duality of either active, critical thinking on the one hand or passive, unconscious not-thinking on the other hand. Like photography, he sees cinema as an ingredient "of a new political art of montage" because the movement-image pushes the viewer in the position of the distracted critic who, paradoxically, thinks through a non-thought (Benjamin, In: Rancière, 2011, p. 108). Cinema produces an experience in which the spectator has an awareness of passive attentiveness or attentive passiveness, in which one is absorbed by the moving image while being concentrated or

focused at the same time (Benjamin, 1999, p. 240). Cinema, so it seems in Benjamin's essay, shows us that when we think what we want to think or see what we want to see, we are not thinking and seeing yet. What is more, the implications of cinematographic sight for thought is precisely that it can be a catalyst for an experience in which a thought opens up to us, forces itself upon us. This effect of cinema, I would argue, has an educational potential. Not in the sense that cinema gives the spectator information that he or she did not know before, but rather that a way of thinking about or seeing the world is presented to the spectator, who is pushed into thinking about it.

Cinema as a spiritual automaton

After reading Benjamin, Duhamel's words receive a different meaning. "I can no longer think what I want to think". What a silly image about thought that Duhamel puts forward, Deleuze argues in his course on cinema. In *L'Humaniste et L'Automate* we can see Duhamel posing himself in relation to a machine. Looking at his posture we can almost hear the words he will write further in his book: "*La machine, je le répète, est ce que nous la faisons et parce que nous la faisons*" (Duhamel, 1933, p. 25). "The machine, I repeat, is what we make it do and because we make it do what it does"⁶².



Here is a guy, Deleuze continues jokingly, who stands before a painting thinking only what he wants to think:

Si on réfléchit mais tout d'un coup on se dit: ah bon! Mais alors c'est un type qui, lorsqu'il lit un roman ou lorsqu'il se trouve devant un tableau, il pense ce qu'il veut! C'est quand même intéressant ça, quelqu'un qui se fait de l'art cette conception: devant l'art, je pense ce que je veux! Alors devant un tableau de Rembrandt, je peux penser ce que je veux? C'est curieux! C'est quand même une drôle d'idée! [...] Généralement, l'idéal de la pensée,

⁶² Photograph by Jean Roubier, retrieved from Duhamel, 1933.

c'est précisément de ne pas penser ce qu'elle veut, c'est-à-dire d'être forcé de penser quelque chose. Un tableau, bon, un Rembrandt, vous ne pouvez pas penser ce que vous voulez, ben, je sais pas comment vous pourriez faire. [...] C'est la nature de la pensée qu'on ne puisse pas pouvoir penser ce qu'on veut.

(Deleuze, 1984)

If one thinks about it, suddenly one says: I See! But then this is someone who, when reading a novel or when standing in front of a painting, thinks what he wants! This is actually interesting, someone who conceptualizes art in this way: in relation to art, I think what I want. So standing before a painting of Rembrandt, I can think what I want? This is a curious idea! This is actually a comic thought! [...] Generally speaking, the ideal of thinking consists precisely of not thinking what it wants, that is to say, being forced to think something. A painting, a Rembrandt, you cannot think what you want, I don't know how you would be able to do that. [...] It is the nature of thinking that one cannot think what one wants.

(Deleuze, 1984, free translation)

Reading this quote, it can be argued that in line with Benjamin Deleuze recognizes the immense vitality for thinking of a certain passiveness of the mind. This mental condition, however, cannot be confused with immersion into forces in such a strong way that the subject is de-subjectified, which is what Duhamel believed characterized the cinema spectator and why he hated cinema so much, because it entails by definition a problematic loss of the capability to think. Duhamel's reflection about cinema, Deleuze argues, is a hasty and sloppy idea about what it means to think, and importantly, what the implications of cinema are for thought. The reason why I believe Benjamin's essay has a pedagogical significance, is precisely because it seems that the very condition for a thought to become possible, - in an age of mechanical reproduction - is that this implies a movement of thought. So exposure to the world somehow involves this movement towards an outside. The thoughts in my head have been removed by moving images. This effect of cinema on the mind of the spectator, Deleuze replies to Duhamel, cannot be that bad (Deleuze, 1984).

Deleuze's study on cinema uses a large number of images from more than two hundred films. Most of these films were probably seen in the movie theatres which Deleuze visited as a spectator. For Deleuze, cinema experiences can be used in the artistic sense and to do philosophy. Therefore, cinema is a philosophical concept in Deleuze's cinema books constructed from the multiple experiences Deleuze had in the darkness of the movie theatre, where films were projected of great directors who "think with movement-images and time-images instead of concepts" (Deleuze, 1986[1983], p. xiv). Specifically, cinema has to be approached not as an illusion of movement, created by immobile sections to which our consciousness "adds" the movement. Paintings for example, are "immobile in themselves so that it is the mind which has to 'make' movement" (Deleuze, 1989, p. 156). Cinema, on the other hand, is not "immobile section + abstract movement", but "a section which is mobile" in itself, in short, an image which makes self-

movement. “[M]ovement is the immediate given of the image” (Deleuze, 1986, p. 2 & Deleuze, 1989, p. 156). Deleuze thus conceives cinema as an automaton and this way it can turn thinking itself into an event or a throw of the dice. Of course this does not mean that for Deleuze standing in front of a painting does not make you think, rather, only with cinema does this movement become automatic, or in line with Benjamin, industrial. Cinema creates a particular kind of attention, “producing a shock to thought, communicating vibrations to the cortex, touching the nervous and cerebral system directly” (Deleuze, 1989, p. 156). In Münsterbergian terms, attention is involuntary in nature.

Deleuze’s cinema books, *The Movement-image* and *The Time-image*, are about a particular cinematographic process of thinking as Deleuze asks the question what it means to think through and from within moving images. His study on cinema is a radical exercise to explore the implications of cinema for philosophy - for what it means to do philosophy. Without ever installing a hierarchy, Deleuze describes scenes to demonstrate cinema’s potential, which is a non-philosophy for him that can be used to do philosophy. Deleuze refers to it as an artistic medium that makes us feel, see and think differently than through ideas and poses that represent something, the way Giroux’s film pedagogy uses this medium. For Deleuze, cinema cannot be defined or understood through linguistics or psychological models or theories, because then philosophy and science would build knowledge through concepts that determine what it is (Deleuze, 1995[1990]). The core of cinema is then an object, “film”, that one should analyze with a method that allows verification, so that we can use it for a programme with pre-established goals and pre -and post-tests to measure its effects. In Münsterbergian terms, the attention in relation to cinema would be voluntary, seeking what one wants to find.

Cinema for Deleuze always shows us the world, and here lies my interest in Deleuze’s study; watching cinema is a way of being connected to the world. It shows us aspects of the world “in the process of being formed or dissolving through the movement of lines and points taken at any-distant-whatevers of their course” (Deleuze, 1986, p. 6). “Cinema” comes from the Greek word “kinetic”, meaning “a motion”. As an art form it has the potential, according to Deleuze, to offer an experience of the world in which thinking does not think any more through a given method or a “presupposed image of thought which determines our goals and our methods when we try to think” (Deleuze, 2004[1968], p. xv). Cinema, however, is a practice of images and signs, created by great directors who, according to Deleuze, think through moving images and create compositions of “images and of signs, that is, a pre-verbal intelligible content” (Deleuze, 1986, p. ix).

Automatic movement gives rise to a spiritual automaton in us, which reacts in turn on movement. The spiritual automaton no longer designates—as it does in classical philosophy—the logical or abstract possibility of formally deducing thoughts from each other, but the circuit into which they enter with the movement-image, the shared power of what forces thinking and what thinks under the shock; a nooshock. Heidegger said: ‘Man can

think in the sense that he possesses the possibility to do so. This possibility alone, however, is no guarantee to us that we are capable of thinking.’ It is this capacity, this power, and not the simple logical possibility, that cinema claims to give us in communicating the shock. It is as if cinema were telling us: with me, with the movement-image, you can’t escape the shock which arouses the thinker in you.

(Deleuze, 1989, p. 156)

The spiritual automaton in us is a mental condition in which the subject is released from identities and structures in favor of a movement in thought. The power of cinema is that its moving images rehabilitate “the claims of the human brain to its place at the center of the world, from where it can put everything at its disposal” (Rancière, 2006, p. 122). But this position “at the center of the world”, this capacity, in line with the abovementioned quote, is no simple logical possibility. The darkness in the movie theatre is very important to realize this because it puts us in a condition that makes us forget our physical position and a particular kind of world outside of the movie theatre. We are no longer part of a specific class in society or part of a particular ethnicity, no longer son or daughter of our parents or mother or father of our children. Of course, the cinema experience does not make these classifications disappear, but can realize a movement in thought that goes beyond them. So what Deleuze has made us attentive for, is that the concept of cinema implies an experience of becoming where we are leading ourselves away from ourselves by means of this materiality or non-linguistic entity that cinema is.

Deleuze describes cinema as provoking “a primitive language of thought” inside the spectator. What takes place is an internal, drunken monologue (Deleuze, 1989, p. 159). To understand what the spiritual automaton is about, what Deleuze means with drunken monologue, it is crucial to study the difference between on the one hand Giroux’ conceptualization of subjectivity in relation to cinema, Dale’s critical spectator of cinema, Duhamel’s human consciousness in control of the own thoughts and Deleuze’s spiritual automaton on the other hand, which I align with Münsterberg’s subject who is full of involuntary attention, or Benjamin’s cinema spectator, “pregnant” with attentive passiveness. The object of cinema, that which is being filmed by directors, for Dale, Giroux and Duhamel, is humanity. That is, what is represented on the screen, through associations and suggestions, is a representation of humanity. In American cinema, for example, the main actor, a hero, is capable of actions which restore a kind of peace inside the whole that the film is. An unbalance, depicted in the beginning of the film, pushes that hero into actions that restore the world.

In the arguments of Giroux, Dale and Duhamel, the subject of cinema, the spectator through whose consciousness cinema has an effect, is the individual. This individual should, in the light of the representation of humanity as depicted on the screen, have his or her proper judgment. In Dale’s words, the spectator should not be a “Yes-man” who just accepts representations as given truths. In the Apple commercial, the woman with the hammer represents the desired individuality. This

interpretation of how cinema “works” on the individual, primarily thrives on the act of identification. The spectator of cinema identifies (or not) with what the director suggests, and agrees or disagrees with the film or aspects of the film. Identification with the main character of the film is very important in that regard. The hero acts and the spectator judges these actions from the personal point of view. Action of the hero and vision of the spectator meet each other on the cinema screen: the spectator finds himself or herself looking in the mirror by means of identification with the actions of the protagonist (Giroux).

The “drunken monologue” that makes the automaton spiritual has nothing whatsoever to do with humanity as object of study and the spectator-as-individual as the subject through whom this humanity passes. Cinema, in Deleuze’s study, is about nature, even if that nature is humanity. The close-up of a face for example, is not a subjectivity of an actor playing a hero the spectator can choose to identify with or not. The face is a landscape and the mental thoughts of the spectator in relation to this landscape a movement, not of a person vis-à-vis an idea about humanity, but of an individual that is part of the masses - for whom cinema is designed - vis-à-vis a world force (Deleuze, 1989, p. 162).

Cinema’s materiality can thus be understood in the sense that it suspends or short-circuits the idea of a programme and that it shows cuts of reality like Benjamin’s surgeon or cameraman does, this way exposing us to what we see. Through cinema we then no longer “discover only what we have already given ourselves, by which we derive from things only what we have already put there” (Deleuze, 2000[1964], p. 69). Here, Deleuze explicitly describes voluntary attention and he states that cinema has nothing to do with it. That is, cinema can establish an experience in which free-floating associations of the subject are being replaced by cinematographic thought. As the French cinematographer Robert Bresson puts it: not in order to see what you are already thinking, but to think about what you see and to be the first to see what you see, the way you see it (Bresson, 1975, p. 57). According to Deleuze our only identity consists of experimentation on ourselves (Deleuze, G. & Parnet, C, 2006[1977], p. 9). This movement in thought, this becoming, can be realized inside the cinema spectator who experiences with the moving images a non-personal power. In the chapter “Thought and Cinema”, Deleuze discusses Artaud’s cinema experience who

believes [...] in an appropriateness between cinema and automatic writing, as long as we understand that automatic writing is not at all an absence of composition, but a higher control which brings together critical and conscious thought and the unconscious in thought: the spiritual automaton.

(Deleuze, 1989, p. 165)

To conclude, for Deleuze cinematic movement and time influence the spectator who is conscious and unconscious, active but also passive, critical yet at the same time surrendering completely to the experience. This state of surprise or shock is a consequence of the specificity of cinema, this

external organ that produces automaton experiences, through which the fundamental openness Leroi-Gourhan described can materialize. Accordingly Deleuze also hints at an ethos as the concrete result of the experience of the automaton, which cinema guarantees. This ethos, I argue, is something education could develop as a consequence of particular activities in relation to contemporary technology.

The digital screen is an automaton

The digital screen is not cinema, of course, but is like it, in the sense that it produces automaton experiences as well, not only when we go to the cinema auditorium, but also in the everydayness of life. This implies a radical difference with cinema, which has a regime of public withdrawal as we *go to the cinema*, into a public darkness. The digital screen might have inverted cinema's regime of watching. I interpret Patricia Pisters' expression that cinema *gave the world its screen* in this way (Pisters, 2012, p. 69). Beyond the private and public, *anywhere* and *at all times*, the digital screen produces particular scripts and algorithms, but also culturally coded events. Because at all times attention can be caught by the screen, it can be hypothesized in line with Hayles that hyper attention becomes the norm (page 106).

The screenager might show evidence of stress and even of mourning, because of the fact that nowadays we are in a flux or transformation away from homo sapiens, towards a post-human condition as a consequence of this new prosthetic tool, a materiality with a particular quality, which, quantitatively speaking, is always with us, sometimes slumbering in the background, at other times extremely present, asking for our attention. This way, body, mind and digital technology together "sweat out" a screenager, that is, a subjectivity constituted by a life that is situated in an age of screens. In relation to Leroi-Gourhan's argument we could interpret particular contemporary reactions as psychological coping mechanisms vis-à-vis this reality. Examples of this are the drawings for adults we discussed, regimes that ban the screen, a revival of second hand clothing of the 1960s and 1970s and other vintage materials, the renewed interest in booklets to write ideas in, the conscious choice for an old Nokia cell phone because it only allows to send messages and make or receive phone calls, a desire for (extreme) sports etcetera. Or, ironically, the screen becomes a tool to de-activate itself, which already of course entails the moment it is switched on again. These examples might indicate the screenager is reacting to the attention screens produce by trying to be present in the concrete space and time he or she is part of.

Taking a picture of the self and uploading this on social networks maybe shows the anxiety best of this "I" and "we" in a state of transformation. The selfie can be conceived as a reality check, as in line with a technocentric view on humanity, we *are* nowadays *in* the screen, this prosthetic organ of society through which we give meaning to the world. In the short term the selfie can operate in such a way that it releases a kind of anxiety, which is quickly replaced by the feeling that we are *not there* anymore, seen on the screen, by others. A sense of loss of the "I" can surface, and thus the screenager feels he or she should take another selfie. Academics tend to reduce the selfie to a

narcissist practice of this or that individual (Tifentale, 2014, p. 5). Instead of problematizing the selfie I would rather interpret it both as an individual and collective, global cultural practice that shows the transformations which are taking place as a consequence of the digital screen. The selfie might show that collectively we do not know anymore who or what this “I” could be and how “we” should relate to the world, which also, more and more, receives its meaning from within a tethered digital time and space.

If screens are prosthetic tools that co-determine our subjectivity, and through the experience of screens knowledge predominantly comes to the fore as a good to be produced and consumed, the screen-user is shaped in relation to this and might thus experience a specific sensation of knowledge that is emptied of the meaning of that knowledge. The screen can create a problematic theft of thoughts leading into a situation in which one consumes one’s own attention in relation to the screen and becomes a postmodern proletarian. This is hypothesized by the French philosopher Bernard Stiegler, for example, who states that the digital screen can be toxic and reduce the screenager into a mere consumer (Stiegler, 2010). Hence Stiegler’s pharmacological opinion about technology which will be addressed in the next section: it gives humanity the power to shape itself or to exist and thus to cure itself. The digital screen might thus produce that new possibilities arise in order to study the world and oneself. But this immediately implies that technology also can make humanity sick and produce a toxic existence as well. In other words, through technology the “I” can be used, but simultaneously this “I” can find itself at a problematic loss as well. This is how the concept “de-subjectivation” should be understood: the moment one is deprived from the capability to be in the world in such a way that one can reflect about it. Here, the role of education could be very straightforward, that is, instead of preparing the individual for the job market, it could, more broadly and importantly, give the screenager the ability to reflect about the reality one is in, both on an individual level and situated in a broader perspective as well. With Stiegler we will see that the digital screen threatens this possibility. Specifically, the automated machines would be able to reduce mankind to servants of the machine. In short, with the digital screen, the automaton can become *total*.

The “*total automaton*” should be considered here the way Pierre Janet refers to it in his study “*L’automatisme psychologique*” (Janet, 1889). It relates to the state of mind of the somnambulist and cataleptic, who, under certain circumstances, are completely dispossessed of thought. At least, this is what psychiatrists believed, they concluded that people who suffer from somnambulism or sleepwalking and cataleptics or people who do not respond normally to human interactions anymore, who stay immobile for hours and in particular cases allow the body to be molded into any-shape-whatever, that these people have reached a non-psychological state. They are, at least temporarily, reduced to pure physiological beings and no longer subjects to be studied in the domain of psychology. They have reached, according to these psychiatrists, a state of de-subjectivity. One doctor by the name of Despine, Janet argues, believes that both cataleptics and somnambulist merely respond organically to their environment. They have no knowledge, no

perception of their “I”, there is no consciousness of being someone, of what goes on within the own personality and there is no reflection on actions of the self (Janet, 1889, p. 34, p. 35). What is more, according to Despine there is non-participation of the “I”, only an activity characterized by a psychic unconsciousness and an automatic brain (Janet, 1889, p. 35). Lancaster’s nineteenth century Monitorial System can be interpreted as creating a primitive total automaton, as the classroom technology deprived the pupils of the ability to experience the automaton. Rather, they were governed by it. Remember that with Münsterberg the automaton of cinema meets the subjectivity of the spectator halfway, making the automaton only partial (see from page 46 onwards).

In the way Despine describes somnambulists, he contributes to the duality which is also present in the Apple commercial. According to Janet, scientists of his time oppose the creative act of a spirit to reproductive behavior characterized by automatism, to make the difference between a human consciousness and a being in the state of automatic non-thought. This duality is represented by the blond woman consciously slinging the hammer at the screen on the one hand, and the apathic, grey, uniform mass marching in file and gaping at the screen on the other hand. It should be noted however, that also philosophers of Janet’s time testify of a belief in this duality. The singular and dominant idea about humanity coming to the fore is that of a voluntary power, one and indivisible, of which the person is the very manifestation (Janet, 1889, p. 21). The image that an active consciousness is the point of departure of humanity also reminds us of Descartes’ *je pense, donc je suis*, this self-conscious individual sitting in front of a fire, actively verifying whether the fire is indeed a real fire and how one can be sure of this (Janet, 1889, p. 44). Or, as Leroi-Gourhan states, Descartes “opposed the human being as the embodiment of intelligence to the animal as a ‘machine’” (Leroi-Gourhan, 1965, p. 257). And therefore, he argues, would Descartes have experienced contemporary electronic devices, “he might well have spoken of the machine as an ‘animal’” (Leroi-Gourhan, 1965, p. 257).

The organic creature that Despine described in the above has a lot in common with the cultural creature of the *zombie*, which has gained renewed interest of our society, in video games, movies and beyond these two spheres. This creature embodies the characteristics of the total automaton; it responds stereotypically to light sources for example or to sound, and it will act in accordance to a simple law, that of violent aggression to human beings. The true horror of this fictional creature is that when bitten, one will not die, but become *undead* as well and assume the same stereotypical behavior, that of an automated creature. In fact, today, in real life, there are zombie parades, in which people dress up and behave *undead*, marching through cities, this way identifying themselves with this creature.

Although zombie parades in real life are a subculture and niche, it could be hypothesized that the entire revival of zombie culture nowadays is a way of coping with automated experiences which, from the 1950s onwards, more and more started to saturate our society. Or differently put, the

screen can be interpreted as the concrete catalyst of the automaton as a cultural mode, creating a process in the mind that is “automatic”, which produces a particular kind of stress, not only on behalf of the individual, but on societies as a whole. Interestingly, zombie games like *State of Decay*, *Breakdown* (2013) produced by *Undead Labs* have no script and continue into infinity, producing hours of endless, repetitive actions on behalf of the gamer, who plays a survivor who constantly has to scavenge for supplies, avoid and kill zombies and constantly upgrade skills. There is a weird paradox to be experienced, namely that in the endless struggle against zombie hordes, the player can reach a slightly more sophisticated state of automatic thought herself, this way identifying to a certain extent with the nature and behavior of the zombie one is virtually killing perpetually.

Deleuze, who read and referred to Janet’s study, conceptualizes his spiritual automaton as always consisting of two contradicting states of mind, which nevertheless coincide. The cinema spectator experiencing the spiritual automaton is both the somnambulist and the “Cartesian diver” at the same time. “On the one hand, the great spiritual automaton indicates the highest exercise of thought, the way in which thought thinks and itself thinks itself in the fantastic effort of an autonomy” (Deleuze, 1989, p. 174). “But, on the other hand, the automaton is also the psychological automaton who no longer depends on the outside because he is autonomous but because he is dispossessed of his own thought” (Deleuze, 1989, p. 174). In short, when cinema is spiritual, it cannot operate as a *total automaton* because thought and non-thought meet each other halfway.

In *The Time-Image*, Deleuze explicitly refers to the electronic image. He actually predicts the possibility of a total automaton experience quite accurately. The quote below could be related the way the CBLEs as discussed from page 183 onwards produce a particular kind of experience:

When the frame or the screen functions as an instrument panel, printing or computing table, the image is constantly being cut into another image, being printed through a visible mesh, sliding over other images in an ‘incessant stream of messages’, and the shot itself is less like an eye than an overloaded brain endlessly absorbing information [...].

(Deleuze, 1989, p. 274)

The overloaded brain endlessly absorbing information of course does not turn us into zombies or somnambulists, rather, these figures might be metonymic for a restless state of mind as the concrete consequence of the continuous interaction with screens and their particular materiality. Much like in the cinema experience, the screenager reaches a state of distraction, and the question rises in what way this state of distraction allows us to be critical at the same time. In other words, how can the automaton be partial, instead of total? How, instead of being toxic, can it be curative?

3. The screen is a pharmakon⁶³

To address this question we will study one final approach vis-à-vis the screen. The automaton experience might be related to a specific interpretation of the digital screen, namely that it can be conceived as a *pharmakon*. This idea is conceptualized by the French philosopher Bernard Stiegler, who explicitly discusses education in relation to digital screen culture. The idea that the screen is a pharmakon is a pedagogical view on the screen which, I argue, allows us to study its automaton-effect. Stiegler interprets education in the Kantian sense, for whom the task of the Enlightenment entailed that the individual liberates himself/herself from *Unmündigkeit*, i.e. to promote autonomous thinking or *Aufklärung*. The educational project that is implied strives at creating a critical ethos, a way of life which demands a person to think/decide for herself (Foucault, 1984). Stiegler thus refers to education in a general sense: the individual should be able to give meaning to his or her personal life and to that of the community he or she belongs to. This ethos, I argue, is the very ethos that I conceptualized discussing Leroi-Gourhan and Nancy. What is more, I would also like to relate this ethos to the willingness with which Benjamin's distracted critic watches the cinema screen.

Education for Stiegler is what George Simondon calls "*individuation*" of the individual; not a stable state or a fixed identity, but "a phase in a process through which she never ceases to transform herself" (Stiegler, 2012, p. 2). This way, the screen is clearly not interpreted in terms of performativity or like a mere tool, but in terms of a research on what a screen *makes us do*. Stiegler problematizes digital screen culture when he states that the ability to pay critical attention to the world is in a concrete way at risk. This is because of the way marketing technologies are using screens to capture the attention of the individual for the purpose of consumption. For Stiegler therefore education nowadays should be a public concern, even a matter of social hygiene, related to the digital screen culture we are living in. According to Stiegler we need to ask the question what it means to be self-critical of our situation in digital spaces, so as not to be mere consumers of digital media. Consequently Stiegler's argument is not about "fighting for or against YouTube" for example, but "for a therapy and a politics, and against a poisoning" (Stiegler, 2009, p. 47). As already mentioned, Stiegler argues that the context of digitization needs to be considered in relation to the Kantian notion of *Aufklärung*: adulthood conceptualized as the power to think and the will to know. This notion of adulthood, in turn, cannot be realized without attention, which must be formed by education, without which a being "does not know how to do anything, does not have a mind, and cannot theorize (that is, contemplate abstract concepts)" (Stiegler, 2012, p. 2). Education realizes the repetition and development of habits, because of which attentional forms are created which allow the individual and the society as a whole to have a mental capacity for concentration, that is, to be pensive or reflective (Stiegler, 2012, p. 1).

⁶³ This part of the PhD dissertation is based on the article *The Significance of Digital Screen Culture for Education* (Decoster, 2015).

A crucial element in Stiegler's argument is that the formation of attention is historically conditioned by the concrete material techniques that dominate a society. In the West since Greek civilization, according to Stiegler, attention has been formed - "reformed, deformed and transformed" (Stiegler, 2012, p. 4) - by means of the technique of writing. Kant's Enlightenment project has to be understood from acts in what Stiegler recognizes as a pre-digital epoch where education is realized through the practice of reading and writing. The possibility to be critical was "the result of a developmental stage of the psyche instructed and instrumentalized by the book as psychotechnics" (Stiegler, 2009, p. 44). The book or any written text - and this is very crucial for Stiegler - is a psychotechnics that is dangerous and therapeutic at the same time. Therefore it should be considered as a pharmakon, and this in relation to attention:

The pharmakon is at once what enables care to be taken and that of which care must be taken - in the sense that it is necessary to pay attention: its power is curative to the immeasurable extent that it is also destructive.

(Stiegler, 2013, p. 4)

Sophism in the Ancient Greek period is very important in relation to this notion of the pharmakon, as it shows how writing can be misused. The sophist practice of writing exploits technology to sell an idea, to have power over the reader and manipulate the mind. In that sense the sophists commercially exploited the attention which writing generated, and writing became a poison in their hands (Stiegler, 2009, p. 46). For Stiegler the origin of Western philosophy was precisely a reaction against the sophists and their commercial misuse of the practice of writing. To prevent that attention would be deformed and reading and writing would create "loss of autonomia", long circuits had to be created through the act of taking care for the text one reads or writes (Stiegler, 2013, p. 25). An example of concrete practices of attention formation might be that of thinkers who copied classical texts five to eight times before writing their own work, this way literally allowing the words of a text to be inscribed in their thoughts. As the result of the necessarily slow process which learning how to read and write consists in, a form of deep attention is created, and this allows for the technique being curative instead of poisonous or destructive.

In another time than the sophist era Kant posed his famous question "What is Enlightenment?". His point of departure and goal was to promote maturity as opposed to immaturity in industrialized society of the eighteenth century. But although Kant's idea of maturity is set in a different historical context, maturity is also believed to be the result of the practice of writing. It is through attention formation vis-à-vis the book, a pharmakon, that Aufklärung is made possible. This implies that the technique of writing is experienced in such a way that the book does not replace understanding, but creates, forms and shapes attention (Stiegler, 2010, p. 21). Education can thus be conceived as attention formation which results in maturity through a curative exposure to letters, gazettes, books, etc. The other possibility, however, is that the pharmakon creates an immature state of the mind. As mentioned above, the sophist period is a concrete example where

the interference of money turns the technique of writing into a poison: an idea can be sold when attention is being caught by a psychotechnics (Stiegler, 2010, p. 21). The book, the psychotechnics that allows maturity, is at the same time the pharmakon that can lead into immaturity, which for Kant is the result of the lack of will and courage to move beyond a tendency for laziness and cowardice:

It is so convenient to be immature! If I have a book to have understanding in place of me, a spiritual adviser to have a conscience for me, a doctor to judge my diet for me, and so on, I need not make any efforts at all. I need not think, so long as I can pay; others will soon enough take the tiresome job over for me.

(Kant, 1784)

Stiegler argues that nowadays *digital media* have become the most important psychotechnics. In that sense Stiegler interprets the contemporary human condition as radically different: a new pharmakon requires us to think individuation anew. The act of taking care means that we revisit the Kantian question of what *Aufklärung* is in relation to a different technology than that of writing. YouTube, Google, Facebook, Tumblr ... are all *attention engines* which are part of a new, digital epoch where they function as an audiovisual, digital pharmakon which captures attention. The question that comes to mind is how we can take care of ourselves in relation to the contemporary digital condition. The digitization asks us to experiment with digital media to produce a new kind of deep attention vis-à-vis the concrete screen experiences of the screenager.

Stiegler quite often refers in his texts on digitization to Adorno and Horkheimer's *Dialectic of Enlightenment* (1997), a study published in 1944, which shows how twentieth century technologies were "put into the service of the capturing of the attention of the masses", with as a result "a deforming of attention that detoured the desire or attentional energy of the masses toward commodities" (Stiegler, 2012, p. 8). These authors of the Frankfurt School problematized the way a cultural industry reduced the individual's potential to consuming his existence. Today's digitization, for Stiegler, has a similar economic logic as the twentieth century culture industry Adorno and Horkheimer criticized. With digitization, it can be argued, the exploitation of attention for commercial purposes, which was central to the literary practices of the sophists, resurfaces, thereby resulting in a proletarianization of society: the consumers' attention is captured, diverted and distracted (Stiegler, 2013, p. 52), not creating an "'exploited worker' in the traditional, Marxian sense, but rather the cog in the social wheel that has been deprived of all skills, let alone expertise, thus of knowledge, and thus of any participation in the critical process of collective intelligence" (Stiegler, 2010, p. 213).

For Stiegler digital screen culture is potentially toxic in nature, producing hyper attention as conceptualized by Hayles, and in this way destroying deep attention (Tisseron & Stiegler, 2009, p. 64). In short, the digitization of society is a danger for the cultural process which forms attention.

Stiegler states that the Internet can produce immense distress for the individual, “wipe out all the inherited structures of civilisation on every content” and create the destruction of the mind, “disillusionment and tremendous disaffection” (Stiegler, 2013, p. 30). What is concretely possible is that through the experience of digital media, critical attention can change into hyper attention. Google and YouTube are examples of digital pharmaka, attention engines and part of a networked society. On these attention engines, in general terms, all sorts of data are accessible on a global scale in the form of (moving) images, sound and text. When the screenager connects to these engines, only one possible mode of attention is realized, viz. that mode which makes us consuming digital media by clicking from web page to web page.

The source of stimulus for hyperattention as it ‘surfs’ [zappe], leaping from one object to another, dispersed and unfocused, [...] is what does not last; such stimuli switch from one data stream to another. There is a multiplicity of tasks because of that multiplicity of streams: channels, networks, Web sites, and other programming industries that, like sharks, compete for attention; attention is, after all, merchandise [...].

(Stiegler, 2010, p. 79-80)

In *Taking care of Youth and the generations*, Stiegler interprets screens as potentially problematic psychotechnics that capture attention in relation to market industries, with detrimental effect.

In privileging short-term, immediate satisfaction over investment, this drive-oriented organization of speculative capitalism also destroys all the forms of individual investment in a responsible consciousness, thus instigating an “industrial populism” that is all the more antagonistic to educational, familial, and national missions in that its current highest-priority goal is the massive capture of children’s attention from the earliest age, provoking widespread organological disorders and the literal destruction of children’s affective and intellectual capacities - and further, provoking dramatic increases in attention deficit disorder through the premature structuring and irreversible modelling of their synaptogenetic circuits.

(Stiegler, 2010, p. 56)

Hyper attention is the form of attention produced by digital screens, which take to the extreme the potential of television to endlessly capture its consumer. Stiegler discusses the current situation by referring to Marcuse’s critical study on television. “In 1955, Marcuse saw television becoming an ‘automatic superego’” (Stiegler, 2010, p. 9). What is realized today through the experience of screens, is an “attentional control - that in fact, unfortunately creates only channel surfing and loss of all authority” (Stiegler, 2010, p. 9). Stiegler thus reinterprets the studies of members of the Frankfurt School (of which Marcuse was also a member) and takes a similar stance in relation to the impact of the digitalisation, although he tries to avoid the reactionary stance of Horkheimer and Adorno for example.

To conclude, education nowadays could result in experimentation with elements of the digital screen culture we are living in, so that digital technology shapes us and this way simultaneously avoids a misshaping. It can be said that the screen is something that, like a book, can be put to use for experiences that allow a critical distance in relation to the everyday, i.e. using the “I”, but at the same time it also requires that we take care how we relate to it so as not to lose the “I” or become de-subjectivated. An important remark should be made, however, as it is tempting to situate Stiegler as someone who is conceptualizing a duality between good and bad practices in relation to technology: a way of thinking about the digital screen that might be considered as creating a particular kind of duality the way the Apple commercial opposed the masses to this free-thinking technocentric individual. Vlieghe even argues that to some extent, Stiegler is a technophobe. He agrees on Stiegler’s technocentric view of education in the light of the digitization, but argues that there is a serious inconsistency in Stiegler’s argument as he claims both “that our constitution as subjects is dependent upon contingent technological conditions *and* that education should consist in preserving an existing frame of reference across the changing of generations” (Vlieghe, 2014 p. 534).

Vlieghe refers to Agamben and Flusser to discuss this inconsistency, claiming that

it is no longer possible to discern between correct and incorrect uses, i.e. between proper and improper ways to relate to technology. Any ‘correct’ use is ruled out because we find ourselves in a situation beyond correct and incorrect use.

(Vlieghe, 2014, p. 535)

With Flusser, Vlieghe refers to a post-historical age: “history no longer possesses the force to decide how we should give shape to our individual and communal existence” (Vlieghe, 2014, p. 535). This post-historical condition, Vlieghe argues, in fact allows that education in the Kantian sense can be affirmed. And this because, Vlieghe concludes, digital media can result in liberation from a “progressive (linear) historical framework that promises more freedom as times go by (and generations succeed one another)” (Vlieghe, 2014, p. 536). This implies that no principle - I would argue that of performativity included - can guide the outcome of education in advance. With this critical remark on Stiegler’s theory, it could be argued that Vlieghe believes that the prosthetic tools of today, maybe more than other tools, allow the ontological remark of Leroi-Gourhan to concretely take shape. That is, the fact that humanity can be characterized, paradoxically, by a particular kind of overspecialization, that is, one of avoiding any specialization whatsoever, might be realized because of the specificity of digital technology.

Consider Hörl’s discussion of the point of view of Nancy as described on page 208. Where does this interest come from, he argues in relation to Nancy’s conceptualisation for “being outside oneself”?

In this article I argue that that the fascination with the open and with the outside that erupts in the twentieth century within a history of sense that had always resisted the exterior and the open, is related to the history of machines and objects. It is because of dramatic changes in the culture of machines and objects that the enthusiasm for the open and the outside has risen to prominence in the history of sense. More precisely, it is the appearance of 'open machines' and 'open objects' [...] that destroys the exhausted, traditional culture of sense with its related ontological registers and concomitant relations of the production of the economy of meaning. Following the emergence of new technical objects and transformed object relations, it gives rise to a new culture of sense that is post-meaning.

(Hörl, 2013, p. 12)

In the next chapter I will argue that to be able to give post-meaning and experience a new culture of sense, a new form of deep attention has to be developed in relation to digital technology. The role of education would then consist in conceiving and treating the digital screen as a *pharmakon*. Education should experiment with digital technology in such a way that it does not function as a total automaton, but as a partial automaton. "Total" refers to the fact that when attention in relation to digital media is in "hyper mode", we cannot speak of open machines or open objects as referred to in this quote. This because then the act of up- and downloading offers no possibility to have an experience of digital technology, as it solely consists of a consumption of leisure time. In the long term digital technology can operate in such a way that it results in the destruction of attention, creating a post-modern proletariat. Education should therefore develop deep attention in relation to digital screens as a response to this reality. Experimenting with the digital screen is not about bringing the student at the point the educator wishes this student to arrive at (which is a modern, disciplinary perspective), neither about putting into practice self-regulation (which is a post-modern, performative perspective), but about allowing the screenager to experience the digital screen. Education could give the individual the possibility to transform oneself or to individuate in relation to the digital screen, to become mature in the general sense Stiegler refers to it.

Chapter Two

The role of education in an age of screens

1. Rethinking the figure of the student

In this chapter I argue that education, instead of listing a set of competences, knowledge, norms and values or skills that need to be acquired and using technology to achieve this, should more in general allow the screenager to form or shape him or herself in relation to digital technology. In line with Stiegler's point of view I argue that education should develop an ethos of interest and care in relation to the digital screen. It should enable the individual and the collective to research the question what it is that screens make us do.

The three previous parts of this PhD dissertation actually illustrate that the general task of education could entail the act of taking care of oneself in relation to technology, by considering it as a pharmakon. Lancaster's Monitorial System illustrates a lack of care about how technology can co-determine who we are and what we can do and think. Replacing the book by the cardboards and slates, Lancaster introduced a technique and a pedagogy that destroyed rather than developed attention. Lancaster's system guaranteed the pupil could not *not* learn and arrived at the point where the system wanted the pupil to arrive. However, the development and growth of attention formation towards maturity the way Stiegler conceives, could not take place, because the automaton took over the task of thinking, the "I" of the individual was at a loss and without a personal will. The concrete experience of the classroom technology and the way the teacher and the monitors operated, did not create the opportunity to be reflexive or pensive, but in contrast, put the automaton into practice in a techno-deterministic way. Accordingly Lancaster's system shows how technology can potentially misshape the individual. It was impossible to have an experience of knowledge or to develop a personal relationship with knowledge the way the classroom technology represented it. This way, the ability to have deep attention for something could not materialize. The unique aspect of Lancaster's pedagogy is that he radically allowed technology to be in charge, because of which the pupil became a cog in a behavioristic teaching machine.

In the second part I studied the cinema screen, which can also be conceived as a pharmakon. Within the context of the USA and during the first part of the twentieth century educators conceived the educational potential of the cinema screen from its vicariousness. Apart from that we can see a point of view that is at times techno-phobic rather than techno-deterministic. Lancaster uncritically put into practice a total automaton. *The Visual Instruction Movement*, however, recognized the automaton but clearly kept it at bay and tamed its effect. This because the teacher and the adult world in general, in line with the disciplinary discourse of that time, filtered the content in relation

to a preconceived idea of adulthood. Of course, the idea of protecting youth against cinema can be interpreted as a way of treating cinema as a pharmakon. Part of the history of cinema is that until today it produces commercial images to be consumed. Also, cinema can be dangerous or toxic, in the sense that it can function as a propaganda machine. This is illustrated by the film *Triumph des Willens* (Riefenstahl, de, 1935), which German film director Leni Riefenstahl produced with funds of Hitler's Nazi party. In the writings of Münsterberg, Benjamin and Deleuze, however, we can find a curative, therapeutic automaton experience which the cinema education of *The Visual Instruction Movement* never really explored. Cinema indeed does not allow the individual to think whatever one wants to think and produces a shock to thought. This shock, however, is not necessarily "total" in the sense that cinema puts ideas into the head of the spectator that do not belong to that person. In other words, the three authors each in their own way argue that the cinematographic automaton only goes halfway. As Bresson argues, with cinema, we can reach the point where we stop seeing what we are already thinking, to start thinking about what we see.

Leading the spectator away from pre-conceived ideas, he or she potentially becomes a distracted critic, someone who has been pushed into an experience from where it is possible to contemplate about a particularity of the world. A cinema education could consist in allowing that the automovement of the image also provokes a movement in thought. The automaton can allow that thoughts materialize, this way making cinema curative. The ability of cinema, not just to draw attention, but to develop deep attention in relation to something, is of course not a given. It depends on many things, such as the vision and way of working of the film director, whether the spectator watches a film all by him- or herself at home or together with others in a cinema auditorium or in a classroom, what happens after having experienced cinema and much more. A cinema education, in which a group of people collectively visits a cinema auditorium or experiences film in a classroom can be seen as an interesting withdrawal, a state of exception similar to Münsterberg's laboratory event. A cinematographic experience which does not focus on preparing the individual for "real life" or the job market, but which results in a specific time and space where an aspect of the world shows itself.

Losing the "I" as a consequence of the total-automaton experience

As we saw in the third part of this study, research indicates that youngsters in the US look at and interact with digital screens on average 8,5 hours per day. In France children experience more screen time than that they go to school. The pharmacological question of Stiegler is highly relevant in relation to this technology. What happens during this time related to one or multiple screens? Although we should be careful not to overgeneralize, it can be hypothesized that youngsters immerse themselves in computer habits like playing computer games, interacting on social media, sending text messages and up- and downloading photographs and videos (Gurung & Rutledge, 2014). What is more, contemporary devices like the smartphone, digital watch and tablet-PC are extremely user friendly. As the public announcements of the company Apple nowadays indicate, it is very easy to smoothly integrate these devices in daily life: following prompts sent by applications, taking

pictures, listening to music, using the smartphone as an alarm clock and so on. This is something even young children intuitively manage to do. Quantitatively speaking, our society is immersed by screens, but qualitatively speaking the experiences produced by screens are often limited and easily related either to economic consumption or production. Additionally, by using technology the screenager uploads personal information to the Internet - for example, the emotional status at this or that particular moment, the location where one is, the attained college degrees, his or her heartbeat or a (self-referential) photograph or video. In this networked culture of self-reference the screen is an extension of the personal identity, which can be managed and continuously updated.

The quantity of this way of relating to the screen can produce a particular quality, namely, according to Stiegler the screenager is in danger of becoming a postmodern proletarian. One way of relating to the screen is that the screenager is *surfing*. The verb surfing has a double meaning here. It literally refers to the activity of browsing on the Internet, but it also refers to the act of channel surfing and zapping, clicking from webpage to webpage, continuously checking news websites or the Facebook account for example. This way, the screenager remains at the surface in the sense that no attentional form is created, the development of the ability to contemplate abstract concepts does not materialize. During this PhD dissertation I hypothesized in line with Hayles and Stiegler that a particular mode of attention, namely hyper attention, is created as a consequence of the consumption of screen time. This mode of attention, according to Stiegler, has a destructive character in relation to the ability to have and form attention, to become mature and to have the capacity for critical thinking.

In this regard we could argue that 99 percent of the world population can be diagnosed as digital illiterates. Vlieghe argues that “most users of digital media have no inkling about what is going on in the machines they use” (Vlieghe, 2015b, p. 219). The screenager is surfing on the screen, something which the swiping and tapping of the fingers on the touchscreen might have increased, because it involves a kind of zapping. A German computer hacker called Fukami made the comparison with the way most people use Word, the word processing program. Most people, he argues, are able to type text, create structure in that text, set things in bold or italic and implement a picture. But the relationship with Word does not go deeper than that, although a quick glance will do to realize that much more is possible. This goes for our computer skills and insights in digital technology in general as well, Fukami continues. Our relationship with computers and digital screens might be situated at the *surf*-ace of a user-friendly environment.

Digital learning environments like the CBLEs that have been studied in the third part of this PhD dissertation do not break with this regime of the digital screen. In contrast, CBLEs also situate autonomy vis-à-vis digital technology at the surface. Getting accustomed to these digital environments involves that the screenager is able to use the interface and understands the role of the pedagogical agents. Like *Pam the Planner*, who sends prompts and commands which say what the learner is going to do next (see third part, chapter three). But who is Pam, anyway? She shows

great resemblance to digital characters in contemporary computer games, characters that have a collection of programmed dialogues to interact with the gamer. These dialogues serve to get the individual acquainted with the interface of the game, what buttons to push and they allow the screenager to immerse him or herself in the fictional world the game developers created. These digital characters are programmed to give commands to the individual or ask the learner to make binary choices, between this or that scenario, for example. Like video game characters, Pam is represented on the screen as a female tutor, but below the surface binary codes in the form of zeros and ones are producing a psycho-pedagogical control on the individual. It could be hypothesized that these CBLEs are not about the individual *at all*, but that the individual, paradoxically, is being self-regulated by the screen.

When they are operational, CBLEs incessantly catch attention of the screen-user. The timer that starts to count down to zero, for example, is a constant reminder that when time has elapsed increase in performative behavior must be shown in relation to a quiz. Connecting to a CBLE brings about a certain automatic movement, a learning experience in which the user cannot *not* learn what is set out for him or herself by the automaton. In the CBLE experience on page 177 the emotions of the student are “interpreted” by calculating how many seconds the eyebrows stand in this or that kind of position, for example. At once, the analysis of the emotions of the student influences the commands and pedagogical suggestions that are being sent to the student. Accordingly, these CBLEs are teaching machines that operate like a total automaton. It could even be argued that the all-knowing teacher who tells everybody what specific goals to achieve, this modern, pre-war figure, instead of being abolished, is simply incorporated in the postmodern program, in the form of bits and bytes, as constantly prompts suggest or even command what to do next.

In the CBLEs as discussed from page 183 onwards, the total automaton is shown to its fullest extent. The teacher is replaced by superhuman pedagogical agents, which not only monitor (meta-)cognitive skills of the learner, but, equipped with intelligent and highly sensitive equipment, they register and “interpret” movements and gestures of the human screenager and adapt their interaction with the learner based on these observations. Connecting to a CBLE, the learner accepts the logic of the program or the circuit to which one has connected. Arborescent, structured algorithms do not push thought into motion or create a mental dive as a consequence of the event, rather, the learner is surfing from one |IDEAL_SUBGOAL| to another, and attention is caught or grabbed to arrive at the point where the learner is supposed to arrive. As already mentioned, the pedagogy of CBLEs that promote self-regulated learning shows great resemblance to Lancaster’s Monitorial System, which albeit in a more primitive way, dealt with attention so that the learner could not *not* learn. In line with Stiegler’s concept of the pharmakon, it could be argued that this postmodern instrumentalization of the screen in education does not develop deep attention in relation to knowledge, but that it even contributes to the destruction of attention.

During this study I also considered the relationship with knowledge as a consequence of the digital screen. Compare the act of surfing on the screen to the concrete experience of the GPS, which constantly gives information to the driver while being on the road. This information functions in such a way that it is only visualized in chunks, and this at the moment the driver needs it. Within the short time laps of twenty seconds, when arriving at the roundabout, data becomes meaningful and useful knowledge that operates in the short term. However, once the third exit on the roundabout has been taken, this knowledge again becomes meaningless data, which immediately disappears because it would only create unnecessary distraction. On the whole, this might bring about that the driver, although more or less aware of where he or she is, has no clue whatsoever *how* the destination was reached because mentally he or she has no map of the route. Of course, a GPS has a map with a general overview that the driver can look at, but the device invites to type in the address and let the GPS take care how to get there. This way data goes into the mind to become meaningful knowledge, *but does not stay there*, it functions as a chunk of information in the short-term, to arrive at a destination. The specificity of the knowledge does not form or shape the “I”, because it appears on the screen when the information has use-value, and only then. It simply passes through the cognitive centre. It could be argued that this is precisely what the digital screen and the Internet can generate and why the screen should be considered as a *pharmakon*. In the long term, the human condition produced by the screen might involve a problematic loss of the “I”, both on the level of the individual and the society as a whole.

A second version of the Apple commercial

Interestingly, there is a new version of the 1984 Apple commercial to be found on YouTube⁶⁴. The same event takes place but the difference is that the woman with the sledgehammer is now wearing an iPod and ear plugs as well. It can be argued that this iPod stands for any screen-related device we nowadays use. This version of the commercial shows that the blond woman carries a different message than in 1984. The difference is that the blond woman is now “plugged-in”, cut off from society although physically present. This screenager is disconnected from physical reality, focused on herself and no longer related to others, whom she cannot hear. Maybe this is what digital screens make us do: they withdraw the screenager from the particularity he or she is in. To be clear, I do not necessarily wish to problematize this, rather, I claim that this is an important characteristic of contemporary screen subjectivity. Like the cinema screen or the combination of the cardboards/slates and the monitor of Lancaster’s system, the digital screen can guarantee that attention will be drawn away from the reality outside the frame, and towards what happens inside the frame.

As a consequence of smartphones and tablet-PCs, the screenager is saturated with screen-experiences. The digital screen, unlike the cinema screen, has no regime of withdrawal, no culture of moving away from it. Rather, it can be hypothesized that screens produce a regime which constantly makes the screenager long for the screen and the reality within its frame. Being *here*,

⁶⁴ Retrieved online from <https://www.youtube.com/watch?v=5JreOhjCJA0> on 27/05/2015.

the screenager is mentally speaking potentially also *elsewhere* (see page 111). Hyper attention becomes a cultural mode that characterizes the screenager's way of relating to the world, others and oneself⁶⁵. What is more, the screen functions as a self-referential object. While learning, the computer can analyse human behavior and give instant feedback, this way automatically tracking and adjusting non-performative behavior. Paradoxically, it might produce something beyond the purpose innovators have in mind. The screen no longer allows the individual to self-regulate, but connected to a computer, the individual finds him or herself being self-regulated by the computer, which takes over this particular task. In this way the screen might actually, in and by itself, produce a "self" that is absent and isolated from the particularity of the time and space in which the body and mind are residing. In that sense, a subject resurfaces which was already present in Lancaster's classroom. The question rises whether it is still us who have control over ourselves. Could it not be that control becomes a given as a result of the omnipresence of digital screens and what they make us do?



65 Nowadays the cinema screen and its public withdrawal can have a curative effect when used in education, precisely because it lacks interactivity. Moreover, the fact that a collective of people are looking at the same screen at the same time results in "unplugging" each individual towards a thing in common.

Using the “I” as a consequence of the partial-automaton experience

In this section I will argue for a particular kind of education in relation to the digitization of society. To be clear, when I refer to education it is in line with Stiegler, and in the broad sense of raising children to give them the possibility to be transformed in a strong sense of the word, i.e. to become interested in something in such a way that one starts to see and think differently. In Dutch the word *vorming* might cover the meaning of this notion, which is comparable to the German word *Bildung* or the English word “edification”. It should not, however, be interpreted the way *Bildung* came to the fore in this study in relation to a modern disciplinary society. Neither should it be considered as a development or growth described by fixed standards derived from a developmental psychology or sociology, but more general the possibility to become someone else, in spite of what is expected.

To treat the screen as a pharmakon education should experiment with the digital screen to create activities in which the screenager is not surfing, but diving. The American novelist Herman Melville describes a particular attitude or ethos which consists of “diving”, which can serve as a metaphor for what it means to study an aspect of the world.

Any fish can swim near the surface, but it takes a great whale to go down stairs five miles or more ... Thought-divers ... have been diving and coming up again with bloodshot eyes since the world began.

(Melville, In: Deleuze, 1990, p. 103)

To *dive* instead of to surf, in my point of view, is about affirming the automaton effect digital screens generate, the way students that copy the text of a book allow the book to form their attention in relation to the text and the part of the world this text represents. To dive into the automaton, which Duhamel actively resisted to, is something that could be argued for. Duhamel never dove into the cinema, but swam at the surface and concluded that his assumption was indeed the truth, namely that cinema deprives us of the ability to think. In contrast to this, we could look for the conditions in which the specificity of the digital screen creates deep attention for something. Rather than a set of skills, competences or knowledge, Melville seems to suggest that the individual needs a kind of willingness or ethos to be interested in something *outside* oneself. This ethos is something which education can help developing. Masschelein and Simons argue for a particular interpretation of the Dutch word *vorming* which can help clarifying what using the “I” or diving could mean.

Here, the [...] ‘I’ is suspended into confrontation with the world (lifted up, put in brackets), which allows for a new ‘I’ in relation to that world to take shape and form. This transformation is what we want to refer to as formation. This new ‘I’ is first and foremost an I of experience, attention and exposure to something. However, we must be careful to distinguish formation from learning. Or, put another way, formation is typical for learning in school. Learning involves the strengthening or expanding of the *existing* I, for example,

through the accumulation of skills or the expanding of one's knowledge base. Learning in this sense implies an extension of one's own lifeworld, adding something. The learning process remains introverted - a reinforcement or extension of the ego, and therefore a development of identity. In formation, however, this I and one's life-world are brought into constant play from the outset. Formation thus involves constantly going outside of oneself or transcending oneself - going beyond one's own life-world by means of practice and study. It is an extroverted movement, the step following an identity crisis. The I does not add to previously acquired knowledge here, and this is precisely because the I actually is in the process of being formed. The I of the student is thus being suspended, decoupled: it is a bracketed or profane I and one that can be formed, that is, can be given a specific form or shape.

(Masschelein & Simons, 2013, p. 45-46)

This interpretation on *vorming* inspired the way "using the 'I'" was mentioned in the sections on Leroi-Gourhan, Nancy, Benjamin, Deleuze and Stiegler. If we study the evolution of humanity we can see that it is not only characterized by an increasing complexity of technology. As a consequence of our ontological relationship with technology, humanity is also characterized by the continuous possibility of perplexity and exposure, which is why I distinguished a difference between an interpretation of technology as mere tools, and an interpretation of technology as artefacts. From the point of view of technology as an artefact, time and again humanity has to be reinvented in relation to the technology at hand and because of the experiences created by this technology. This movement in thought could be related to what Masschelein and Simons call an extroverted movement, where the entire identity of the person is at stake.

What does it imply, then, to conceive the screen as a pedagogical tool that can form us? Stiegler, who interprets technology like Leroi-Gourhan, argues that we should treat digital technology as *pharmaka*: they can shape but also misshape us. The technique of reading and writing, for example, requires an ethos of care, so that the experience of reading and writing does not result in a misshaping of the mind. From an educational perspective this implies that nowadays the "I" of the student should be used in relation to the specificity of screen technology, to avoid a loss of the "I" in the form of a problematic de-subjection. Losing the "I" to the point where one can become de-subjected should be conceived as a problematic state of mind characterized by a malformed mode of attention. From this mode of attention, as Stiegler has argued above, the individual is vulnerable and attention can be caught. However, losing the "I" should not be confused with the idea of suspending the "I" as in the quote above. Suspending the "I" is an extroverted movement which, in contrast, allows shaping or *forming* the self in relation to something outside the self, beyond personal needs. Using the "I", the screenager accordingly has deep attention for an aspect of the world and this as a consequence of the experience of the dominant technology of a specific society. The digital screen, when it does not catch or grab attention anymore, but generates deep attention, is curative, just like the technology of the book can be curative when the technique of

reading and writing is used in a particular way (see page 228 and onwards).

Deep attention, however, is a cultural and human phenomenon which is not an immediate given as a result of this or that technology, but the result of a pedagogy which perceives technology as a pharmakon. As long as the principle of performativity remains the blueprint for the way innovators organize education, we cannot mature in relation to digital technology, both on the level of the individual and collectively, as a society. To avoid the automaton to be total and to render it partial and therefore spiritual is not about taking our distance from digital technology, which would imply, in line with Duhamel's attitude towards cinema, an intellectual stance about the possible risks and negative effects of living in an age of screens. The duality present in the Apple commercial is to be avoided if we want to develop an ethos which is not techno-phobic or techno-deterministic. This means that we have no other choice but to experiment with expressing ourselves by means of computer technology and screens. Vlieghe argues that as a consequence of the digitization we have reached a point in history where a rupture has been made with the traditional way of expressing ourselves. We are evolving from a book-based culture into a screen-based culture, which, among other things "has brought about the opportunity to create and recreate texts without any restriction whatsoever" (Vlieghe, 2015a, p. 22). This new form of culture, this digital literacy "is to be understood as something radically distinct from book-based literacy" (Vlieghe, 2015a, p. 24). Digital literacy "is fully dependent upon what digital devices allow for in their concrete materiality and practicality" (Vlieghe, 2015a, p. 24).

Vlieghe compares the pedagogy of long hand writing to typing on a computer and argues that the physics of the book and the physics of the screen are two different worlds. For example, a lot of self-discipline is needed to read a digital text entirely without clicking on a hyperlink (Vlieghe, 2015a). Also, digital text is rather a process than an object: text is dependent on hardware, programs, systems and electronic supplies (Vlieghe, 2015a). Vis-à-vis the act of writing Vlieghe argues that typing is a pointing gesture, the screenager points at a key to create a particular sign. Writing by hand, however, is a productive gesture, it is essentially *graphomotoric* because a direct and intimate relationship exists between the concrete movements and the construction of signs. This is why in Western schools it takes at least one to two years to be able to read and write. While typing still involves some training and therefore a concrete formation of the body and mind, the tablet-PCs touchscreen for example might avoid the necessity of such a formation completely, as the applications on such devices run intuitively and produce user-friendly experiences.

In *Writing Machines*, Hayles discusses the concrete practices of reading and writing and she states "that the physical form of the literary artefact always affects what the words (and other semiotic components) mean" (Hayles, 2002, p. 25). At least, she argues, digital text produces a different reading experience than reading text on paper. Because it is hypertext it is characterized by "multiple reading paths, chunked text, and some kind of linking mechanism to connect the chunks" (Hayles, 2002, p. 26). The material of a book, which consists of one page following another,

produces a chronological experience of words, sentences, paragraphs and chapters that follow each other in a logical order. Hypertext, on the other hand, allows that at any time a different text can appear. Hayles discusses an online text which is hypersensitive to the mouse cursor movements, which cause the text to disappear (Hayles, 2002, p. 57). Hayles' example illustrates experiences only the digital screen can produce.

Both Vlieghe and Hayles look at what the screen does with the body. In this regard digital technology can be related to the bio-mechanical element Leroi-Gourhan identified human evolution with, at least until the industrial revolution. Leroi-Gourhan has shown that the essence of being-human, for hundred thousands of years, has to be related to the hands and the technology it wields. According to him the hand specialized in avoiding specialization and launched a becoming-technical with ontological consequences. At first, our hands functioned as bio-mechanical pliers to wield stone tools. Gradually, however, they matured and became more agile, capable of carrying out more complex things. What is more, through preservation and transformation of specific techniques, the complexity and richness of human culture transformed as well. The last 12,000 years, mankind's experience with technology has been a manual activity. Moreover, the experience of reading and writing alphabetic texts, for long, was per definition related to the hands. As a consequence of the automaton, Leroi-Gourhan argues, humanity ontologically changes. This because radically replacing one tool for another implies that the hands' function might regress. When the ten fingers become useless because of the advancements of our external artificial organs, there might be a kind of regression of their function, they might become pliers again. Of course, it would take thousands of years for hands to regress to such a state. Rather, the concrete impact of the regression of the hands' importance in the short term must be situated on an individual level. "*Ne pas avoir à penser avec ses dix doigts équivaut à manquer d'une partie de sa pensée normalement, philogénétiquement humaine*" (Leroi-Gourhan, 1965, p. 62).

Being useless with one's fingers,' 'being ham-fisted,' is not a very alarming thing at the level of the species as a whole: A good number of millennia will pass before so old an organ of our neuromotor apparatus actually regresses. But at the individual level the situation is very different. Not having to 'think with one's fingers' is equivalent to lacking a part of one's normally, phylogenetically human mind. Thus the problem of regression of the hand already exists today at the individual if not the species level.

(Leroi-Gourhan, 1993, p. 255)

For long, the use of hands prolonged the true function of the tool that is wielded. Hands allow us to hit the rock with a hammer or pierce a piece of cloth with a needle. In relation to digital technology, however, the hands are used to type, to click, to swipe and tap. Maybe this implies that the hand is merely used as a zapper to surf, and thus part of an event that produces hyper attention. Here I believe the idea of the pharmakon is crucial; our bodily relationship with screen-technology should be investigated in relation to the possibility of having attention. The rise of

digital screens actually shows how important hands really are. Quantitatively speaking, screens more than any other technology, influence our being in the world. If the hands' role in relation to this technology is merely a zapper, this might have ontological consequences, but also consequences in relation to the ability to have attention. Of course, this could lead us into preserving the act of teaching long hand writing in schools, which is what Stiegler argues for (Vlieghe, 2015b, p. 220). Vlieghe, although he does not exclude the preservation of long hand writing, argues that a proper equivalent should exist in relation to digital devices in formal education, a digital literacy "that is valuable in and of itself and that is related to the technology of reading and writing digital devices" (Vlieghe, 2015b, p. 220). Also, as screen technology further develops, the question rises which body part will be accentuated as the "gate" through which we experience the tool and what kind of expression this allows. Consider how giving speech commands already results in concrete actions like setting the alarm or looking up particular information on the Internet. The swiping and clicking of the hand might easily disappear in the near future and could lead to the fact that our relationship with technology turns into a pure cerebral activity, for example.

A book-based culture and a screen-based culture produce completely different realities. Instead of seeing this as a disaster, Vlieghe argues that we have to research what it means to be able to think critically in relation to new conditions produced by the digitization. Using the "I" (diving) instead of losing the "I" (surfing) therefore hints at the act of "hacking" as a form of digital literacy. Of course, by hacking I do not refer to the act of attacking a website of a bank institution, for example. A hacker might be considered as a person who secretly tries to access a computer system to cause damage or steal information or to an expert in computer programming and problem solving⁶⁶. However, I see hacking as a pedagogical verb, which necessarily involves having and/or developing certain skills and knowledge related to computer technology. The purpose of acquiring these skills and knowledge should nevertheless remain open. For example, learning how to program so as to become a computer game developer, is not the focus here. The idea is to develop the general ability to understand the materiality of computers and screens. Like the book, the screen is then considered as a pharmakon: a psychotechnics that shapes and potentially misshapes us. Education must therefore be re-thought, in order to give the individual the ability to care for him or herself and others in relation to digital technology, to have and develop deep attention in relation to a new technology.

2. Rethinking the time and space of the classroom

In this section I argue for a public withdrawal, a concrete experience of time and space in which the individual and the collective gather to study what the digital screen makes the screenager do. As a consequence of the regime of the digital screen, which is "always on" and creates interactivity in

⁶⁶ Information retrieved from online dictionary <http://www.merriam-webster.com/dictionary/hacks> on 27/06/2015.

the form of multitasking, the condition in which the screenager finds him or herself might be characterized by a smooth continuum from one screen event to another with hyper attention as the result. In this section I argue for a particular kind of space and time because of which the screenager can withdraw from time either conceived of as leisure time (in which the screen is used to play games, to send messages, to be on Facebook, etc ...) or time conceived of as performative time (in the different learning environments, time is spent learning how to be a productive member of the knowledge society). In other words, education should disrupt the smooth continuum of screen experiences and hack into the regime of the digital screen instead of affirming it. In other words, through education the screenager could become present in the digital present. Therefore a particular kind of public withdrawal is essential in order to create deep attention in relation to digital technology. Although educators nowadays generally conceive such a withdrawal as problematic and old-fashioned, it could actually be argued for. Masschelein and Simons claim that schools with their classrooms and playgrounds are public spaces where a specific kind of withdrawal takes place, which creates the possibility of a particular free-time. "The specific form of classrooms and playgrounds presents, at the very least, the possibility of literally *becoming separated* from the time and space of the household, the society or the labour market and the laws presiding therein" (Masschelein & Simons, 2013, p. 33). In line with this argument, I want to conceptualize the importance of such a public withdrawal vis-à-vis the regime of the digital screen. Consequently I argue for a space and time which cannot be compared with the learning environment as it is interpreted by contemporary educational innovators, because although this learning environment might prepare the screenager for the economic, screen-centered world, it does not develop deep attention.

For more than a hundred years, the dominant way of learning in schools consisted of using the blackboard technology within the space and time of a classroom. The pedagogy which results from using the blackboard is nowadays regarded upon as problematic in the sense that it produces a teacher-centred education in a space closed off from the real world. However, attention can focus on something precisely because the experience is limited; the classroom keeps the world outside and reality is "reduced" to what is drawn onto the blackboard. Regardless of the role the blackboard had to play in line with how a disciplinary society conceives a critical thinking individual, it can also be conceived of as a tool that operates in itself. Because of its possibilities and limitations and, importantly, because it operates within the time and space of the classroom, it allows that attention can be drawn towards an aspect of the world.

The blackboard is literally at the teacher's fingertips. He can write on it, draw on it, immediately erase what he has written, or preserve it for days. He can scrawl key words on it, produce a detailed diagram, or write out a series of essay questions. He can use the board himself, or ask his students to use it. He can place material on it in advance, or use it to capture the reflecting thoughts emerging from a discussion.

(Jackson, 1968, p. 5-6)

Notice how in this quote the blackboard is described from the position of the teacher and how he or she can use the tool the way he or she wants to use it. Looking at technology from such a point of view, we might solely think about the blackboard from a teacher-centered perspective and problematize this practice as old-fashioned. We might quickly become oblivious of the mediation of the blackboard, of the concrete experience its materiality allows, that co-constructs the relationship with knowledge. This quote, apart from illustrating a teacher-centered perspective, actually shows how the blackboard's limitations and possibilities co-determine the experience of knowledge. This is also exemplified in Sørensen's description of the way the blackboard operates in an activity in which an alphabet song is sung to learn the ABC's. While the pupils sing, the teacher tries to keep up writing down every letter.

All pupils were seated at their desks. The teacher was at the blackboard, writing. The pupils were carefully watching the teacher's writing. Or, more precisely, they were watching the letters appear on the blackboard. The visual materiality of the letters appearing on the blackboard constituted a geographic place to which each child's gaze was fixed. [...] The whole assemblage was a game in which the teacher, to the amusement of the pupils, put at risk her ability to write the letters at the same pace as they were mentioned in the song. The possibility of the teacher failing made the children carefully monitor the letters appearing on the blackboard.

(Sørensen, 2009, p. 140)

Sørensen uses this example to show that the blackboard co-constructs a particular relationship between the collective of pupils and the teacher. My argument, based on Sørensen's point of view on technology, is therefore that regardless of the fact that the disciplinary regime instrumentalized the blackboard, but also the cinema screen and other technologies, their materiality nevertheless co-constructed specific experiences of knowledge as a consequence of their possibilities and limitations. Today the classroom with its closed doors is often problematized because, it is argued, it is an artificial experience which is completely disconnected from the real world. However, the example Sørensen gives shows that within the constellation of the classroom and as a result of the materiality of the blackboard and how the teacher and the students relate to it together, attention is drawn to something. *This* has to be known and by withdrawing from daily life into a classroom, the letters of the alphabet come to life within the frame of the blackboard. Because of the way the teacher draws the letters, he or she also draws attention. By this I mean that attention of a group is being created because of the physical presence of each and every pupil in that specific time and space and because of the harmony that is created between the material of the blackboard, the attention of the pupils, the song that is being sung and the actions of the teacher.

I don't want to argue for or against a preservation of a blackboard pedagogy within a traditional classroom setting. Rather, the example shows that a public withdrawal creates the possibility to have attention for something. Precisely today and as a consequence of the regime of the digital

screen, such experiences might be crucial, yet they are at risk of disappearing as a consequence of the contemporary preoccupation with the individual learner and his or her trajectory in relation to the performativity principle. To be clear, this public withdrawal, although interrupting the regime of the digital screen (and thus an attempt to interrupt the impossibility to have deep attention), is not per se a reality *without* screens. This withdrawal could even be technocentric when the pharmacological question is researched how the screen, potentially toxic, can operate in a curative way. To study this question, I will describe an art performance which in my opinion allows us to imagine a way of relating to the screen which is not expressed in terms of competences, but in relation to the specific ethos I described in the first chapter of this part. We should experiment with the digital screen in such a way that instead of catching attention to consume time or to be productive, it generates attention for something, consequently becoming a pedagogical tool.

On the road⁶⁷



In the video performance *On the road* (2011), Kindermann and Hendrickx push an immobile Ford Mustang through the streets of Brussels. This action is filmed by the camera of a smartphone which provides live streaming images coming from this simple script. By means of a Skype connection the images are directly sent to a laptop at *Recyclart*, an art centre from where the spectator is looking at the performance. The spectator is therefore looking at how in real time an immobile car is being pushed through the streets. At *Recyclart* the moving images are projected on a wall by means of a beamer. Looking at the screen the spectator has his or her back towards the large window, the glass door and the streets to where the car is being pushed. In the picture above, which was taken after the performance had taken place, we see the Mustang having come a halt at *Recyclart*.

On the road uses basic equipment that is accessible and familiar to the majority of people: screens, Internet and mobile phones. The everyday is shown with the use of digital tools. The smartphone

⁶⁷ Photo reproduced with kind permission of the authors.

films streets and people being part of traffic, going somewhere. People passing by enter or leave the frame of the screen. Some of them help pushing the Mustang or start talking to the camerawoman or the artists. Suddenly a van blocks the view. Or a person on a bike rides next to the car and holds on to it. A biker turns right and disappears from the frame. Parts of the city of Brussels influence the moving images, without any director governing the actions of the elements in the screen. A red light for example, abruptly brings the car to a halt and literally changes the experience.

The potentiality of *On the road* is that what is projected on the screen creates that the spectator has a specific sensation about the physical position in a world saturated with screens. Not in the sense that we are being pushed outside a Platonic cave and have suddenly become enlightened and found insights and knowledge about “the world as it is”. The experience is an exercise in which the screen draws attention to the world; the live-streaming of an intervention of artists involves watching images of real-time city life. A host of unpredictable things enter the frame or remain off screen but influence the performance nevertheless and push the spectator into observing, selecting and comparing, seeing. Gradually there is a certain physical and mental fatigue. The spectator does not really know why these images should be relevant. Unlike in a movie theatre, there is no narrative of a feature film, rather images that after a while seem somewhat banal. However, in my opinion the screen shapes the “I” by creating an extroverted move towards any-thing-whatever that appears on the screen. The images become empty of meaning in the sense that there is no truth or story to be seen in relation to what the camera is filming. But neither can the screenager click away from this event. At home or all by him or herself, this would be very easy, but at *Recyclart* the screenager belongs to a public gathering. So instead of *going somewhere else*, the spectator keeps on looking at the screen.

On the road created a time and space in which screen, world and self come together in a specific way. What is interesting is that the car the spectator sees in real-time on the screen is literally approaching his or her physical position. When the car almost arrives at *Recyclart*, towards the end of the performance, the camera is filming the street and the building he or she is in at that very moment. The self is already a part of the screen and part of the performance. The spectator has to choose between going out on the streets or to keep on looking at the screen with the back turned to the filmed event. Some spectators go outside to see the car with their own eyes and maybe even touch it, others remain focussed on the screen. Of course, there is no “right choice”, it is not that the spectators who choose to go outside are more interested in the “genuine” experience than in the screen-representation of the real, for example. Ultimately all spectators become part of the screen. The spectator enters the frame of the mobile camera that has been following and filming the car from the beginning. The spectator becomes aware of this as he or she is either confronted with the camerawoman filming him or herself nearby the car, or he or she is looking at the own body being projected on the screen. “Finally media-representation and live-performance alternated when the public became part of the work, looking at itself while looking at the performance”

(Kindermann, 2012).

The spectator who does not go outside sees the own body operating live on a screen. The spectator becomes an impersonal force of the city, much like the red traffic light that stopped the car for example or one of the hands that pushed it. The spectator's position in *Recyclart* connects to the broader space of the city of Brussels, the result of the images the screen has shown during the entire performance. In *On the road* the spectator becomes an impersonal power: it is not about *you* and *your* personal feelings or desires, *your* personal narrative. In a different way than in the movie theatre, the spectator is drawn to something outside the self, also when he or she is physically present on the screen and part of the performance. When finally being confronted with the moving images of themselves, spectators have potentially become like characters of modern cinema who do not lose their identity, but whose identity is at stake or put to use. The spectator can have a sensation of the own body as if one is a stranger to oneself, *becoming another*. What do I mean by this?

In *The Time-Image* Deleuze discusses how both characters and their filmmakers in modern cinema *become another* (Deleuze, 1989, p. 147-155). Their identities are at stake in the sense that the line between the objective camera that sees the character and the subjective eyes of the character that interprets the world, is blurred and messed up. Already in *Citizen Kane* (Welles, us, 1941) the main character has no fixed identity anymore. This character only has a subjectivity based on what witnesses say about him. These witnesses never create a single identity that can be agreed upon (Deleuze, 1989, p. 148), which creates an indeterminacy about the subject. "Objective and subjective images lose their distinction, but also their identification, in favour of a new circuit where they are wholly replaced, or contaminate each other, or are decomposed and recomposed" (Deleuze, 1989, p. 149). That "one knows who one is and whom one is filming, ceases to be valid. [...] The film-maker and his characters become others together and the one through the other" (Deleuze, 1989, p. 153). Deleuze's discussion remains within the scope of the process the character/actor and the filmmaker go through together. But this process where the identity is at stake can be experienced in *On the road*, on behalf of the spectator. Not because the spectator can no longer identify with the characters of a film anymore. Rather, in *On the road* the spectator has become part of the screen, looking at oneself while looking at the performance.

This is a different self-referential experience than when the screenager uploads and manages selfies or other self-referential material on social media websites, for example. Also, the self-reference of the CBLEs that send prompts like "Cheer up" and "I know you can do this" is of a completely different order, steering the individual towards a programmed sensation. *On the road* shows that it is possible to create an extroverted move by means of digital screen culture, as the spectator, when confronted with him or herself, goes outside the boundaries of what the self is already feeling, wanting, desiring. Precisely this sensation, I would argue, can be understood as using the "I" as a consequence of relating to the screen. There is, in the words of Masschelein and Simons, an

extroverted move. The screen, when it shows how performance, digital technology and spectatorship fall together at the end of the performance, draws attention to the fact that nowadays it is no longer clear who is inside and outside the screen, who is acting and who is watching. To be able to experience this screen reality, we need to create events in which the mediation of screens becomes tangible, instead of just having attention caught by the screen, like the CBLE on page 186. The live streaming images, in which the camera comes closer to the spectator as time goes by ultimately films the spectator watching moving images of him or herself. In this experience, the spectator stands on a threshold. The screen, in the space and time of *Recyclart*, shapes or forms the spectator who is *literally* standing on a threshold between the world and audiovisual representations of the world, which now has become a given due to the omnipresence of screens⁶⁸.



In the twentieth century movie theatre the darkness shuts the spectator off from the world, making it possible to realize a movement in thought. For Deleuze the cinematographic automaton allows the possibility of thought. The time and space of *Recyclart*, although not a dark room like the cinema auditorium, nevertheless also involves a public withdrawal away from the regime of the digital screen. So instead of a screen-centered continuum in which attention is constantly grabbed by this or that attention engine, *Recyclart* potentially created or generated attention in relation to a screen-centered world.

⁶⁸ Photo reproduced with kind permission of the authors.

The modern fact is that we no longer believe in this world. We do not even believe in the events which happen to us, love, death, as if they only half concerned us. [The] world [...] looks to us like a bad film. [...] The link between man and the world is broken. [...] Man is in the world as if in a pure optical and sound situation.

(Deleuze, 1989, p. 171-172)

Deleuze's quote refers to a Europe left in ruins after the Second World War, but can still be relevant vis-à-vis the digitization. Nowadays events are easily registered by digital technology because by means of video and audio-capture everyone and everything potentially appears online. Images that capture worldly, political events like terrorist attacks but also the everydayness of this or that individual life, are a given as a result of the regime of the digital screen. With *On the road* we saw an example of how the screen can be used within a specific space and time constellation, because of which we are not just immersed by screen events, but in which attention is generated for a world saturated by screens. This way, the screenager is not just *in* the world, but is able to reflect about it. In other words, the regime of the screen is interrupted to be able to have an experience of that regime. The omnipresence of smartphones, for example, has turned the world in a particular kind of optical and sound situation. Deleuze's idea of an overloaded brain endlessly absorbing information can coincide with the fact that cinema gave the world its screen, this way indeed creating screen events that might only half concern us, and in which the world looks like a bad film.

However, certain public experiences, precisely when time receives a different quality than leisure time or productive, economic time, can bring about a certain care or interest for the world. Education in the public place of the school, where children and youngsters learn, can contribute to believing in the world by withdrawing the individual into this particular space. Surely this does not mean that education can or should fix worldly problems. But school, Masschelein and Simons argue, always has had the potential of making children learn to care for and become interested in aspects of the world, precisely by asking and creating attention. The digitization poses a concrete threat to the ability to have deep attention for something. Deep attention is a cultural, human phenomenon which cannot be developed without an education. The regime of the digital screen produces channel surfing and potentially destroys attention. A long term development of deep attention cannot be shaped if the world is perceived as a smooth continuum of (screen-)events that extend instead of interrupting what the individual wants.

This is why the omnipresence of the digital screen, which threatens the long term development of attention, makes it relevant to rethink the traditional act of going to school, although it is often conceived as a boring activity. Being introduced into aspects of the world, its history, its geography, a language or mathematics, *by going to school*, even though the digital screen can present all these aspects in and by itself, requires and develops attention and thus care for aspects outside the own ego. Going to school and being "forced" to participate in events that present a part of the world is

valuable in itself, precisely because the relationship with other pupils and the teacher, within the constellation of the classroom, allows for something to show itself, beyond its direct use-value, beyond *fun* and beyond what the individual wants. Instead of affirming the regime of the digital screen, like contemporary educational innovation does, we should thus interrupt it by rethinking traditional education as described above. My argument is that classrooms, which are distinctively different from learning environments, should continue to exist. Or, if they disappear there should be an alternative space and time where, inspired by the concrete limitations, rules and habits related to a classroom, a fissure or interruption takes place, because of which the regime of the digital screen becomes a question of concern, rather than a force that imposes a one-dimensional reality upon the subject.

What is more, education could consist of hacking into the regime of the digital screen, by radically experimenting with this object. In and by itself the digital screen will not become pedagogical, it requires some kind of intervention. When affirming the digital screen from an attitude of care and by creating a public withdrawal in which the screen is treated as a *pharmakon*, it can function as a pedagogical tool. The artists of *On the road* experimented with digital media, the experience of time and the position of the body of the spectator within a particular space in such a way that a public withdrawal concretely materialized as a consequence of the screen. As such it can be inspiring to think about how the specificity of the digital screen, just like the blackboard or the cinema screen, potentially co-constructs an ethos of care and the development of deep attention.

3. Rethinking the figure of the teacher

In this section I will argue that in times of digital screens, it is important to rethink the role of the figure of the teacher. Alongside the possibility of turning each environment into a learning environment, digital technology also takes over particular important roles normally attributed to the teacher. By means of Internet programs, the screenager can auto-educate him or herself when learning specific skills, competences or knowledge. But as we saw in the third part of this PhD dissertation, also the task of scaffolding and more in general, of *facilitating* the overall learning process of the individual could become a matter where digital technology instead of the teacher is in charge. Of course, here and there it might still require some kind of management from a human agent, but computer programs already exist that independently provide scaffolding strategies that push the individual into self-regulated behavior. What is important to take into account is that nowadays innovators only go halfway, that is to say, the role of the teacher is still considered as important. However, what might be problematic is that in describing *why* teachers are important, they are primarily perceived in terms of performativity. In line with this principle, the professional teacher is described as someone who is capable of wearing different psycho-pedagogical hats. It is someone who constantly changes his or her behavior successfully in relation to an ever changing environment, this way addressing the specific learning needs of each individual learner.

In contrast to this teacher, who mainly relates to pupils or students as a facilitator, I would like to propose a different kind of teacher, whose starting point is first and foremost an ethos of care, both in relation to knowledge and the figure of the student. Digital technology might actually be curative in the sense that it radically puts an end to the legitimization of knowledge in the modern sense of passing on norms and values and disciplining the individual in relation to that knowledge by sending him or her to school, where the all-knowing teacher is in charge. As Vlieghe argues, we live in a post-historical age where it is no longer possible to tell the individual how he or she should give shape to the individual and communal existence. In *The Ignorant Schoolmaster* (1991[1981]) and *The Emancipated Spectator* (2011[2008]), Jacques Rancière discusses the emancipatory effect of education and art, which is not about “overcoming the gulf separating activity from passivity” (Rancière, 2011, p. 12). In line with this, using the “I” or diving is not about a student learning “what the schoolmaster must teach her” (Rancière, 2011, p. 14), it is not about “a form of knowledge, a capacity, an energy in a body or a mind - on one side, [that] must pass to the other side”. In relation to art Rancière suggests that it transforms the subject, but not at all as a movement away from a passive attitude into an active participation, as if we have to “activate” our “I”. In this regard digital technology might actually radically allow a fundamental openness in the sense that knowledge is no longer restricted to a particular legitimization.

However, even though the legitimization of knowledge in the modern sense no longer holds any ground (and with this legitimization, the all-knowing teacher), the freedom to give personal meaning to knowledge is not simply a given in the post-historical age. Here the teacher could play an important role. Digital technology imposes a different way of relating to knowledge, which might require a specific response from education. When knowledge is set free from a pre-fixed meaning in terms of norms and values, but re-appropriated in terms of its use-value and receives its meaning in relation to performativity, it is situated within a narrow economical perspective. And this, I would argue, is what the digitization might create, namely a world in which knowledge is merely fuel for the knowledge society. In other words, the postmodern discourse on knowledge and the way knowledge receives meaning as a consequence of digital media, might lead to a problematic relationship with knowledge, in the sense that it ceases to be operational *as knowledge*. It can be argued that it stops being knowledge and that it is reduced to data, which is merely stored in digital archives, from where it can have its short-term effect in relation to performativity. Digital technology can be toxic, when through digital media, knowledge is not experienced profoundly, but merely passes through the mind, and does not stay there, like when the GPS device presents chunks of information with direct use value, but with no long term effect and no attention formation.

In times of digitization, education could focus on the importance of the specificity of knowledge, not in relation to absolute truths, but neither merely in relation to the knowledge economy. The task at hand is to experiment with the screen to be formed and not to be deformed by the events it produces. Education could create the general ability to have an ethos of care in relation to the way digital technology changes our relationship to knowledge, something which the teacher could help

creating from his or her relationship with knowledge on the one hand, and the students on the other hand. As a consequence of the new experiences digital technology generates, Vlieghe argues that the elder generation has a huge responsibility on behalf of the new generation of digital natives (Vlieghe, 2015b, p. 210).

Faced with the ubiquity of digital media, the existing generation has *the duty to respond in an appropriate way to the present situation*. This is not to say that they have to decide for the members of the new generation how they should lead their lives. Instead, what is [at] stake here is the very possibility that the new generation is actually capable of deciding itself on how to give shape to individual and collective existence.

(Vlieghe, 2015b, p. 221- 222)

In this quote we can read that Vlieghe does not make a plea for the all-knowing teacher who will enlighten students with the underlying truth of particular knowledge. Rather, the new generation, Vlieghe argues, has to have the opportunity “to be actually a new generation that can take critical distance from the existing society and rejuvenate it” (Vlieghe, 2015b, p. 217). In other words, to be able to believe in the world, the older generation must create the conditions in which deep attention for something can materialize. Drawing on Stiegler and Arendt’s essay *The crisis of education*, Vlieghe argues that to become someone, subject-constitution must take place in relation to the elder generation. Preservation of ways of being in the world - which can take place by going to school or being together and growing up under the guidance of parents - allows to have a world in common. This however, goes beyond what the individual wants in terms of needs. This is in fact what “using the ‘I’” hints at: the self goes outside or beyond the comfortable sphere of the life-world, by relating to what “we”, that is, the society, across the generations, finds worthwhile preserving. This preservation introduces the newcomer to the world. Simultaneously, however, this involves an unavoidable re-interpretation, time and again, as “there is principally openness toward a future that can be different from the present” (Vlieghe, 2015b, p. 217). Educating someone can therefore be interpreted as relating to knowledge from the act of preservation, protecting what is worthwhile by passing it on to the other generation. Yet, in such a way that a fissure can take place, that is, in such a way that preservation allows for a possible renewal (Masschelein, 2008, p. 191). Preservation does not entail that the way a society relates to the world must never change.

From this point of view on education we cannot but criticize postmodern innovation that affirms the digitization of society as described in the third part of this PhD dissertation. This because the possibility arises that the fissure or friction - the concrete experience of preservation which at the same time allows renewal of the world, - disappears, as a consequence of a performative pedagogy that implements the total automaton. The materiality of the screen, when combined with the principle of performativity, results in a world where the generations possibly avoid the question of preservation and profound, individual relationships with knowledge. The teacher, when primarily conceptualized as a facilitator, affirms this economical perspective, rather than developing an

attitude of care. Or, in the words of Vlieghe, “the harmful side of the pharmakon consists of a use of technology that renders transindividuation impossible, i.e. a way of dealing with the predominant technologies that disturbs intergenerational interaction and that puts a stop to the possibility of criticality and of societal change” (Vlieghe, 2015b, p. 217). The teacher, when conceived as a facilitator, is like a neutral force and the experience is not binding. Innovators, for example, banish the lecture of a teacher to the online world, where the individual can look at a short video clip. Moreover, the online lectures cannot be too long and should be as interactive as possible. This way, educators argue, online lectures take into account the short attention span students seem to have. This point of view actually contributes to the destruction of attention, because these online courses actually never develop deep attention in relation to something. What is more, innovators that make a plea for online courses rarely discuss in depth what the value of the live presence of the teacher could be, what it means to be present in a classroom, to listen to someone directly instead of watching that same lecture on a screen, all by oneself. Consider the difference between attending a live concert and listening to that same music all by yourself. Or the difference between watching a film in the living room, on a lazy Sunday afternoon and going to the cinema, watching that same film with a group of people, afterwards having a drink and discussing what you just saw.

As digital technology is becoming more complex it can outsmart the human teacher in the role of facilitator. This might actually be an opportunity to reflect about what is human teachers can do, that computers can’t, and this beyond the role of facilitating. The education I propose is not about preparing for a world to come, but about creating the right conditions so that the student is exposed to (a part of) the world and can contemplate about this. Emancipation begins when the student understands that he or she is always and already capable of observing, selecting, comparing and interpreting, and that there is no restriction to the capacity of his or her thoughts during this experience; that there is no secret knowledge or model necessary to speak, or a teacher who would guide the student through that knowledge or model so that finally the student would “understand” the world. However, in the regime of the digital screen, in which the teacher merely functions as facilitator, the screen might function like a shield. One meaning of “screen” is that it keeps the world outside. A sun screen, for example, blocks light from coming in.

If the digital screen’s regime creates mind zapping and the possibility to close any window whenever the individual feels bored by its content, then the general ability to reflect about the world never becomes a habit. If the regime of the digital screen imposes teachers to reduce the presentation of knowledge to short 10 minute clips full of interactivity on behalf of a virtual audience, then this might actually shield the screenager from having an experience with knowledge. Instead of diving into the materiality of something, the screenager is surfing from one event to another, from one learning environment to another, without ever being exposed to something. In that sense, although self-regulated learning is interpreted as student-centred and individual learning, it could be argued that there is no individual anymore, only the continuous reactivation of oneself in relation the principle of performativity. However, the public withdrawal that the space

and time of the school can create, actually allows that events take place which the screenager, in and by him or herself, would never experience. The role of a teacher in such a time and space, could consist of creating experiences so that the screen does not function as a shield, but as a window to the world.

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Nederlandstalige samenvatting

Van cinema educatie tot de alomtegenwoordigheid van digitale schermen

Een uitdaging van de assumpties in het licht van educatieve ervaringen

Dit onderzoek start vanuit de vaststelling dat we steeds meer worden omringd door digitale schermtechnologie zoals smartphones, tablet Pc's, smartwatches, televisies en laptops. Daarom spitst dit onderzoek zich toe op de figuur van de *screenager*. Deze figuur beperkt zich echter niet louter tot de *teenager* die zich vaak tot één of meerdere schermen verhoudt. *The screenager* - zo omschrijft voorliggende studie deze figuur - leeft in *an age of screens*. Niet enkel tieners, maar zo goed als iedereen verhoudt zich tot schermen door zich bijvoorbeeld met het Internet en sociale media te verbinden en daardoor representaties van de werkelijkheid te up- of downloaden. Deze figuur moet dus ruimer worden opgevat en omvat *wij allen*, de verschillende generaties die leven in een tijdperk waarin schermen alomtegenwoordig zijn. Dit proefschrift onderzoekt de rol van educatie ten aanzien van de digitalisering van onze samenleving. Anders geformuleerd, hoe percipieert onze samenleving de rol van educatie in een wereld die steeds meer vanuit onze ervaringen met het (digitale) scherm wordt bepaald?

Uiteraard is er binnen het veld van educatie al veel onderzoek gedaan in relatie tot digitale technologie, de toenemende digitalisering van de samenleving en de impact van recente technologieën op de manier waarop we onderwijs (zouden moeten) organiseren. In de algemene inleiding van dit proefschrift bespreek ik kort drie voorbeelden die aantonen dat wetenschappelijk onderzoek voornamelijk vanuit een instrumentele invalshoek een oplossing probeert te bieden voor een concreet probleem of in relatie tot de noden en verwachtingen die de digitale samenleving met zich meebrengt. Dit om de nieuwe generatie jongeren voor te bereiden op de transformaties die onze samenleving ondergaat. Bij dergelijke studies krijgt de lezer meestal inzicht in de sterktes en zwaktes van hedendaagse technologie in relatie tot een bepaald onderwijsdoel. Of er wordt verhelderd hoe leren kan bijdragen aan het ontwikkelen van competenties die de screenager sterker moeten maken ten aanzien van de digitalisering.

Dit proefschrift, echter, neemt geen instrumentele wending, maar vertrekt ook niet vanuit een normatief, vooraf ingenomen standpunt van wat educatie is of zou moeten zijn, om zo een oordeel te vellen over de hedendaagse verschuivingen binnen het onderwijs. Met deze studie poog ik eerst en vooral te onderzoeken welke verhouding tot de werkelijkheid ontstaat vanuit de concrete ervaringen met het scherm. Welke ervaringen maakt technologie (on-)mogelijk? Dit is in de lijn van het standpunt van wijsgerig pedagoog Joris Vlieghe, die stelt dat technologie niet alleen een instrument is dat gebruikt kan worden met een bepaald doel dat men voor ogen heeft. Technologie heeft niet alleen een instrumentele betekenis, maar ook een existentiële. "Het zijn niet alleen dingen die we gebruiken, maar ook dingen die ons vormen en mee beslissen wie we zijn en wat we

kunnen en denken” (Vlieghe, 2015a, p. 7, eigen vertaling). Een soortgelijk uitgangspunt vinden we bij Estrid Sørensen, die in *The materiality of learning* stelt dat onderzoek naar technologie binnen educatie zich voornamelijk bezig houdt met het bereiken van op voorhand vastgelegde doelen. Ook stelt ze dat als technologie niet kan waarmaken wat we hadden vooropgesteld, dat we dan meestal onze interesse in die technologie verliezen (Sørensen, 2009, p. 7, eigen vertaling). Dat onderwijskundigen eerst en vooral vastleggen hoe kinderen leren en zich ontwikkelen, om daarna de vraag te stellen hoe technologie kan gebruikt worden binnen dat perspectief (Sørensen, 2009, p. 7, eigen vertaling). De focus zou volgens Sørensen echter meer op de materialiteit zélf moeten liggen en hoe dit mee ons denken beïnvloedt.

In de algemene inleiding beschrijf ik dan ook een specifieke onderzoekshouding die in de lijn ligt van de standpunten van Vlieghe en Sørensen. Vanuit die onderzoekshouding⁶⁹, die ik uitwerk aan de hand van de cinema filosofie van Gilles Deleuze en de film *L’humanité* van de Franse regisseur Bruno Dumont, bestudeer ik het kruispunt waar (digitale) schermtechnologie en onderwijs elkaar ontmoeten. Zoals de Franse regisseur Robert Bresson het stelt, niet om te zien wat men op voorhand al heeft gedacht, maar om te kunnen nadenken over wat het is dat men ziet (Bresson, 1975).

Dit proefschrift bestaat uit vier delen die elk vanuit bovenstaande houding geschreven zijn, om zo onze verhouding met (scherm-)technologie te bestuderen. In het eerste deel van dit onderzoek benadruk ik het moment dat onze samenleving onder invloed van het Verlichtingsideaal het kind massaal het klaslokaal binnenbracht. In een case-study onderzoek ik de technologie van Joseph Lancaster, die in het begin van de negentiende eeuw de verhouding tussen de schoolmeester en de leerling drastisch verandert door het individuele studieboek te vervangen door griffels en schoolborden. Onderzoek naar Lancasters pedagogiek is relevant ten aanzien van vandaag, omdat Lancaster een soort van “leermachine” ontwikkelde waardoor technologie de bovenhand kreeg op de figuur van de leerkracht. Hij ontwierp namelijk een efficiënt en effectief systeem dat de aandacht van leerlingen automatisch bij de te kennen leerstof hield, zonder dat een leerkracht of monitor (dit is een speciaal geselecteerde leerling) expliciet les gaf.

Er vond een bepaald *automaton* effect plaats, dat wil zeggen, vanaf het moment dat een leerling het klaslokaal betrad werd een bepaald leermechanisme met standaardprocedures op gang gebracht, waardoor de leerling niet *niet* kon leren wat Lancasters griffels en schoolborden presenteerden. Of anders geformuleerd, constante aandacht voor de leerstof werd bijna automatisch gegarandeerd door de wijze waarop de technologie de leerling bij de les hield. Daardoor kan gesteld worden dat de technologie van Lancaster een soortgelijke vorm van aandacht produceerde die door het cinema-scherm en het digitale scherm worden gegenereerd, in die zin dat het moeilijk is om de aandacht af te wenden van eender wat er verschijnt binnen de contouren van

⁶⁹ Deze onderzoekshouding is beschreven in het artikel “What does it mean to be a human researcher? Deleuze’s character of the forger in the film *L’humanité*” (Decoster & Vansieleghe, 2014a).

deze twee schermen. Doorheen het proefschrift omschrijf ik dit als een *automaton*-ervaring. In het tweede, derde en vierde deel van deze studie worden de gelijkenissen en verschillen tussen Lancasters onderwijsmachine, het cinema-scherm en het digitale scherm verder bestudeerd.

In het tweede deel van dit proefschrift bestudeer ik het cinema-scherm. In het eerste hoofdstuk vergelijk ik Lancasters automatische leermachine met de cinematografische ervaring zoals beschreven door de psycholoog Hugo Münsterberg (1916). In dit hoofdstuk onderzoek ik hoe het bewegende beeld automatismen genereert en welk soort van aandacht de toeschouwer van cinema bijgevolg heeft. Op die manier blijft het concept van aandacht, dat reeds belangrijk was in het eerste deel, een belangrijke leidraad van dit onderzoek.

In het tweede hoofdstuk van het tweede deel onderzoek ik aan de hand van een tweede case-study hoe cinema tijdens het begin van de twintigste eeuw onderwijstheorieën beïnvloedde en op welke wijze het cinema-scherm letterlijk binnen het klaslokaal werd gebracht. Ik analyseer onderwijstijdschriften, theorieën en onderzoek die vanaf het begin van de twintigste eeuw opduiken binnen de context van de Verenigde Staten van Amerika. De cinema educatie die tot stand komt *brengt de wereld tot bij het kind* om zo de theoretische, leerkracht-gecentreerde vorm van doceren die toen gangbaar was af te wisselen met intuïtieve, cinematografische ervaringen van de werkelijkheid. Dit echter zonder de figuur van de leerkracht of de onderwijsvorm van het doceren in vraag te stellen, zoals het geval bij Lancasters pedagogiek. De hervorming die het cinema-scherm tussen 1920 en 1950 met zich meebrengt blijft beperkt tot de praktijk van *vicarious learning*, althans wat betreft de Amerikaanse context. Volgens onderwijshervormers van die tijd brengt het cinema-scherm de wereld namelijk tot bij het kind, al is het in de vorm van bewegend beeld. Zo kan een klas uit een stedelijke school als alternatief voor een daadwerkelijke klasuitstap naar bijvoorbeeld de *Rocky Mountains* via het cinema-scherm de bergen beleven *alsof* men er effectief is geweest.

Echter, het automaton-effect dat cinema kan veroorzaken zoals het is beschreven door Münsterberg in het eerste hoofdstuk zal eerder getemd worden dan dat het wordt bevestigd en onderzocht. Dit toon ik aan door in dit tweede hoofdstuk de invloed van censuur op cinema educatie te bestuderen. Eveneens neem ik de cinema pedagogiek van Edward Dale en Henry Giroux onder de loep ik, die beiden in hun interpretaties het automatische karakter van cinema eerder temmen dan ermee te experimenteren. Ik besluit dit tweede deel met een korte verwijzing naar de cinema-filosofie van Deleuze en het essay *Het kunstwerk in het tijdperk van zijn technische reproduceerbaarheid* (1936) van Walter Benjamin. Beide auteurs bestudeer ik uitgebreid in het vierde deel van dit proefschrift, omdat hun interpretaties van cinema wel experimenteren met het automaton-effect van het cinema-scherm.

Het derde deel van dit proefschrift zoomt in op de impact van het digitale scherm voor de manier waarop we educatie vandaag opvatten en concreet organiseren. Tijdens dit deel maak ik in elk van

de drie hoofdstukken een driedelige beweging. Eerst en vooral onderzoek ik steeds hoe onze verhouding met het digitale scherm een specifieke ervaring tot stand brengt. Anders geformuleerd, ik houd een bepaalde eigenschap van het digitale scherm tegen het licht, zodat we het kunnen bestuderen. Ten tweede beschrijf ik in relatie tot elke eigenschap hoe innovatie binnen het hedendaagse onderwijslandschap deze eigenschap steeds bevestigt. Ten slotte beschrijf ik hoe de bevestiging van de desbetreffende eigenschap een verandering teweegbrengt in de manier waarop onze samenleving nadenkt over educatie en deze concreet beïnvloedt in de praktijk. Met andere woorden, elk hoofdstuk onderzoekt hoe een eigenschap van het digitale scherm het denken en handelen binnen het onderwijslandschap doet transformeren. Ik kijk met andere woorden hoe onderwijsinnovatie eigenschappen van het digitale scherm inzet in de vorming van de figuur van de screenager.

In het eerste hoofdstuk van dit derde deel beschrijf ik hoe schermtechnologie een transformatie teweegbrengt van een moderne, industriële en disciplinaire samenleving naar een postmoderne controle- en kennissamenleving. Aan de hand van de interpretaties van de Franse filosofen Jean-François Lyotard en Deleuze beschrijf ik een shift in de betekenis van kennis als gevolg van de invloed van computer-gerelateerde technologie, die vanaf de jaren 1950 een belangrijke impact heeft gehad op onze samenleving. Deze transformatie naar een kennissamenleving, in termen van onderwijsinnovatie, heeft als gevolg gehad dat onderwijs zich steeds minder focust op een bepaalde, moderne interpretatie van vorming en zich steeds meer focust op leren als voorbereiding op de (scherm gerelateerde) arbeidsmarkt. Dit impliceert een drastische herpositionering van de figuur van de leerling of student. In plaats van zich te moeten vormen aan een kennis- en leerkracht gecentreerde vorm van onderwijs, moet deze leerling/student steeds meer zichzelf reguleren via leerling-gecentreerd, geïndividualiseerd onderwijs.

In het tweede hoofdstuk beschrijf ik hoe het digitale scherm altijd aan is (“Always on”) en de screenager aanzet om een interactieve multitasker te zijn. In tegenstelling tot het cinema-scherm produceert het digitale scherm een regime van ruimte en tijd waar ervaringen met het scherm altijd en overal mogelijk zijn. In termen van innovatie leidt dit tot een vervaging van de scheiding tussen de leefwereld of het dagelijkse leven enerzijds en het educatieve leven zoals dit wordt ervaren in de schoolse context anderzijds. Dit toon ik aan door hedendaagse vormen van innovatie zoals *The Flipped Classroom* en *Bring Your Own Device* te bestuderen. Deze vormen van onderwijsinnovatie impliceren een fundamentele herpositionering van de rol van het klaslokaal, waarbij de grenzen van de klasmuren vervagen en dit omdat het digitale scherm (“Always on”) de rol van deze ruimte- en tijdservaring zoals die binnen de moderne, disciplinaire samenleving werd opgevat onder druk zet. In het eerste deel van dit proefschrift zagen we met Lancaster hoe het kind het klaslokaal betrad zodat het daar onderwezen kan worden. Het tweede deel beschrijft hoe de wereld via het cinema-scherm het klaslokaal wordt binnengebracht. In dit derde deel zien we hoe met het digitale scherm de mogelijkheid bestaat dat het kind het klaslokaal niet meer nodig heeft om representaties van de wereld op te nemen en te leren. Leren kan nu altijd en overal

plaatsvinden, een transformatie die onderwijsinnovatie bevestigt en waardoor het klaslokaal een andere rol krijgt toebedeelt dan in de moderne, disciplinaire samenleving.

In het derde en laatste hoofdstuk van het derde deel beschrijf ik hoe dat het scherm een object is dat zelf-referentie realiseert. Ik bespreek dit aan de hand van de theorie van de psychologen Christian Metz, Sherry Turkle en Jan Devos, maar ook door concrete schermervaringen te bestuderen, zoals het fenomeen van de selfie, Reality TV en Internet pornografie, waar zelf-referentie telkens op een andere manier aan bod komt. Ook bestudeer ik de manier waarop academici en niet-academici deze ervaringen evalueren, in hun onderzoek of via de publieke opinie. In termen van innovatie kan de mogelijkheid tot zelf-referentie gerelateerd worden aan de concrete initiatieven binnen de onderwijscontext om het scherm te gebruiken in functie van zelf-regulerend onderwijs. Via *Computer Based Learning Environments* produceren digitale schermen zelf-referentie als een vorm van sturing van het individu. Dit impliceert een fundamentele herpositionering van de figuur van de leerkracht, die in zijn of haar rol steeds meer kan vervangen worden door computer-technologie.

Het derde deel van dit proefschrift bestudeert dus transformaties die onderwijsinnovatie doorvoert door te bespreken hoe respectievelijk de figuur van de leerling/student, de tijd en ruimte van het klaslokaal en de figuur van de leerkracht mede bepaald worden door de ervaringen die het digitale scherm produceert. In dit deel komen dus drie transformaties aan bod die het mogelijk maken te spreken over de invloed van de digitalisering op de manier waarop wij vandaag nadenken over en concreet vorm geven aan educatie. Eveneens bespreek ik in dit deel van de studie het concept aandacht, dat zowel in het eerste als tweede deel ook aan bod is gekomen.

Het vierde en laatste deel van dit proefschrift breekt met de wijze waarop ik in de eerste drie delen vooral beschrijvend onderzocht heb hoe een bepaalde technologie invloed heeft gehad op de wijze waarop onze samenleving onderwijs organiseert. In het vierde deel probeer ik zowel het cinema-scherm als het digitale scherm in een ander licht te plaatsen dan de wijze waarop ze tot nu toe aan bod zijn gekomen. In het eerste hoofdstuk probeer ik eigenschappen naar voor te brengen, zowel van technologie in het algemeen als van het cinema-scherm en het digitale scherm, die nog niet expliciet besproken zijn. Aan de hand van de filosofen Bernard Stiegler, Jean-Luc Nancy, Benjamin en Deleuze en de antropoloog André Leroi-Gourhan ontwikkel ik een pleidooi om anders over technologie en onderwijs te denken dan de wijze waarop onderwijsinnovatie vandaag de rol van onderwijs ten aanzien van het digitale scherm opvat. In het eerste hoofdstuk bestudeer ik het belang van een particuliere houding of ethos die inspirerend kan zijn om na te denken over de relatie tussen technologie en educatie. De houding zoals die is besproken in het eerste hoofdstuk koppel ik in het tweede hoofdstuk aan een algemene discussie over de rol van educatie in relatie tot de digitalisering. In dit tweede hoofdstuk bespreek ik voor een laatste keer de figuur van de leerling/student, de tijd en ruimte van het klaslokaal en de figuur van de leerkracht.