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New Materialist Explorations into Language Education

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We have produced a considerable amount of academic work together, but this one has been our longest and most time-intensive piece to date. A large part of thinking through the topic, literature, chapters, feedback, and production happened over the phone, while walking our dogs. We therefore dedicate this book to Janosch, Kaisla, Lars, Etti, Harri, and Itta, who, together, know the whole story.

Jyväskylä, Finland   Johanna Ennser-Kananen
June 2022   Taina Saarinen

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Part I
Introduction

Chapter 1
Towards Socio-material Research Approaches in Language Education

Johanna Ennser-Kananen (ID) **and Taina Saarinen** (ID)

Abstract This chapter outlines the socio-material framing of the book that it opens. We situate this volume materially not only in the discipline of applied linguistics and language education, but also in the long tradition of applied language studies at the University of Jyväskylä in Finland and the community there. In doing so, the book builds on the authors' roots in social constructionist thought and explicates why an orientation towards new materialism may be useful for a consideration of equity issues in language education. Socio-materialism fosters a critical, transformative perspective and encourages an ontological ethical grounding of research, thus providing a starting point for research that implicates (but yet decenters) the role of the researchers. Having conducted the work presented in this book in a community of applied linguists has also made us aware of the material role of the community and its scholars in the process; not just as a vessel of knowledge, but as a part of an assemblage.

Keywords New materialism · Socio-materiality · Social constructionism · Equity · Ethics · Negotiability

Social Constructionism as a Starting Point

This book analyzes language education in society in a frame that acknowledges the ways in which humans socially construct reality on the one hand (Pennycook, 2018) and act in a dynamic relationship with the material world on the other (Bennett,

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2010; Pennycook, 2018). The relationship between social constructionism and the material has been debated by researchers working within the social constructionist paradigm (Fairclough et al., 2004) as well as outside of it (for instance critical realism; Bhaskar, 1989). Building on this tradition, the authors contributing to this book approach society and social phenomena as both "materially real and socially constructed" (Coole & Frost, 2010, p. 26).

We[1] want to examine and revisit our position as researchers by decentering ourselves and humans in general from the main focus of research activities and giving way to the materialities that deeply shape our environments and societies. Through this *critical posthumanist realism* (Pennycook, 2018), we hope to engage in research that sees society as an ethical interrelationship between humans and the material world (Bennett, 2010; Pennycook, 2018, p. 9). Our approach is eclectic rather than fixed or dogmatic, and the chapters we have collected in this volume explore the socio-materialities of language education from the perspectives of material agency, spatial and embodied materiality, and human and non-human assemblages.

Posthumanism is an umbrella term for various lines of thought that have in some way or other challenged anthropocentric ways of thinking and redefined the idea of what it means to be human and how humans (should) relate to their material and mediated environment. As editors of the volume, we have challenged ourselves and our colleagues to problematize *anthropocentrism* (i.e. the idea of humans as the centre of the natural or social environment) and *logocentrism* (i.e. the idea of language as superior means of meaning making). This we want to do by understanding humans as entering an ethically motivated relationship with their material environment, "*entangled* and *implicated* in other beings" (Pennycook, 2018, p. 126) and communicating meaning with a diverse range of social and material means (Canagarajah, 2021). Our intention is to expand our theoretical roots towards approaches that acknowledge the materiality of language and its functions in education.

This Book as an Assemblage

This book is an assemblage, or a material-discursive dynamic (Barad, 2007) of several elements and entities that have come together in the Jyväskylä applied linguistics community over several decades. The assemblage comprises (at least) of the community of applied linguists and language education scholars and educators at the university, their individual socio-historical and institutional positions, and a higher education policy that promotes and rewards "profiling" of universities. By profiling, we refer to a higher education policy that encourages universities to focus

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[1] Unless otherwise specified, "we" refers to us as the editors of the book.

on particular disciplinary areas, and supports those activities with Academy of Finland funding. Having hosted a large community of applied linguists since the 1970s, the University of Jyväskylä became a site for such profiling in 2016, as the Department of Language and Communication Studies and the Centre for Applied Language Studies received a large multi-year grant to develop the initiative *Applied Language Studies for the Changing Society*. Later named *Research Collegium for Language in Changing Society* (RECLAS), the profiling initiative aimed at building on the long tradition of applied language studies at the university to develop the field further, particularly in the areas and intersections of language education and assessment, language policies and social structures, and discourses of language, diversity and (in)equity.

The goal of the profiling activity was to support "a significant contribution to the development of the research field theoretically, methodologically, and empirically" (RECLAS application, 2016, p. 10). These multi-level expectations were a constant challenge to us as members of RECLAS, as they seemed vague, exciting, necessary, and ambitious at the same time. The influx of financial resources from the Academy of Finland not only triggered several hiring and (re)structuring processes, but also carved out spaces and times for Jyväskylä scholars in applied language studies to think and talk about where we would like our work, our research community, and our field to move, and how. This almost hyperbolic goal of "developing the field" became a backdrop for the activities that took place sometimes inside university walls, other times in spaces leaving and refusing those walls, but always in a constellation of people with varying relationships with the community, the university, the discipline, and the ambitious profiling goal. Only as the process of writing this book came to a close, did we begin to see the book not just as another academic output of a funded project on the topic of new materialism in language education, but as a material assemblage in itself (see Engman, Ennser-Kananen & Saarinen, Chap. 10, this volume).

Based on existing work and long traditions at our institution, the RECLAS understanding of language as a situated means for social construction and mediation was made explicit in the application for the profiling funding:

> Overall, the thematic areas [of RECLAS] share an understanding of language that **recognizes its dynamic, social and situated nature** and its role in **constructing social realities, norms, ideologies, processes of identification, participation, inclusion and exclusion**, each providing its specific perspective to the exploration of language-based phenomena in current day society. (RECLAS application, p. 11, our emphasis)

This understanding of language reflects the theoretical foundations of the bulk of work within RECLAS thus far. The community was relatively firmly situated within a social constructionist tradition that grounded much of our work in an understanding of language, change, and society as socially constructed, dynamic, and shaped by the discourses, power dynamics, and societal processes that permeate it. This theoretical basis still is our breeding ground. We, the editors and authors of this book, are working in a field that has largely been socialised into a research paradigm

that considers reality as something constructed and constructive, although we may use slightly different terminology depending on our research focus.[2]

As members of the RECLAS community put many potential issues on the table, ranging from research (as) ethics to methodological advancements, epistemological equity, and the negotiation of new academic identities, genres, and spaces, the two of us grew increasingly unsatisfied with our relatively inflexible theoretical rooting in social constructionism. Although it remains valuable and important for our work, we became more and more aware of the times and places when it did not suffice to deeply explore or understand our data, our analyses, our participants, and our academic selves. While we were indebted to social constructionism as well as used to centre-staging language and discourses, and understanding humans as their main owners, producers, and users in our work, we felt this paradigm needed to be challenged.

We wondered what other approaches that currently receive attention in our field might add to our work and began looking into *posthumanism (*e.g., Pennycook, 2018) as an umbrella term for *new materialist* (e.g. Coole & Frost, 2010) approaches. We were hoping to find ideas that would stretch and challenge our thinking and help us understand the entangled materialities (Barad, 2007) of our social world. In this book, our focus is on challenging this perspective together with new materialism (Fox & Alldred, 2019), or the idea of social and material production rather than social construction. This was also a stretch on our thinking and made us turn over and over again to the relationships between our socio-constructionist traditions and the new materialist theorising, struggling to grasp concepts that went against our internalised Cartesian and Enlightenment ideologies of what research should or could be (Engman, Ennser-Kananen & Saarinen, Chap. 10, this volume).

Exploring the Material

In one of our discussions on developing the field within the profiling area, we asked ourselves and our colleagues the following question: If we weren't focusing mainly on humans in our research, what would we write about? As we began to consider the classrooms and schools, interview situations, survey responses, electronic media, archives, and documents that tend to constitute our primary data sources, we came to acknowledge that our work has rarely been limited to humans, but we have been interested in a plethora of factors beyond humans for a while: spaces, times, objects, emotions, physical processes and forces, for instance. However, it seems that these tended to slip in the background to form the context, data sources, or

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[2] Generally, *social constructivism* implies the individual cognitively engaging in construction of knowledge vs. *social constructionism* refers to knowledge and meaning as historically and culturally constructed through social processes and action (Young & Collin, 2004, p. 375–376).

backdrop of our main analyses, which usually consisted of primarily human activities. Not surprisingly, our list resembled Fox and Alldred's (2019) definition of the "material":

> The materialities considered in new materialist approaches include human bodies; other animate organisms; material things; spaces, places and the natural and built environment that these contain; and material forces including gravity and time. Also included may be abstract concepts, human constructs and human epiphenomena such as imagination, memory and thoughts; though not themselves 'material', such elements have the capacity to produce material effects. (Fox & Alldred, 2019, p. 1).

Several lines of research that include such materialities exist at our institution and beyond. Our colleagues, both those contributing to this volume and others, have been drawing on and making contributions to this scholarship for many years, for example by including spaces, objects, and multiple modes and modalities into their research. Local and international colleagues have worked on and with artefacts (Vygotsky, 1997; Dlaske, 2015; Muhonen & Vaarala, Chap. 4, this volume), human-computer interaction (Suchman, 2006; Thorne et al., 2021; Jakonen & Jauni, Chap. 2, this volume), embodiment and embodied applied linguistics (Canagarajah, 2018; Dufva, 2004; Dufva, Chap. 5, this volume), actor-network-theory (Latour, 2005), and language ecological approaches (van Lier, 2004; Skinnari, 2012). The increasing interest in material approaches also transpires in research on schoolscapes (Laihonen & Szabó, 2018: Laihonen & Szabó, Chap. 6, this volume), our locally developed branch of linguistic landscaping (Shohamy & Gorter, 2008), the ongoing work on nexus analysis at our institution (Scollon & Scollon, 2004; Pietikäinen, 2010), and a renewed interest in multimodalities and multiliteracies (Cope & Kalantzis, 2000; Ennser-Kananen, 2019; van Leeuwen, 2011; Dufva, Chap. 5, this volume; and the new profiling initiative MultiLEAP at our university https://multi-leap.org). All these are indicators of our sustained interest in looking besides and beyond humans in our work.

In all, the interest in materialities is neither limited to our local context, nor is it new. The shift towards scholarship that focuses on "physical environment, everyday objects or the bodies we inhabit" (Brooks & Waters, 2018, p. 21; for language education, see Toohey, 2018) is also underway in the area of education and specifically language education (see for instance Guerrettaz et al., 2021b). Taking this locally and globally surfacing interest in the material world seriously, we believe it is time to make a concerted effort of evaluating this trend through an empirical contribution that explores the interplay between socio-constructivist/constructionist and material realities, in which humans retreat from their center-stage position and are understood as entangled with the material world.

Considering the materialities in our research, however, does not refute or contradict social constructionism. In their foundational work, Berger and Luckmann (1991) suggest that the construction of society happens in dialogue with the material environment, reminding us that their approach to social construction did not exclude materialities. Instead, Berger and Luckmann (1991) saw society as continuously shaped and (re)created within the dialectic between the subjective (human)

and the objective (material) realms. In a similar vein, critical materialism acknowledges that society is "simultaneously materially real and socially constructed" insofar as "our material lives are always culturally mediated, but they are not only cultural" (Coole & Frost, 2010, p. 27). This brings us to *sociomateriality* (Fenwick, 2015), i.e. the entanglement of social and material forces in continuous assemblage and reassemblage (p. 83).

Whereas "strong" or "radical" social constructionism blurs the lines between natural and the social, suggesting that there is ultimately no objective reality outside human perception of it, the socio-material view echoes the "weak" (Searle, 1995) or "moderate" (Heiskala, 2000) social constructionism, which sees the natural and the social as interacting (for example through artefacts, Coole & Frost, 2010; Muhonen & Vaarala, Chap. 4, this volume; Jakonen & Jauni, Chap. 2, this volume, Laihonen & Szabó, Chap. 6, this volume). However, although social constructionist approaches carve out spaces for the material, their role remains limited and separated from the ones that drive societal processes and developments: humans. In order to address pressing societal issues, we believe that such a limited role of the material aspects of society does not suffice. We therefore challenge this view of a human-centered and socially constructed society and agree with Coole and Frost (2010) that change is only possible through reorganization of societal structures and material (e.g., economic) resources. In their words, it would be ...

> [...] ideological naïveté to believe that significant social change can be engendered solely by reconstructing subjectivities, discourses, ethics and identities - that is, without altering their socioeconomic conditions or tracing cultural aspects of their reproduction to the economic interests they unwittingly serve (p. 25–26)

Empirical applications of socio-materialism in learning and education are relatively recent (see for instance Toohey, 2018; Guerrettaz et al., 2021a). However, already in her 2009 monograph *The Materiality of Learning*, Sørensen develops a posthumanist theory of learning as an alternative to humanist educational research approaches. Based on her ethnographic studies in a Danish fourth-grade classroom, she proposes understandings of materiality, learning, and knowledge that de-center humans for the benefit of socio-material relationships, including her concept of "liquid knowledge" (p. 126), a "continual mutation" of socio-material interactions of learners, objects, and the learning environment, which enacts qualitative change but refuses the idea of "growth".

Analyzing the interactions of her participants with a 3D learning platform, Sørensen concludes that liquid knowledge "was all over, embedded in the socio-material practice; it was becoming" (p. 130). In line with Sørensen's (2009) understanding of learning and knowledge, this book contributes to an understanding of the material and non-material, the human and non-human as assemblages rather than binaries. Focusing on language education, we bring together different understandings and aspects of (socio)materiality to offer a more varied view on how the social and the material are intertwined and how this entanglement can be studied (Fenwick, 2015; Guerrettaz et al., 2021b).

Problematizing the Assumption of Negotiability and the Risk of Relativism

Following Bennett's (2010) call for ethical materiality as *practice of ethical behavior* instead of *endorsement of ethical principles,* we reassess our socio-constructionist and socio-constructivist traditions in dialogue with material approaches to allow for a more explicit grounding in equity and social justice-based applied language studies. It seems that our earlier neglect for the material has been more than an oversight, and sometimes even originated from good intentions. A related reduction of "material" to "biological" that we have observed across different disciplines may be based on a limited understanding of the entangled relationships between the social and material. While this view has led to attempts at distancing ourselves from a reduction of humans to biology (a view that has caused highly oppressive societies, for example in the form of biological conceptualizations of race and gender), it may also have caused us to ignore or neglect the material aspects of societal processes. At the same time, as Ahmed (2008) points out, the assumed "antibiologism" or the habitual labelling of socio-constructionist feminist research as reducing "matter" to "culture" is a caricature at best that overlooks the entangled socio-material traditions of the field.

Similarly, an understanding of "material" as merely "artefacts" or "things" would greatly limit our work. Looking at textbooks just as artefacts to be used instrumentally by students and teachers would miss the ways in which the books are designed to enable and facilitate entangled agency (Saarinen and Huhta, Chap. 9, this volume). We believe there is something to be learned from theories that understand society as "material-discursive" or "socio-material" (Fenwick, 2015), as physically and discursively built by and for human and nonhuman matter. Our goal is thus to not only add a material perspective to our social constructionist one, but to ensure that our understanding of "material" remains open and broad (see Fox & Alldred, 2019 above) so that we can transcend the dualism (see also Barad, 2007) between socially constructed and material in ways that have the potential to make a positive societal contribution.

Understanding society in a material way in our work requires an understanding of the role of materiality in shaping societies and our lives in them. In our professional and institutional context, we have already seen approaches (see above section on *Exploring the Material*) that understand action and meaning as mediated by (both material and socially constructed) artefacts. For example, society as a way of organizing reality shapes and is shaped by physical locations, spaces, geographical territories, and social interaction that is mediated by material artefacts, spaces and tools (see Chimbutane, Ennser-Kananen and Kosunen, Chap. 7, this volume, or Laihonen & Szabó, Chap. 6, this volume). In media reports on elections, for instance, we come across examples of voting as a form of embodied citizenship that includes activities such as watching and commenting on pre-election debates, going to the polling site, standing in line, casting votes, and posting selfies with "I voted" stickers on social media. In governmentality theories (Miller & Rose, 2008), the

materiality of society becomes apparent in the organized and repeated ways in which citizen-subjects internalize societal orders and rationalities (also Saarinen & Huhta, Chap. 9, this volume). In nexus analytical approaches, social action has been understood as being materialized in embodied performances (e.g., Scollon & Scollon, 2004). We suggest drawing on such existing work for a renewed and strengthened emphasis of the socially constructed, the material, and their interaction, in order to not just study the election example above as a material context and discursively analyse that, but to analyse these as the actual phenomenon, as an assemblage of material and social in which society itself is being enacted.

We seek to build on the idea that not all social constructs are equal and their acceptance as legitimate representations of our reality may follow hegemonic patterns that are far from politically innocent or continuously negotiable. On that path, we have become increasingly aware of the limited ability of social constructionism to address some of the issues that we find more and more pressing in our research and the societies we live in. Following Fenwick's call (2015) for educators to acknowledge the violence of their (our) material engagements, we suggest that two related potential shortcomings of social constructionism need to be addressed: its overgeneralized assumption of negotiability and its overestimation of relativity.

Assumed Negotiability

When assuming negotiability (either epistemologically in research activities or ontologically in constructing social realities), we keep being reminded that negotiability is a privilege, it is politically charged, and it is dependent on factors that are either a result of construction themselves, or material conditions. In other words, constructing social realities does not happen in a power-free vacuum and is therefore always susceptible to the risk of reproducing particular hegemonic understandings of society.

By framing structural and/or societal issues as socially negotiated ones, they may appear as changeable through (re)negotiation rather than acknowledging that some material or physical action is needed to remedy particular problems. More often than not this happens unintentionally as a consequence of constructionist thinking but nevertheless has severe consequences. Especially socio-politically sensitive issues like any forms of inequity and oppression cannot be addressed solely through discursive changes or renegotiations of social constructs (see for instance Brooks & Waters, 2018). Room for negotiation is often limited or even non-existent, for instance, when policies push people into illegality (e.g., so-called undocumented migrants), officials operate based on racial profiling (Keskinen et al., 2018), or, to use a more language-based example, speakers of minoritized languages are threatened, ridiculed, or attacked as a result of using their languages. In such cases, exclusion and violence are enacted and experienced through material realities that are barely, if at all, negotiable. We found ourselves concerned that if we ignored this materiality, even unintentionally, our work would be limited in its potential for

social change and run the risk of exploiting participants and realities for its own satisfaction.

Risk of Relativism

Our second issue with social constructionism relates to the above in that its potential for negotiation, interpretation, and construction can (inadvertently) promote a relativist agenda. We, as a field (see Pennycook, 2018, p. 108) have grown accustomed to putting "reality" and "truth" in (air) quotes in our thinking, speaking, and writing; thus reminding ourselves and each other that every statement we make is fundamentally contingent on our momentary context, ourselves, and all participants in the social construction process of our reality. While such a view of reality has had an important role in enabling us to identify and undermine absolutist, normative, and dogmatic thinking and given agency and responsibility to (those who get to be) human participants of constructionist activities, it also has its drawbacks, especially in its extreme forms that near social relativism.

We ask ourselves rather bluntly with Pennycook: if we take a standpoint where everything is socially constructed, dynamic, and discursively negotiable, what are our arguments that can fundamentally challenge a "post-factual society" and the spreading of "fake news" (Pennycook, 2018, p. 108)? Of course, we do not argue to take off the (air) quotes and reestablish positivist ideologies based on empirical realities and unquestioned "truths". We do, however, hope to encourage a self-reflexive critical stance that recognizes the material hegemonies in our social constructions and understands that not everything is dynamic, negotiable, and constructable for everyone and in all contexts in the same way, and that the structures that reinforce and uphold these hegemonies are often material in nature. As applied linguists, we see our possibility for overcoming the risk of relativism in a focus on social constructs as situated and operating within a physical world, a blackbox we are only beginning to open.

What, then, does new materialism have to offer to applied linguists? Pennycook (2018, p. 6) asks how, as a field, we have come to think of humans in particular ways, with boundaries between humans and (other) animals, humans and nature, humans and (other) intelligences, humans and (other) artefacts. The both of us would like to expand on that question and ask ourselves and our co-authors why we have, in addition, created boundaries between different kinds of humans? As Pennycook (2018, 121–122) points out, (social) constructionism did not intend to deny material reality as such but rather to understand itself as a "critique of the ways in which particular people, or particular ways of doing research or particular regimes of truth" enable some claims to represent reality. Understanding the foundations of inequities as socially constructed has in some cases been important as it has helped dismantle their legitimacy and strengthened the argumentative basis for their removal. Examples of this are, for instance, racial discrimination or exclusion based on ability.

However, inequities are rarely exclusively socially constructed and often manifest themselves in very material ways (e.g. financial or personal resources, mobility, access, or possessions). As we go about putting the socially constructed and material aspects of equity into dialogue in our respective work, we acknowledge the need for a material understanding that would also allow for a renewed push for social equity and justice between the human, non-human, and material worlds (Bennett, 2010).

Starting Points for Socio-material Research

While it may intuitively be easy to accept the inseparable entanglement of human and non-human or material and non-material in theory, the empirical practices of taking up research that acknowledges these socio-material assemblages are more challenging. The above discussion on the intertwinedness and the ethical implications of the socially constructed and material encourages researchers to frame their work in new ways, or to "queer the familiar" (Barad, in an interview by Kleinman, 2012, p. 77). In the case of our chapters, the "queering" of our work does not only involve adding a material dimension to the socio-constructivist one, but also acknowledging socio-material factors and ways in which we engage with materiality as part of critical learning (Fenwick, 2015). To us, as to Barad, this is an ethical commitment.

The queering of the familiar implies acknowledging the political and ideological interests embedded in the material world, not merely acknowledging the material as operated by humans (Fenwick, 2015). This implies finding new "cuts" in rethinking the interrelationship of human and matter as constructed and material; i.e. ways of appreciating, and understanding, and rethinking what takes place between the material and the human (see Saarinen & Huhta, Chap. 9, this volume; Jakonen & Jauni, Chap. 2, this volume). Barad's (2007) notion of "new agential cuts", i.e. new lines along which agency is assigned or distributed, offers one view of understanding the entanglement of what is often termed "subject" and "object" in research processes. Rather than separating the subject and object in a substantialist (Canagarajah, 2021) Cartesian way, we need methodologies and instruments that help us understand the heterogeneous elements and the collective socio-material enactments (Fenwick, 2015) that constitute our environment. This is not only an epistemic or methodological requirement, but also involves resisting existing normative social categories and ideologies.

The mutual enactment of the various heterogeneous elements in the socio-material assemblages also implies a need to question our Cartesian agential cuts between the (human, active) subject and the (material, passive) object (Coole & Frost, 2010; Canagarajah, 2021). Rather than reproduce this distinction, a socio-material approach involves seeing subjects and objects as entangled. Barad (2007, p. 139) rejects a focus on pre-existing entities such as human agency or observable objects and encourages us to be interested in *phenomena* in which agency emerges

in *intra-action*. Barad's agential realist ontology (Barad, 2007; Kleinman, 2012, p. 77) does not separate the observer from the observed, but instead sees subject and object as entangled enactment. Thus, rather than focusing on "interaction", which implies separate fixed entities that come into contact, Barad uses the concept of intra-action (Barad, 2007, p. 177–178), a relationship in which the entangled "phenomena, observers and apparatuses" (Toohey, 2018, p. 30) bring about agency through their entanglement, and how these phenomena eventually come together (Fenwick, 2015). Barad's (2007) understanding of human agents who do not precede agency but participate in intra-action, from which agency emerges, challenges the relatively persistent human-centered view in applied language studies of humans as actors who have intentional agency over (material) objects. The contingent elements in the intra-action lead to an understanding of agency not as inherent property of an individual or human to be exercised, but as a dynamism of agential forces (Barad, 2007, p. 141; see also Guerrettaz et al., 2021b; Muhonen & Vaarala, Chap. 4, this volume; Saarinen & Huhta, Chap. 9, this volume).

To make all this empirically more concrete, Toohey (2018, p. 32–33) offers several examples for applying such a framework to educational contexts. For instance, rather than analysing teacher or pupil agency and assuming an interaction (e.g. a causal relationship between action and change) between them, a starting point for an investigation could be the ways in which humans, spaces, policies, discourses etc. intra-act and change together and bring about agency (i.e. Chimbutane, Ennser-Kananen & Kosunen, Chap. 7, this volume). Rethinking these cuts within an intra-action framework would thus not only offer new perspectives on the phenomena that surround us, but also on our ways of doing research.

Introducing the Chapters

The chapters in this volume explore language educational contexts through different lenses of (socio)materiality. We organized them in three parts based on how they conceptualize (socio)materiality and seek answers to the following overarching questions:

- In what ways do *material agencies e*merge in language educational contexts?
- How are educational choices and experiences intertwined with *materialities of spaces and bodies?*
- What assemblages of *human and non-human* may occur in language education contexts?

The first part on *material agency* consists of three chapters:

Teppo Jakonen and Heidi Jauni's chapter examines intra-actions from a language classroom with a telepresence robot. Their analyses show that the situation of remote classroom participation demands and triggers complex negotiations of social and material realities, which can blur the lines of agency that are traditionally drawn between humans and machines.

Ari Huhta and Nettie Boivin continue the discussion of human-machine agency in their analysis of large-scale testing in Denmark and Finland through a social constructionist and new materialist lens. They ask how, through the introduction of new assessment tools, agential cuts may have shifted from their conventional place between humans and machines and what implications for test takers and their agency this may have.

Anu Muhonen and Heidi Vaarala conclude the first part with their chapter whose main character is a map. Their analysis of an intra-action of a map of Finland, Finnish senior citizens, and college students in a Canadian *Suomi-koti* ("Finland-home") shows how the map enacts agency, profoundly shapes the encounter, and opens up important possibilities for analysis and learning about time, space, and belonging.

The three chapters in the second part focus on *spatial and embodied materialities.*

In her opening chapter, Hannele Dufva critically reviews the role of materiality in the field of applied linguistics and particularly language learning, and argues that repertoires are always both personal and material. Through her profound theoretical analysis, she calls on applied linguists to move away from an abstract and disembodied understanding of language learning and instead bring together cognitive, sociocultural, and material approaches for a more embodied concept of personal repertoire.

Petteri Laihonen and Tamás Peter Szabó focus on space as a learning environment in the context of co-located schools in Finland, i.e. school buildings that exceptionally house both Finnish and Swedish-medium schools together. Their analysis shows that such spaces that embody multiple languages in social and material forms can serve to embrittle even long-standing monolingual ideologies.

Feliciano Salvador Chimbutane, Johanna Ennser-Kananen and Sonja Kosunen offer a DeleuzeGuattarian (Deleuze & Guattari, 1987) framework of striation and smoothness to understand the socio-material realities behind parents' choices for their children's language education in Finland and Mozambique. They arrive at the conclusion that choice is a complex and dynamic assemblage of material and social (f)actors, rather than a rational decision made by an agentive human subject. All these have to be addressed in order for sustainable social change to take place.

In the third part, two chapters examine *assemblages of human and non-human in learning contexts.*

Tarja Nikula, Anne Pitkänen-Huhta, Johanna Saario, and Sari Sulkunen present a rhizomatic analysis of three teacher interviews on change in educational contexts. Their conceptualization of interviews as assemblages allows them a non-linear, dynamic look at the intra-actions of social and material realities in teachers' discourse, challenging conventional approaches to data analysis and the causalities and hierarchies these tend to produce.

Taina Saarinen and Ari Huhta continue by offering an analysis of the discursive assemblage of an English textbook, the Finnish National Core Curriculum, teacher, and pupil from the Finnish comprehensive school context. Their analysis of the textbook itself and its potential for agency in envisioning an ideal learner is a

contribution to a material understanding of learning that encourages a critical look at the way in which learner behaviour and learning are inseparably intertwined in the textbook.

In the epilogue, Mel Engman, Johanna Ennser-Kananen and Taina Saarinen conclude the book by circling back to the notion of the book as an assemblage of disciplinary, community, and scholarly practices. They offer perspectives on the process of compiling the book as a diffraction that renders its components visible in a new way.

Our chapters, each in their own way, question the notion of the human subject as rational, enlightened being and sole possessor of agency and offer examples of allowing for other-than-human agency to enter the picture. They show how materialities can be taken into account, whether or not that was the original starting point of a particular research endeavor. They exemplify how researchers who have been committed to social constructionist thinking for most of their careers learn to make space for new theories, wherein, we believe, lies their greatest potential to inspire.

While some of our authors have collected and analyzed new data, others have reanalyzed existing data and/or combined data sets in new ways for their contributions. Taken together, these exemplify the diversity of starting points that legitimately co-exist and interact in our work as academics who enter new projects and collaborations. Relatedly, our chapters illustrate not only the promise and excitement about exploring new theoretical and practical grounds, but also the difficulty of empirically doing this. As editors, we hope that within the richness of this volume, each reader will be intrigued by an aspect that has the potential to "develop the field" and carry a part of our work forward in their own work.

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Part II
Material Agency

Chapter 2
Telepresent Agency: Remote Participation in Hybrid Language Classrooms via a Telepresence Robot

Teppo Jakonen (ID) **and Heidi Jauni** (ID)

Abstract Videoconferencing technologies have become increasingly common in different sectors of life as a means to enable real-time interaction between people who are located in different places. In this chapter, we explore interactional data from synchronous hybrid university-level foreign language classrooms in which one student participates via a telepresence robot, a remote-controlled videoconferencing tool. In contrast to many other forms of video-mediated interaction, the user of a telepresence robot can move the robot and thereby (re-)orient to the space, the other participants and material objects that might be outside his immediate video screen. We employ an ethnomethodological and conversation analytic (EMCA) perspective to explore Barad's (Quantum physics and the entanglement of matter and meaning. Durham: Duke University Press: 2007) notion of agency as a distributed phenomenon that emerges from assemblages of humans and materials. We demonstrate the complex nature of telepresent agency by investigating where agential cuts lie in three short episodes that involve mediated perception, touch and movement. Based on the analyses, we discuss how the telepresence technology configures learning environments by making new kinds of competences and forms of adaptation relevant for teachers and students.

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Introduction

Different communication technologies are increasingly commonplace at work, in education and in free time as a way to enable real-time interaction between physically dispersed people. In particular, videoconferencing tools such as Skype, Zoom, FaceTime, Google Hangouts and Adobe Connect are already part of the everyday life of many individuals in different corners of the world. At the time of writing this chapter (2020–2021), many educational and professional organizations were suddenly forced to drastically increase the use of videoconferencing in their daily operations as an attempt to contain and slow the spread of the coronavirus pandemic (Covid-19) through social (or, more accurately, physical) distancing. In many schools and universities, turning face-to-face teaching into virtual classes was by no means an easy task for teachers, despite extensive research literature on blended/hybrid learning (Gleason & Greenhow, 2017) and telecollaboration (Dooly & O'Dowd, 2018).

Videoconferencing challenges our understanding of what it means to be present in some social environment or activity: how is the experience of presence a material phenomenon, and what kinds of implications does its material nature have for the way we think about agency? Perhaps a relatively easy example to illustrate what we mean here is to consider how, whenever we make a video call, the camera and the computer screen mediate what we see of the environment that is remote to us. It is usually less than what we perceive of our own 'local' environment in which we are physically present, and, depending on the technology, we might not necessarily even have the ability to control what the camera shows us. The camera is thus a powerful yet often unnoticed material tool: as Luff et al. (2003) have shown, it can "fracture" the ecology of action in video-mediated interaction so that if we, for example, point at something during a video call, it is not self-evident that our interlocutor sees both the pointing gesture and what is being pointed at. This can have significant implications for how shared understanding of the on-going activity can be achieved.

In this chapter, we explore this kind of remote – or telepresent – agency in a complex assemblage of technology, people, materials and space in an educational context. Investigating how university students participate in otherwise 'regular' face-to-face language classes via a drivable telepresence robot, we attempt to consider how agency is a social, interactional and materially mediated achievement. In a nutshell, telepresence robots are videoconferencing tools that give a participant the ability to move the camera that shows them a remote location (such as a classroom) by driving the robot that is physically in that location. Existing interview and survey-based studies from educational contexts suggest that telepresence robots can augment the sense of agency, presence and social inclusion of remote students (Cha et al., 2017; Fitter et al., 2018; Newhart et al., 2016). However, much less is known about how agency emerges through, and is managed in, the micro-level interactional practices involving telepresence robots. This chapter thus aims to contribute to research on telepresence robots and, more broadly, to interactional

research on videoconferencing by exploring what kinds of consequences the material and technological features of telepresence robots have for remote agency.

Being Telepresent in a Material World

Telepresence can be defined as "the sense of being in another environment" (Kristofferson et al., 2013). As a concept, telepresence goes back to (at least) the beginning of 1980s when Marvin Minsky (1980) used the term to describe remote, robotically enabled presence in some location involving "high-quality sensory feedback". Minsky predicted that in the future such robotic telepresence would "feel and work so much like our own hands that we won't notice any significant difference" (Minsky, 1980, p. 47). He envisaged telepresence above all as a technology that could be used in material environments that are hazardous to humans – examples include the outer space, undersea mining, nuclear power plants, and so on. In Minsky's view (1980), a key aspect and the biggest challenge of telepresence would be achieving a realistic "sense of 'being there'".

Minsky's definition raises a question what exactly makes us feel that we are 'there'. In many ways, humans experience the world and engage in social relations through their bodies (Meyer et al., 2017). Thus, a primitive form of telepresence, of being 'there', can be provided optically: looking through a microscope or following live TV allows us to follow events in a place other than the one in which we are physically located. However, our experience of the physical world is not limited to the visual sense, but it routinely also involves other senses, such as auditory and haptic channels as well as a sense of where the limits of our body are. We can touch things, sense being touched, sense where people around us are by judging from which direction their sound is approaching us, and so on. Initially, it might seem that technology such as videoconferencing is just a tool that mediates the experience of the material world to us. However, it is not always easy to tell where a (technological) tool ends and a human being begins. For example, a blind man's stick becomes over time "an instrument with which he perceives […] an extension of the bodily synthesis" (Merleau-Ponty, 1945/2002, p. 176) instead of an object. Similarly, some user reports indicate that technologies such as the telepresence robot can through time "become integrated with one's sense of self and sense of one's own capabilities" (Takayama, 2015, p. 162).

Telepresence constitutes a context for social action in which the human body is at times a problematic resource – and for this reason it can be challenging to conduct co-operative activities via videoconferencing in exactly the same manner as face-to-face. One way to conceptualise these challenges is through Maurice Merleau-Ponty's (1945/2002) phenomenological philosophy. He argued that in typical circumstances the living human body functions as our 'zero point' for making sense of the world and for acting in it. However, when acting and interacting via a telepresence robot, one needs to coordinate not only one's own physical body but also the remote metal body of the robot. In our classroom data, the telepresence robot is a

material object through which a remote participant acts in the classroom, but it is also an embodied participant that other classroom participants can orient to and use as a resource for interaction. In order for the remote participant to take part in classroom activities, they thus have to co-ordinate the actions and movements of two different bodies, those of the remote body (robot) and those of their own living body, in a way that parallels how video gamers manage the movement of their digital avatars on screen in order to construct game-relevant actions (Bennerstedt & Ivarsson, 2010). The way the robot adds a re-embodied and movable extension of the self can lead to a fracture between the acting self and the sensory self. By offering simultaneous sensory feedback from two different locations, telepresence can also blur the distinction between these locations and challenge what Neisser (1988) has termed as the 'ecological self' – i.e., knowledge about oneself with respect to one's physical environment.

Agency and Telepresence

In broad and traditional terms, agency can be seen as the degree to which "an agent (whether human or nonhuman) can act in the world of its own accord" (Takayama, 2015, p. 161). However, agency is also situated – we do things in the context of specific activities, and our actions and competence are judged in relation to contextual frames of reference and requirements. Barad (2007, p. 33) argues that "agencies are only distinct in relation to their mutual entanglement; they don't exist as individual elements". Although Barad's (2007) agential realism represents a radical (re-)conceptualisation of the ontology and 'locus' of agency, we find that it is in many respects compatible with the way agency has been conceived of in the ethnomethodological and conversation analytic (EMCA) tradition. From an EMCA perspective, human action and interaction have a fundamentally co-operative and material character (e.g. Goodwin, 2013) so that the agency of a person is situated in, and emerges from the sequential context of action, the material objects, technological tools and other participants in the setting. Such a view can perhaps best be illustrated with an example from Charles Goodwin's extensive research on the situated interactional competencies of an aphasic man in conversation with his family members. Goodwin (e.g. 2004) has shown how a man whose vocabulary a stroke reduced to only three words (*yes*, *and*, and *no*) can in spite of this limitation be a competent participant in conversation. This is possible because of the 'laminated' (Goodwin, 2013) nature of human action, i.e. how participants in interaction routinely disassemble and reorganize layers of different kinds of semiotic materials. Thus, the aphasic man in Goodwin's studies can use another speaker's lexicon and syntax as a 'substrate' and transform it, for example, by means of prosody and embodied displays of stance and footing. In that way, he is able to concurrently produce actions that participants treat as belonging to him. In Goodwin's (2013, p. 15) view, this illustrates how "human beings inhabit each other's actions", which resonates well with Barad's (2007)

view that individual agencies do not precede their interaction, but rather "emerge through their intra-action"(p. 33). What this suggests is that EMCA can offer a powerful empirical lens to investigate sociomaterialism and agential cuts from an emic perspective through participants' (changing) orientations to the agency of persons, tools and material objects (see also Thorne et al., 2021, p. 110).

It is one thing to view events at a distance (for example via a video) and another to act and interact remotely in an agentive manner. Luna Dolezal (2009) has investigated the phenomenology of agency in recent, increasingly more high-tech forms of telepresence such as telesurgery whereby surgical operations are performed by manipulating robotic arms at a distance. She draws on Gallagher's (2000) distinction between a sense of agency and a sense of ownership of an action as two distinct aspects of how we experience action (Dolezal, 2009, p. 218). Typically, we experience both of these senses together: for example, if I throw a ball so that it hits a window, I sense that I have caused the window to break (causal agency) and that my hand has undergone a throwing movement (ownership of action). Such a perception can be seen as a particular kind of agential 'cut' (Barad, 2007), a linking together of objects, beings and doings. However, telepresent actions can be different. Even if a person might see that they are doing some action, they do not necessarily feel the action as theirs because an embodied sensation of 'owning' it is missing. Similarly, when making a video call, we might see that we are physically close to another person but we do not (necessarily) sense the same kind of physical intimacy as when we are copresent. In Dolezal's (2009, p. 218) view, this kind of "[d]issociation [of agency] from ownership" also has ethical consequences. Perhaps this is clearest in military applications of telepresence such as the use of drones to fire missiles with a remote user interface that reminds video games (see also Parks & Kaplan, 2017).

In this chapter, we investigate agency in remote participation in a video-mediated, physically distributed assemblage of humans, interactional spaces, human-created technological tools (e.g. the robot, computers, whiteboards), and physical classroom artefacts (chairs, desks etc.). In such a context, agency can be seen as entangled in the sense that the remote student "lack[s] an independent, self-contained existence" (Barad, 2007, ix) in this system without the other elements of the assemblage. Robot-enabled interaction between a remote student and co-present classroom participants is also asymmetric because the remote student has a very different kind of sensory access to the classroom. However, this and other material-technological conditions do not limit the remote student's agency in the classroom in a deterministic manner. Of interest to us are the ways in which participants orient to interactional asymmetries and co-operate with each other to support robot-mediated remote participation. Analogous to Goodwin's examples of how the co-operative organization of human interaction enables the aphasic man to act with considerable agency by using available resources for building action, telepresent agency emerges through coordinated and materially-embedded actions.

Data and Method

Our data consist of video-recorded English, Swedish, Finnish and German language lessons, taught to students of technology as part of their degree studies at a Finnish university. In the lessons at least one student participates from another location via a telepresence robot. Altogether, we have circa 12 hours of video-recorded lessons with class camera footage and (in the case of our English and Swedish classroom data) screen capture from the remote student's laptop. For the purposes of this chapter, we have selected extracts from the English and German classroom data. These lessons showcase first-time users testing the telepresence technology so that students took turns to go to another location on campus to participate in the lesson by operating the robot. The telepresence robot used in our data is Double 2, a device developed by Double Robotics for remote work and education purposes.

Double 2 has a mobile robotic base equipped with an iPad, external video camera, microphone and speakers. As Fig. 2.1 shows, the appearance of the robot is very schematic: it is an iPad on a stick, equipped with wheels. The key feature of the robot is its movability. The remote participant can control the robot via an online interface or with an iPad application. Using a computer, the robot is controlled with arrow keys, with which it can be moved around the classroom. Its height can also be adjusted, which is an important feature when joining groups of people that are sitting or standing. These abovementioned features enable the distant participants to re-orient to the material environment and other participants in a way that traditional
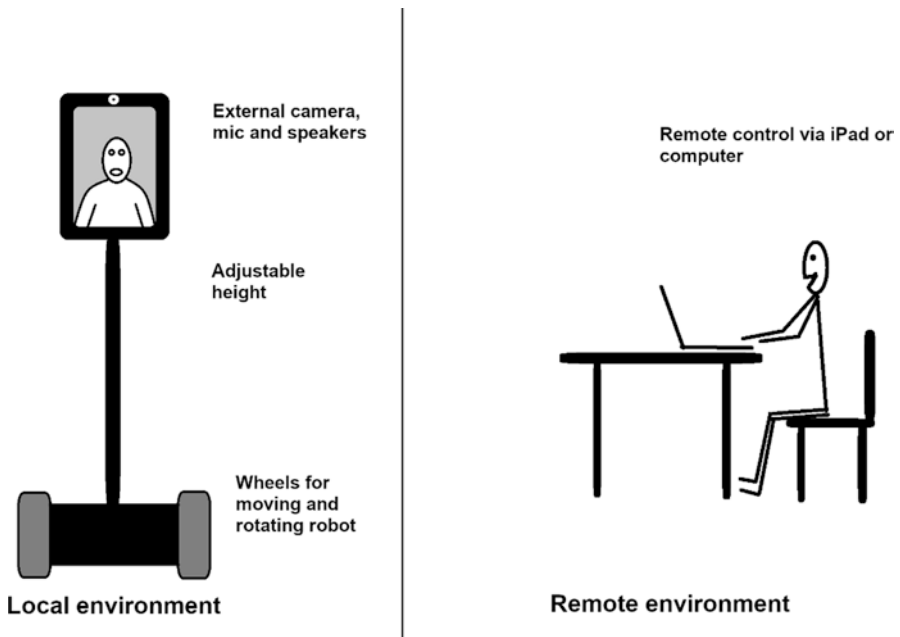
Fig. 2.1 A Double telepresence robot and its remote user

videoconferencing methods do not easily allow. However, Double 2 cannot be used to manipulate objects, and it also lacks the ability to pan or tilt the camera (these features are available in the newer version of the robot, Double 3).

Methodologically, we draw on conversation analysis (see Stivers & Sidnell, 2012). CA, which emerged in the 1960s in sociology (for in-depth accounts of CA origins, see Heritage, 2008; Psathas, 1995), has close connections to ethnomethodology (Garfinkel, 1967). It has since then spread beyond sociology into many other disciplines such as (applied) linguistics, psychology, medicine and anthropology. The sociological orientation is visible in an interest in understanding the organization of social actions and interaction, as well as explicating the kinds of resources that participants use to construct action and make sense of it. Analysing social interaction from a CA perspective usually proceeds through a bottom-up, inductive logic and an avoidance of pre-theorisation, in other words through 'unmotivated looking' (Psathas, 1995). From a CA perspective, interaction is viewed as an orderly and sequentially emerging phenomenon, and a key analytical strategy is investigating how participants treat each other's actions in publicly observable ways in subsequent interactional turns – what Sacks, Schegloff and Jefferson (1974, p. 729) have referred to as a 'next-turn proof procedure'. As Heritage (1984, 241–245) points out, in this way, CA conceptualizes interaction as structurally organized and individual turns-at-talk as both "context-shaped" (by the previous turn) and "context-renewing" (for some subsequent turn).

The transcription of interactional data follows standard CA conventions (Jefferson, 2004). In addition, we illustrate analytically relevant embodied phenomena by way of still images taken from the video. Their timing relative to talk is marked with hashtags (#) in the extracts.

Analysis

In this section, we discuss some ways in which, in the focal context, the agency of the remote student is a social, interactional and material accomplishment that emerges through participants' coordinated and embodied actions. We do this by analyzing three examples, which illustrate telepresent agency in relation to seeing, touching and moving.

Agency and Perception

We begin by considering the sociomaterial assemblage with the help of two still images depicting the same moment in an EFL classroom. Figure 2.2 shows a frame grab from a video camera that was positioned at the back of the classroom. It shows a moment when a teacher is pointing at a whiteboard to show text written on it to two remote students who participate via a telepresence robot (the black object in

Fig. 2.2 Classroom view
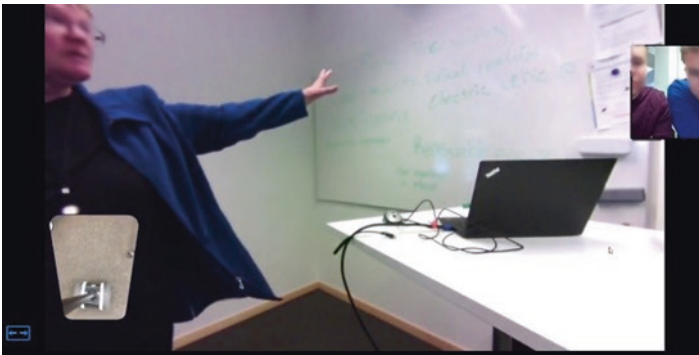
Fig. 2.3 Robot-mediated remote view into the classroom

front of the teacher). In contrast, Fig. 2.3 shows a frame grab from the two remote students' laptop screen at the same time, illustrating the remote students' visual access to the material environment of the classroom. The right-hand top corner shows the remote students' laptop camera recording, which is currently showing a half of each student's torso. This footage is streamed on the robot screen in the classroom and available to classroom participants.

Compared to the participants who are physically located in the classroom, this particular form of telepresence has some limitations with respect to sensing and experiencing the remote sociomaterial environment (the classroom). Some of the limitations relate to the properties of camera-mediated vision. Unlike the human eye, the robot camera offers no peripheral vision, which means that the visibility of objects is either 'on' or 'off', depending on whether they are within the frame perimeters or not. The camera cannot be zoomed or tilted in this version of the Double robot, which means that in order to see text on a whiteboard the remote students would need to drive the robot close enough to the board (as they are doing in Figs. 2.2 and 2.3). Similarly, viewing a paper document at a non-direct angle may

be more difficult than it is in the copresent condition (see also Jakonen & Jauni, 2021). In addition, while the robot can be remotely moved, turning the robot takes more time than it does for the average person to turn their head or body orientation. This kind of relative slowness in comparison to a human gaze shift could make it more challenging to follow talk between participants who are, for example, located in different corners of the classroom – or any other spoken exchange that involves rapid turn transitions. In our data, the classroom participants, especially teachers, orient to this asymmetry and conduct extra interactional work by way of checking, showing and guiding to ensure that classroom materials are visible to remote students (Jakonen & Jauni, 2021).

Seeing is a basic foundation of many kinds of interactions, something which has consequences for the accomplishment of other actions, such as moving from one place to another. For the remote participant, navigation in the classroom can be problematic because the video constitutes a 2D representation of a (familiar) 3D environment. Thus, navigation can require specific interactional practices from the participants, some of which we will discuss in more detail later in Extract 2.2.

Agency and Touch

Telepresence robots differ from each other with respect to the degree of anthropomorphism, i.e., to what extent their design includes human-like physical characteristics (Kristofferson et al., 2013; Li, 2015). Newhart et al. (2016) explored the use of telepresence robots by 6–16-year-old homebound students and found that anthropomorphism was a key factor in whether the classroom participants accepted and included the robot and its remote user as a regular member of the classroom. Interestingly, in one fifth-grade class, the teachers in the study had noticed that the students did not differentiate between the robot and the homebound student operating the robot, but referred to the robot with the student's name. Similar observations have also been made in workplace contexts: for example, Takayama (2015, p. 162) has noted that telepresence robots can through time "become invisible-in-use" and that they disappear "into the background of conscious attention".

The Double 2 robot in our case has very few anthropomorphic qualities, and it is not specifically designed to look human. However, 'seeing' and 'seeing as' are not only psychological and optical phenomena; they are also situated and interpretative accomplishments (e.g. Goodwin & Goodwin, 1996; Nishizaka, 2017). As Goodwin (1994, p. 606) puts it, seeing is "lodged within endogenous communities of practice". Thus, it is possible to see the Double 2 robot as a human body that has a head (the iPad that shows the remote participant's face), a neck/upper body (the pole on which the screen is attached) and a lower body (the wheels). This provides for a possibility to see the robot as the person who is interacting via it, perhaps more readily than in a situation where interaction is mediated by a tablet or a computer placed on a desk. Extract 2.1 illustrates this kind of orientation to the robot as an embodied human participant through an action that we call here, for the lack of a better term, as a mediated touch: a simulation of physical touch accomplished in

video-mediated interaction. The extract shows a peer group – two classroom students and two remote students (via one robot) – engaging in the parallel activity (Koole, 2007) of entertaining themselves while the teacher is asking others to write suggestions for group work topics on the whiteboard. The focal group jokingly treats the telepresence robot as if it were a human being by patting and stroking the robot's head. This results in a largely non-verbal performance of social intimacy by way of peer-to-peer touch (see also Karvonen et al., 2018).

Extract 2.1 Mediated Touch and Physical Closeness

```
01         (5.3)#1.1
02  T      so, (.) do you think we have enough topics:?
03         (2.2)#1.2
```

```
04  GREY? hh he he (.) ↑he he
05         (2.3)
06  T      great
07         #1.3(1.2)
08  GREY  hh (0.7) .hh he he
09         (0.6)
10  T      let's then start ↓voting.
11         (2.6)#1.4
```
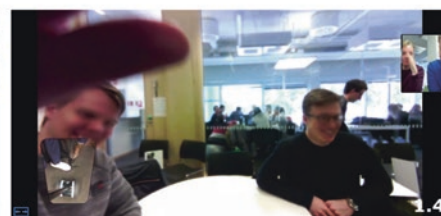
```
12  GREY   .hh he he [he he he .hhh he  [he he
13  BLACK           [he he he he he he [he he
14  T                                  [the topics are,
15         ((T continues list; DS turns robot towards T))
```

The group's parallel activity takes place as the teacher is proceeding through a transition to a new activity phase (lines 2, 6, 10, 14–15). During this, the two remote students, who are visible in the top right-hand corner of image 1.1, drive the robot closer to the two classroom students, Grey (left in the image) and Black (right in the image). The two classroom students monitor the robot's approach by gaze.

As image 1.2 above shows, Grey provides a 'thumbs up' gesture during the silence at line 3 to assess the movement and to signal that the robot has reached a suitable place close to the table. The bottom left-hand corner of image 1.2 illustrates how at this point the robot is already very close to Grey's foot, considerably closer than is typical in human-robot interaction (Lauckner & Manzey, 2014). The

participants are now facing each other in what Kendon (1990) has termed as the F-formation, a basic spatial arrangement for human interaction in which parties have "equal, direct, and exclusive access" (p. 209) to the space between them. An F-formation can be achieved through a range of postural and group arrangements, such as when people are standing and chatting in a circle or seated side-by-side and work on a shared text, etc. F-formations are also formed by hybrid groups that consist of both co-present human participants and telepresence robots operated by a remote participant (Pathi et al., 2019), but their exact shape can depend on the material design of the robot (Kristofferson et al., 2013). To give an example, when a remote participant is visible to classroom members as a two-dimensional image on the screen, as in our data, a side-by-side spatial arrangement can be cumbersome because the remote participant's field of view is narrower than that of a human eye.

The thumbs up gesture is followed by laughter and a silence (line 5), after which Grey pats the robot on the 'head' (top of the screen) as is visible in image 1.3. The patting is an instance of a mediated touch; the remote participants who operate the robot cannot feel the touch as a tactile sensory experience, but the participants can nevertheless use other embodied resources to simulate such an experience of touching and being touched. Here, the other resources include Grey's posture (leaning head) and his facial expression (smile). The visibility of Grey's hand in the top left-hand corner of the remote participants' screen makes the action recognizable to them as a touch. Altogether, the lamination of these resources constructs the action as an instance of gentle patting, a form of affective touch (Cekaite & Kvist Holm, 2017) that demonstrates and builds social intimacy between the participants.

Grey's patting gradually transforms into a stroking gesture by line 11, at which point one of the remote participants (Blue) pokes his head forward as if aligning with being patted and stroked (see the top left-hand corner of image 1.4). This kind of co-ordination of embodied actions by physically dispersed participants to achieve a simulation of human touch illustrates how both participants recognize the emergent action, its local sense and logic, and co-operate to accomplish it. Patting and stroking a peer's head is socially a somewhat delicate action in many classroom contexts, perhaps even more so among adult students, and part of the situated humour around these actions comes from the unexpected nature of this kind of touch as a form of social intimacy in this setting. The shared joke is made possible by perceiving the materiality of the robot in such a way that it is seen as a human being, by finding equivalence between specific parts of the metal body of the robot and human body parts. The remote students agentively make this touch happen by driving the robot and by putting their head (Blue) into a position in which Grey can see it on the screen right under his hand.

Agency and Movement

Extract 2.2 exemplifies how agentic movement by the remote student is collaboratively accomplished, and accommodated to, in the classroom. It shows how a German language teacher deals with a routine organisational task: assigning

students into small groups for an activity, here a quiz to be completed in groups. In the extract, the teacher's task is made more complex by the fact that the remote student (Timo) is part of a group with two classroom students (Lauri and Markus), who are seated at different ends of the classroom. The teacher thus needs to guide one classroom student (Lauri) and the remote student's robot to another desk for the activity.

The extract shows how the remote student, who has positioned the robot in front of the classroom whiteboard (see image 2.1) follows and anticipates the teacher's instruction by beginning to move the robot. The teacher accommodates to this movement and supports the remote student's navigation of the robot into a group with an elaborate multimodal instruction (lines 6–7).

Extract 2.2 Changing Places

```
01 T      los geht's ((clicks the quiz open))
          'let's go'
02        (0.6) ((reads groups from the whiteboard))
03 T      gut, (.) Timo sie sind mit Lauri und mit Markus#2.1 im <team>
          'good, Timo you are with Lauri and Markus in a team'
04        vielleicht ähm? (.) Lauri können sie mal ↑hierher#2.2 gehen=
          'perhaps ehm Lauri can you go here'
```
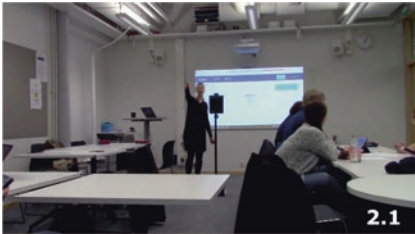


```
05        =wir nehmmal den anderen tisch diesmal
          'we take the other table this time'
06        also Timo#2.3 ↑einmal,(0.5) ↑einmal wir umdrehen, (0.4)#2.4
          'so Timo just we just turn around'
07        zum Markus und zu Lauri.#2.5
          'to Markus and Lauri'
08        (0.4)
09 T      genau.
          'exactly'
10        (1.2)
11 T      okay.#2.6
```
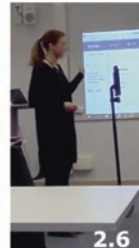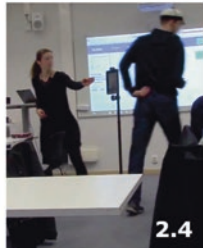


```
12        (0.4)
13 T      helfen sie (ihn ein) bisschen (.) dass er sie findet,
          'help him a bit so that he finds you'
14        ((Remote student drives the robot to Markus))
```

The teacher assigns the remote student into a group by addressing him, announcing his group members (line 3), and by pointing at one of them (Lauri) to indicate his location in the classroom to the remote student, as shown in image 2.1. The teacher then implicates where the group ought to sit by requesting Lauri to go from the back of the room to another group of desks (where Markus is already seated, line 4). Image 2.2 illustrates how the teacher points towards Markus (on the right-hand side of the room) and how Lauri complies with the teacher's instruction by standing up and beginning to walk towards Markus's desk.

The remote student reacts to the teacher's turn at line 3 by beginning to turn the robot anticlockwise away from the whiteboard. The movement begins roughly when the teacher says 'ähm' (line 4) and stops at the end of line 4 into a position where the robot screen is facing the teacher (as it is in image 2.2). The movement is a demonstration of agency that shows that the remote student is able to anticipate what he should be doing next, even if the teacher has thus far merely named the remote student's group members.

The remote student continues to turn the robot roughly when the teacher says *diesmal* ('this time', line 5). This could be the beginning of a movement towards the assigned place (Markus's desk). Yet, the teacher provides a further instruction to the remote student, both verbally and in embodied ways (lines 6–7). The teacher makes a rotating gesture with her left hand (image 2.3) and points towards Markus's desk so that she continuously maintains herself in front of the screen of the turning robot (images 2.3–2.5). Doing this allows her to secure that her referential gestures will be visible to the remote student, whom she is directing to the desired location. The turning movement comes to a stop at the end of line 11 (*okay*), after which the remote student drives the robot straight ahead to Markus's desk (not shown here).

In this situation, it is noteworthy that the physical activity of moving oneself (or one's robot) to the appropriate place in the classroom is left to the remote student's task in much the same manner as the classroom student (Lauri). However, these two students are instructed and assisted by the teacher in a strikingly different manner. Whereas Lauri is 'just' verbally requested to go to Markus's desk (line 4), the instruction for the remote student is much more heavily supported by segmenting the requested action into turning around and moving straight ahead (lines 6–7) and what could be termed as hyper-iconic gestures. These instructional features display an orientation to the material constraints of telepresence and showcase a situated co-ordination of human and technological bodies, material environment and language in a fractured ecology of action in which referential practices are known to be complex (see e.g. Luff et al., 2003). In this sense, the instruction thus amounts to an embodied demonstration of professional competence by the teacher.

Conclusions

In this chapter, we have investigated issues related to agency in robot-mediated participation in language education. 'Agency' is itself a concept that is notoriously difficult to pin down, and here we have tried to explore its material and embodied nature by considering the nature of rather mundane senses (seeing and touching) and actions (moving) in video-mediated interaction (see also Muhonen & Vaarala, Chap. 4, this volume). Telepresence robots, such as the Double 2 robot in our data, are currently viewed as a potential technological tool for increasing the agency and social inclusion of vulnerable student groups relying on remote access to education (Cha et al., 2017; Fitter et al., 2018; Newhart et al., 2016). However, there is not much interactionally-oriented research examining the ways in which copresence and telepresence may be consequential for students' possibilities for action, participation and agency in learning settings (but see Jakonen & Jauni, 2021; Liao et al., 2019).

From a conversation analytic perspective, a material tool such as the robot constitutes a resource for constructing and making sense of social action; the technology does not prescribe, a priori, any particular way to interact via it, even if such a way might have been envisioned by those who have developed the technology. Such a view has clear links to, for example, ecological perspectives that highlight the role of affordances for language learning (e.g. van Lier, 2000). From such a perspective, it can thus be difficult to assess any technological tool as inherently 'good' or 'bad', simply because human action can be constructed in a myriad of novel and unforeseen ways. This can be seen in how, despite the obvious technological limitations of the robot vis-à-vis copresent interaction – such as those related to the field of vision, speed and dexterity of movement, and the lack of haptic sensory feedback it affords – telepresent agency is still possible in social interactions that require seeing, touching or moving.

In all cases analysed in this chapter, the remote students are treated as agentic participants, but their agency is also co-operatively constructed and supported by classroom participants through practices of guiding, showing, and so on. The robot-mediated remote users are oriented to as needing particular kind of interactional support, which constructs these interactional situations as asymmetric. However, through the support, actions and participation become possible. This gives rise to a question where exactly agency is located in this kind of a sociomaterial assemblage (see also Guerrettaz et al., 2021) involving telepresence, and in what sense are the remote student and the robot embodied participants in the classroom. For the remote student, the robot is a proxy or an extension of the self that mediates sensory information and provides a way to interact from a distance. The robot is also a material and agentic participant that classroom members orient to, and whose material and technological properties they must take into account as they design social actions addressed to the remote students: for example, by considering the arrangement of bodies in the classroom (Extract 2.2). Consequently, the ecological self (Neisser, 1988) and agency of the remote student are fundamentally dispersed across space,

existing in the remote location and the classroom, in this particular socio-technological assemblage.

In much of our data, remote students are given the primary responsibility to move the robot to relevant places within the classroom (e.g. Extract 2.2). However, at times remote navigation takes extensive teacher guidance and time. Perhaps paradoxically, extensive guidance constitutes an orientation to the asymmetric nature of robot-enabled hybrid teaching, but it increases the agency of the remote participant. Time-wise, a more effective means might be to just move the robot by carrying it from one place to another, similarly as one would move a laptop-mediated videoconferencing participant from one place to another. Yet, this does not happen, and part of the reason may be related to the way the robot can be seen as resembling a person: thus, lifting the robot by the pole would be akin to grabbing a human being by their neck.

The entanglement of agencies becomes visible through embodied actions that are addressed to, or that involve, the robot. The material shape of the robot seems to invite classroom students to treat it as an actual person for example by patting it on the head (Extract 2.1) or by giving high-fives. By touching the robot in a manner that resembles the way humans or animals are touched, classroom participants can treat it as an actor with agency. This agency does not necessarily stem from the robot's physical properties, but the situated role and meaning it has in the (distributed) ecology of action as the extension of the remote student's self, a kind of a 'stand-in' for an actual human being in an entanglement of materials and humans. This illustrates that "agential cut[s] between 'subject' and 'object'" (Barad, 2007, p. 140) can be complex, emergent and at times blurry in this kind of a sociomaterial assemblage.

In general, remote students – just like classroom-based students – participate in classroom interaction in a manner that demonstrates their understanding of the activities, the way they look for, and find, a local sense and order in the activities. Moreover, they participate in the unfolding of activities, and constitute those activities, by adapting their methods for accomplishing different actions to the interactional contingencies in a complex configuration of bodies, objects and technologies (see e.g. Girard-Groeber, 2018). In this way, the remote participants are taken as competent and agentic members of the classroom. Their sense-making is supported by knowledge of the kinds of practices, activities and roles that can be taken as typically relevant in this particular institutional setting. Adaptation is itself a demonstration of agency, and telepresent students' agency is enacted through the situated ways in which social order is co-operatively and repeatedly (re)produced in the setting.

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Chapter 3
Changes in Language Assessment Through the Lens of New Materialism

Ari Huhta and **Nettie Boivin**

Abstract In this chapter, we analyze English tests that are part of two computerised assessment systems, the Finnish Matriculation Examination and the Danish National Tests. Language assessment is a fruitful field to explore from the perspective of materiality, to better understand what materialities exist in modern language tests and how students interact with such systems. Within the assessment and test-taking space, material objects exist that are imbued with political values and force test-takers to perform in specific ways. We explore what new materialism has to offer for interpreting current trends in language assessment and to what extent these perspectives allow for new insights to emerge. We describe the changes in language assessment concerning material developments and focus on the aspects of computerization that pertain to formal tests and examinations. Computerization has increased human-computer interaction during the assessment process, as well as automated analysis and scoring of test-takers' responses. This implies that the computerized system assumes some degree of agency.

Keywords Agency · Computerised assessment · Material relationship · Finnish Matriculation Examination · Danish National Tests

Introduction

Assessment is an interesting and under-explored aspect of language education to investigate from a materialist angle because it may involve a wide range of material objects including pens, papers, test booklets, recordings, and computers. While

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these objects do not necessarily differ from those in a language class, their purpose and relationship during testing is worth investigating. Importantly, the intertwined nature of these objects, particularly the digital ones, with the human participants in the assessment process is highly interesting to study (for a discussion of such digital-human assemblages, see Thorne, 2016). Whereas the purpose (assessment, teaching, learning) is largely conceptual and immaterial, the spaces and conditions that separate most assessments from teaching and learning activities are at least partly material. Computer-based assessments also introduce the interesting question of whether digital content is material. After all, computer programmes and digital tasks correspond to test booklets in the paper-and-pencil world (see also, e.g., Bezemer & Kress, 2016). In our chapter, we therefore view digital assessment content as a material equivalent to traditional physical writing implements (see also Burnett et al., 2014 on the complexity of distinguishing between material and immaterial in the digital world). Furthermore, computers also blur the line between subjects (learners, teachers) and material objects (computerised tests) and suggest that the agential cut (Toohey, 2018) between the two may be even more difficult to draw than the traditional one between the learner and textbook (see Saarinen & Huhta, Chap. 9, this volume). This blurring is reinforced by the fact that technology provides access to socio-cultural embedded language context via videos and audios. Moreover, the computer may have different value and affect for the young, 'digital' generation than the material tools of the paper-and-pencil world (Prensky, 2001; Heydon, 2012). Thus, the computer may provide the test-taker with a more lifelike socio-cultural context that paper test-takers are not afforded. This concept will be unpacked later in the chapter.

The clearest examples of how assessment differs from teaching and learning materially are large-scale examinations. Examinations take place in special settings such as large halls whereas teaching often happens in smaller spaces such as classrooms – and learning can happen anywhere. However, many tests, particularly teachers' own tests, are administered in the same classrooms where teaching takes place. Therefore, space is not only about the size and familiarity of the setting but also about the objects that are present and how they are used that distinguish assessment from teaching.

The placement of such material objects as desks and chairs is important in many assessments. In written examinations, desks are placed well apart to prevent examinees from seeing each other's responses but in teaching/learning contexts, learners' desks are often close to each other to enable collaboration. The different spatial arrangements may reflect different learning paradigms: modern teaching/learning is often based on learner collaboration, and therefore, the traditional arrangement of examination desks may appear a relic of the teacher-centered era. In oral tests, the placement of chairs and recording equipment can be based on a careful consideration of their effect on the atmosphere of the interaction (Huhta & Suontausta, 1993). Oral tests differ from written tests also in that they are usually administered in small, quiet rooms with only 2–3 persons present rather than in bigger spaces (e.g. Fulcher, 2003; Luoma, 2004).

The relationship between human participants and non-human objects is regulated in many assessment contexts, particularly in formal examinations and tests. More specifically, the range of material objects test-takers may utilise is restricted; therefore, the material aspects of assessment not only concern which objects are present but also which objects cannot be present. For teaching and learning, anything considered helpful for learning can be used. In contrast, test-takers in paper-based tests are only allowed to bring their writing tools. Everything else is given to them, and any other material found in their possession could be considered cheating. Furthermore, test-takers often have to hand back all the materials given to them after the test.

What distinguishes assessment from teaching and learning even more clearly than the materials is the rules that govern assessments. In addition to dictating which objects examinees can have, rules regulate participants' behaviour, rights and obligations (also relating to the space and time of assessment) and, thus, determine their agency. In written examinations, test-takers must work alone in silence, they may not move around freely in the space, and they may not ask for help from others, although this may vary depending on the test-takers and purpose of assessment, as our two examples will illustrate. In contrast, many learning activities are based on collaboration between learners with assistance from their teacher.

The material and agential basis of many assessments is, thus, quite different from teaching and learning. However, assessment purposes differ, which affects their material characteristics, too. Assessments that most radically differ from teaching and learning are large-scale, standardised examinations used for certifying examinees' skills and knowledge or achievement of the goals of education. Such examinations are used for gaining entry, for example, into a higher level of education. They are, therefore, used for gatekeeping, to ensure that only persons with specific competences can enter the desired education, profession or position (Nguyen, 2021). However, smaller scale assessments aiming to improve learning at the classroom level are by far the most common purpose of assessment. These formative assessments can be done with test-like tasks but more commonly through homework and continuous teacher observation of the learners in the classroom. Therefore, formative assessment is often embedded in teaching/learning and does not involve obvious material changes associated with examinations. Like the other aspects of language education, also assessment has changed over time. The most relevant changes for our chapter concern the emergence of centralised, national, and large-scale examinations and their recent digitalisation.

Formal written examinations to control education and select civil servants began in the Western countries in the 1800s (Spolsky, 1995). The 1800s also saw the start of the measurement of mental abilities, first to diagnose disabilities but later to select individuals based on their intelligence and other psychological constructs (Spolsky, 1995). Large-scale psychological testing commenced in the USA during WWI to quickly allocate appropriate roles to a large number of recruits. The solution was the multiple-choice and other objectively scorable test formats. The tools of mental measurement, such as the multiple-choice, spread to language assessment, and are now an established part of all testing. Therefore, the current language

examinations are the product of nearly two centuries of centralised examinations and psychological testing. These two traditions largely underlie the material aspects of current examinations as well as participants' agency.

The most important recent material change in assessment is the computerisation of paper-based assessments since the 2000s. This has happened both in large-scale gatekeeping examinations and diagnostic/formative assessment (e.g. DIALANG; Alderson, 2005; for overviews, see e.g. Suvorov & Hegelheimer, 2014). Below, we discuss two English tests from the Nordic countries to illustrate computerisation from the material and agential perspectives. The first test is part of the Finnish Matriculation Examination (ME) and the second is one of the Danish National Tests (NT). While the two test-taking contexts are different, the chapter investigates from a new materialist perspective the similarities between the students' relationship to the material and immaterial computer objects. We refer both to published studies and an interview by the second author of a Danish/American seventh grader who grew up in Denmark. We also make use of the first author's personal experience based on working for the Finnish Matriculation Examination Board.

The Finnish Matriculation Examination

The Finnish Matriculation Examination (ME) is the final (summative) achievement test at the end of general upper secondary education (see https://www.ylioppilastut-kinto.fi/en/). It provides students and admission officials in higher education institutions (HEI) with information about individual student achievement. HEIs give ME results considerable weight in their selections and, therefore, the examination is high-stakes for the students (see Table 3.1).

The ME is administered twice a year. Students must pass at least four subjects, but they can choose several additional subjects (ten is a practical maximum). The subject 'mother tongue and literature' is the only compulsory subject, all others can be chosen from among several natural and social science subjects and foreign/second languages. English is not compulsory, but most students select it. Students can spread their ME across a maximum of three consecutive test dates (i.e. they have to complete all components within 1½ years); thus, they can retake any subject once or twice.

The ME was digitized in 2016–2019. The examination is a traditional fixed test, i.e. all students are given the same tasks. Students take the examination in their school using their own laptops. The computerised ME scores the students' multiple-choice responses automatically whereas open-ended tasks are marked afterwards by assessors using a separate online system. The first assessor is the student's teacher and the second is a rater appointed by the ME Board; the ME raters are typically experienced language teachers from different types of educational institutions.

Table 3.1 Main characteristics of the English tests in the Finnish ME and Danish NT

	Finnish Matriculation Examination (English)	Danish National Test (English)
Purpose / use	Achievement (final summative test of general upper secondary education) Gatekeeping (selection to higher education)	Formative (feedback to students, parents and teachers; lower secondary level) National monitoring of achievement
Structure / skills tested and task formats	One test with four sections: Listening, reading, writing, and vocabulary & structures Multiple-choice, constructed response (gap-fill, short-answer), 1–2 extended writing tasks	One test with three sub-domains: Reading, vocabulary, and language & language usage Multiple-choice
Time	6 hours	45 minutes
Space	School's sports hall or equivalent	Computer classroom
Modality	Computerised Fixed test Student's own laptop	Computerised Adaptive test School's computer (desktop)
Agents	External agent (ME board): Test content; system development Teachers: Invigilation, first rating (compositions, short-answer items) ME raters: Double rating (compositions, short-answer items), additional ratings Student: Decide in which order to complete tasks, how long to spend on tasks, whether to revise responses, when to start listening to audio recordings, how many times to watch the video recordings Computer: Automatic scoring of multiple-choice items and some short-answer items	External agent (NT authority): Test content; system development Teachers: Invigilation / guidance; feedback to students & parents; individualising instruction based on NT results Students: Can decide to skip items & how long to spend on items Computer: Automatic scoring of multiple-choice items; calculation of learner ability; selection of items to administer; providing a score / level

The ME in languages has two versions (more difficult and easier, roughly corresponding to high B2 and low B1 levels of the Common European Framework of Reference, respectively) and it covers listening, reading, writing, and grammar and vocabulary, with a range of item formats. Listening tasks are based on audio or video recordings, and pictures are regularly used in reading, listening and writing tasks. Writing involves a 200–250-word composition on one of the four given topics (more difficult test) or two short writing tasks each with two options (easier test).

The Finnish ME is spread over about two weeks, and the students are allowed six hours to complete each subject test. The tests are administered in the students' school at the same time across the country. The venue is a large room such as a sports hall with teachers as supervisors. The students are familiar with the ME exam but are now building a relationship with the digital aspects of the large-scale exam. The Danish exam, while not high-stakes, still shares features with the Finnish ME as it is used for national monitoring purposes. We will next discuss some of these.

The Danish National Test

The Danish NT programme started in 2006 and has been implemented in its present form since 2010. The NTs are part of a more general educational reform recommended by OECD (2004) and a reaction by the Danish educational authorities to disappointing PISA results (Beuchert & Nandrup, 2018). OECD (2004) recommended that evaluation in the schools be improved by creating better (standardised) assessment and feedback instruments for the teachers, and the NTs implement this recommendation. Consequently, to ensure improved assessment results, the Government implemented external testing more regularly, particularly for such subjects as Danish as L1 for which a national test is taken four times between grades 2 and 8. The NT in English is taken by the students only once, however, typically in grade 7. In total, the Danish national testing system covers ten subjects (Høvsgaard, 2019).

The Danish National Tests (NT) have a dual aim (Beuchert and Nandrup 2018; see Table 3.1). First, they help the teacher provide feedback to learners and to design individual teaching plans (see Høvsgaard, 2019, p. 84); thus, this use of the test results can be called formative. The student's parents are also informed about their child's results by comparing the child's performance with the national average on the particular subject and possibly accompanied by more detailed feedback from the teacher (Kousholt, 2016). Thus, the NT provides students, parents, and teachers with information that aims to improve student learning. Second, educational authorities use the results to monitor school and national level achievement in primary and lower secondary education, which suggests that the test may also be used for accountability purposes.

The NT is computer adaptive (CAT); i.e. it adapts to a student's performance and attempts to find the right level of item difficulty for each student, thus providing everyone with an individualised test scenario. The philosophy behind this is based on a key principle in the Danish School Act, namely that "for students to be equal, we need to treat them differently" (Høvsgaard, 2019, p. 85).

The adaptive system scores responses automatically. In addition to marking, the adaptive algorithm calculates a new ability estimate after each response to decide whether to administer an easier or more difficult item next. The algorithm seeks to estimate the learner's level of proficiency by minimising measurement error and by finding a state where the learner's probability of responding correctly to the items is 50%.

Each NT covers three subdomains presented as one test. For English, these are reading, vocabulary, and language usage. The English test uses only multiple-choice questions, which makes automated scoring possible. The number of items in the test and in each subdomain varies between students depending on how fast the algorithm can estimate their proficiency.

The Danish NTs take 45 minutes, but students can be allowed more time to finish. The NT in English is administered only once during students' studies, at the time decided by the school. The students take the NTs in their school's computer studio.

Material Relationships and Agency in the Finnish and Danish Testing Systems

We next compare the two tests by first providing a general account of the agency of the different actors in the assessment process before moving to a more detailed analysis that focuses on the relationships between the two computerised systems (i.e. objects) and the human participants, particularly the students (i.e. subjects).

We use agency as defined by Barad (2007, p. 235) as "an enactment, not something that someone or something has", in other words, "(a)gency is doing/being in its intra-activity." Barad contends that agency emerges from an interaction between material object and human and one does not contain independent agency over the other. Intra-action thus understands agency as not "an inherent property of an individual or human to be exercised, but as a dynamism of forces" (Barad, 2007, p. 141). Our study examines the intra-action of the assessment process with the task at hand, and the material objects involved in the activity. It highlights the idea that agency is the fluidity of intra-action occurring between digital multimodal object and the learners' choices of when and how to utilize it.

As far as the Finnish and Danish assessment contexts are concerned, agency in both is divided between various human participants – test designers, teachers, and students – but also the computer has an agentive role. The roles of the agents vary, however, as does their significance, freedom of action, and influence on the assessment process.

Test designers: In both countries, the assessment system is designed by a centralised national authority that decides on the content and rules of assessment. They also maintain the computer system that delivers the test content.

Teachers: Both Finnish and Danish teachers have different roles that derive from the very different purposes of the two assessments. During test administration teachers' agency is limited to invigilation in both countries; this is particularly important in the high-stakes Finnish ME but also the Danish teachers are expected to ensure that students adhere to the regulations. However, as we will describe later, the Danish teachers may sometimes also guide and encourage their students, particularly the younger students. Where the two contexts differ the most concerns what the teachers are expected to do after the test. In Finland, the teachers also do the first rating of the writing and short-answer tasks for their own students. Although the raters appointed by the ME Board have the final say, they are obliged to forward student performances to another rater, if their rating differs from the teacher's marks by a certain amount. Thus, the teachers' ratings carry some weight in the assessment process. In Denmark, the teacher's role is to interpret the results for the students and also for themselves, and to create study plans for each student (Høvsgaard, 2019). Thus, the teachers are given considerable freedom to turn test scores into feedback and action plans. The Danish teachers' role in the testing process is, thus, directed towards future learning whereas the Finnish teachers judge what students' ability was at the time of the examination,

even if they can try to learn from the current students' performances lessons for future instruction.

Students: Individual students have limited agency in both contexts. Even if the Finnish ME is not mandatory, unlike the Danish NT, students have to pass the exam if they want to enter higher education. However, after completing a specified number of courses, the Finnish students can choose when in the window of three consecutive ME administrations they sit particular subject tests. In Denmark, students must take the NTs when their school decides to administer them. The actual test-taking clearly differs. In the adaptive Danish tests, students must take the items in the order the system administers them, and they cannot return to previous items to change their responses. In the fixed Finnish ME, students can see the outline of the entire test before they start, and they can take the tasks in any order. They can also change their responses. We will discuss student agency in more detail below.

Computer: Finally, the computer can be considered to have some agency, even if the system cannot make free choices since its actions are based on a scoring key or a mathematical formula. However, the system acts independently of the student (and the programmer) when it scores and is not just a platform for delivering content and collecting responses as the paper-and-pencil tests are. In Denmark, the computer both scores and estimates a student's ability after each response in order to decide which item to administer next. In contrast, the Finnish system only scores the multiple-choice items and leaves the rest to humans. Overall, then, the border between the computer and the other agents is somewhat blurred in these assessment systems, particularly in Denmark (see also the discussion about different agential cuts elsewhere in this volume).

Type of Material Relationship – Space, Equipment and Time

We now turn to the material characteristics of the two computerised assessments, such as the place and equipment, because familiarity with these likely affects some test-takers' anxiety. This, in turn, can affect how well they can demonstrate their skills and knowledge.

One of the affordances in both contexts is the venue which is the students' own school rather than an external testing centre. Even the high-stakes Finnish ME is administered in the students' own school with their teachers as invigilators. Admittedly, the largest hall of the school where the ME is administered is not the students' own classroom but, nevertheless, the students have a familiar relationship with the space. What obviously diminishes the familiarity of the venue is the special layout and rules that govern its use for examination.

In the Danish context, too, there is a familiarity and similar relationship with the space. Since the Danish NT is administered in a computer room with a homeroom teacher, the venue is likely to be familiar to the students because of previous teaching. Thus, the physical setting of the NT is somewhat similar to the students' regular

experience with teaching. The students' test-taking behaviour is regulated but this appears to vary depending on the students' age; at primary level (for the NT in L1 Danish and mathematics) the teacher often provides help to students (see Kousholt, 2016).

Both tests are computerized; therefore, computers and related accessories are the key material objects. In Finland, students use their own laptop, but the school lends them the equipment if they need one. Thus, the functionality of the equipment is familiar to the students, including the feel of the keyboard that is important for typing longer responses fast enough. Studies on the ME suggest that both the teachers (Leontjev, in print) and students (Savolainen, 2017) consider typing to be faster than handwriting and that it is easier for the teachers to read and evaluate learners' typed texts. Both students and teachers were, however, worried that typing might increase spelling errors.

The Finnish students take many computerised tests in the years preceding the ME through the digital course examination system Abitti (see https://www.abitti.fi/), created to help students prepare for the examination. This ensures familiarity with the digital testing system. Moreover, through multimodal context in situated context viewed in the videos, audios and visuals that the digitalized test has provides some form of agency over prior group test taking. For example, the student is afforded the time to replay these multimodal (video) affordances which in most tests can only be played once or twice.

Interestingly, decisions by the ME Board to allow students to use their own laptops and to watch video input in listening tests as many times as they like deviate from the principle of standardisation that is so typical of high-stakes examination. The reason for the latter is purely technical: the technology applied in the system allows only one or unlimited number of playbacks of videos, and the once-only option was considered to make video-based task unfairly difficult. Why students were allowed to use their own computers may relate to financial considerations, since it would have been expensive for the schools to provide laptops for all their students. Whatever the ultimate reasons, while decreasing the standardisation of test-taking conditions, these decisions seem to have been beneficial for students' subjective test-taking experience (see Burnett et al., 2014) and possibly given them a fairer chance to demonstrate their language skills. Seen from the New Materialist point of view, this relationship with a familiar object such as one's own laptop provides affordances for the student.

Overall, the digitalisation of the Finnish ME seems to have been successful, according to the English teachers, even if they have concerns about students' variable computer skills (Leontjev, in print). Similar, rather positive findings were obtained in a study of the ME in geography covering school rectors, teachers, and students (Kari, 2019). However, Hava's (2019) survey of over 700 students across all ME subjects revealed a mixed picture with a number of students who would have preferred a traditional paper-and-pencil exam; unfortunately, Hava's survey did not investigate students' reasons for their preferences.

In Denmark, the computers are not personal but provided by the school, even though potentially familiar to the students as the tests are given in the school's

computer room. The Danish students may seem disadvantaged compared with their Finnish peers as they must work with less familiar equipment. However, they are likely to have taken several NTs (e.g. in L1 Danish) by the time of taking English, even if, overall, schools may vary considerably in how frequently computers are used in teaching. However, comparisons of the effect of familiar vs unfamiliar devices on students' feelings and performance are difficult because of the differences between the tests. The Danish NT for English uses multiple-choice and, thus, requires very simple interaction with the tasks. Therefore, the lack of familiarity with the equipment may not, as such, have a serious impact on Danish students' ability to demonstrate their language skills.

A separate issue is that individual students' familiarity with using computers varies in both countries. The schools and teachers, too, differ in how much homework is on computers, so some students are unavoidably better prepared for the tests than others. Given the high stakes of the Finnish ME and due to the widespread use of the Abitti system, the Finnish students, who are also older since they study at upper secondary level, are probably more experienced in using computers, even if some English teachers have concerns about their students' computer skills (Leontjev, in print).

Other material objects can also be present. In the Finnish ME, students can use paper and pens to take notes, for example, when listening to recordings and planning their written compositions. In contrast, the use of pen and paper is apparently not possible in the Danish NT – on the other hand, such tools would be of limited value since the English test only uses multiple choice items and does not include listening. However, it appears that some Danish students may regard this as a problem because it deprives them of the tactile multisensory mediation (Boivin, 2021) that they are used to in their regular classroom learning. The student interviewed for this chapter mentioned that "some students like the feel of paper" and that she herself likes to "write notes to organize their thinking" (interview 1/3/2020; see also Hava's study of Finnish students' preferences). The NT removes this affordance.

Type of Interaction with Modality

The computerized modality of assessment affects the way test-takers interact with the assessment system that comprises both hardware and software that administers test materials, and in the case of the Danish NT also scores student responses. However, there are significant and interesting differences between student interaction in the two systems. These differences relate to what the students know (or assume) about the test in general, how they monitor their progress through the test in terms of time, what choices they can make, and how they understand success vs failure during the test.

Transparency of and Familiarity with the Test-Taking Process

Fixed tests, paper-based or computerized, are quite easy to understand since everybody takes the same items. In the Finnish ME, the students get an overview of the examination on the first screen of the entire test and can, thus, easily see how many sections and items there are, which helps them to monitor their progress through the test and be aware of how many items are left. They know the time allowed for the whole test and can monitor how much time they have for the remaining tasks. However, it should be noted that the ease with which students "understand" fixed tests is partly due to their socialization to them by participating in an educational system that uses such tests.

Research on the Danish NT, which is a computer adaptive test (CAT), indicates that the adaptivity of the system results in very different interaction between the students and the test compared to fixed tests. Overall, adaptivity, as an entirely new feature of a test, appears to be very difficult for the students to understand, which leads to uncertainty and erroneous assumptions of what happens during the test and what the test result means. Teachers, too, appear to struggle to understand how adaptive tests function (Høvsgaard, 2019, p. 88). The students will not know in advance how long the test is going to be, particularly in terms of the number of items. The NT is planned to take about 45 min, but the students can obviously complete it faster if the algorithm can estimate their skill level more quickly. In this respect, the adaptive test does not differ from fixed tests because in the latter, too, fast and more able test-takers can complete the test well before the maximum time allowed. What makes the difference is that in a CAT, students do not know in advance how many items their version will contain, which makes it difficult to predict the length of their test session.

Since the Danish students cannot know, by counting the number of items, how far they are in the test at a given time, the system indicates progress with color codes. All students start the test with the visual modality of a red light, move into yellow as the algorithm begins to find the right level, and then into green when the algorithm has found a level of proficiency within a specific degree of certainty (Høvsgaard, 2019, p. 87). This creates an impression for the students that a "green screen" signifies that they have managed to complete the test. While the color system was created to help the students to know how far they are in the test, the unpredictable variation in the actual number of items each student has to answer has been found to result in unforeseen and even unfortunate consequences. However, the color system as a familiar indicator used in video games also becomes a multisensory discourse resource for the students navigating the test. This navigation creates a relationship with the material color the computer creates with the student and with time. Therefore, the computer algorithm creates a relationship with time and gaming that the students are familiar with (Allerup & Kjeldsen, 2017).

Kousholt (2016), Allerup and Kjeldsen (2017) and Høvsgaard (2019) report on research on the NT test-taking process in the primary, and the second author interviewed a lower secondary school student for this chapter. These studies show that

many students want to complete the NT as quickly as possible and that the test can turn into a competition of who can finish first. Furthermore, the students regularly compare how many items they have answered. What further affects the test-taking process is that the testing conditions seem to vary across grade levels and probably across schools and teachers. Kousholt (2016) observed a primary school teacher actively helping struggling students but added that such help was probably not given in the secondary schools. However, she maintained that students are very interested in comparing their NT color codes, number of items taken, and finishing times with their peers at all grade levels. How openly they do this varies.

Transparency of the test is also a matter of the relationship between the number of correctly answered items and the overall test result, and in this, too, fixed and adaptive tests differ. The relationship is straightforward in fixed tests: the more items you get right the better your overall score will be. Item weighing may slightly affect this (see Alderson, 2005).

However, computer adaptive tests work in a way that makes learners' prior experience based on fixed tests invalid. CATs give test-takers items that are likely to match their level. The Danish NT aims to give students items where their chance of answering them correctly is about 50% (Allerup & Kjeldsen, 2017, p. 112) because such items yield the most information about test-takers' ability. At the start of the test, this is not possible since nothing is known about the student's ability but with more items the estimation becomes more accurate. In the Danish NT, the CAT stops when the algorithm estimates that the student's probability of answering the next item correctly is exactly 50% (with a certain amount of error). In fixed tests, students who answer more items correctly get better results, whereas in a CAT, both low and high ability students may answer an equal number of items correctly even if their overall result is very different. Allerup and Kjeldsen (2017, p. 115) agree that this is conceptually very different from what the students, and teachers, are used to and can, thus, confuse them, since the assumption that a larger number of correct answers leads to a better result does not hold.

In addition to a certain lack of transparency, CATs seem to result in a different approach to time and speed than fixed tests. The NTs were not designed to measure speed but students' skills and knowledge. However, as described earlier, they often appear to turn into speeded tests probably because of several reasons. One reason is likely the uncertain number of items that a student encounters. Another is the color coded indication of progress, which is apparently easy to spot by other students sitting nearby and which may lead to competition about who is fastest. Kousholt (2016) observed that in primary schools, at least, this was more typical of boys than girls. She argued that students' attention to speed and the number of items they can answer probably comes from computer games where speed is a key factor for success. The student interviewed for this chapter also said that many students "look at numbers, if you are the last person still yellow you don't feel good, you feel slow and stupid" (interview 1/3/2020). Høvsgaard (2019, p. 87) reported that teachers often remind the students "to keep a good pace", which can also contribute to the speeded nature of the test (see Helsper & Eynon, 2010, on learners' age, gender, experience and education as predictors of computer skills).

An interesting finding by Kousholt (2016) and (Høvsgaard, 2019) that some students attempted to reach the green light as fast as possible by skipping all the items they considered too difficult suggests another failure to understand CATs. Høvsgaard (2019, p. 87) reports that skipped items are counted as wrong answers which can result in a too low overall result and at the very least means that the test takes longer simply because the system struggles to estimate the student's level due to his/her inconsistent replies and, thus, needs to administer more items.

Awareness of Success and Failure During the Test

It is probably easier for test-takers to be aware of how successful they are in completing the test tasks in fixed tests than in CATs. This is because fixed tests contain a number of items that are either quite easy or quite difficult to most test-takers since such tests target average students. Thus, less advanced students encounter a lot of very difficult items, whereas advanced students come across many items that are easy for them. Whatever the students' ability, they are aware, to some extent, which items they certainly got right and which they simply had to guess or leave unanswered. More generally, in Finland, the students practise by taking retired ME tests and can therefore develop quite accurate expectations about their typical performance on such tests. Since the English NT in Denmark is taken only once, students do not have similar points of comparison to base their expectations on.

Besides the relative difficulty of the tasks, the task type may matter when it comes to test-taker awareness about success. In multiple-choice items, it is always possible to guess so that even in the most difficult items there is a reasonable chance of answering correctly and, therefore, apart from very easy items, test-takers cannot be entirely sure whether they have managed to make the right choice. In tasks requiring free production, test-takers have to create their own responses and it may be easier to be aware of how successfully one has addressed the task. There appears to be no systematic research on this matter but the first author's own experience in rating student performances in the Finnish ME suggests that weak students often leave short-answer questions unanswered but very seldom do the same in multiple-choice questions.

Test-takers' awareness of their success in a CAT is bound to be different from a fixed test for the basic characteristic of CATs, namely that they aim at administering such items to the students that are neither too easy nor too difficult. Thus, students constantly encounter items where they cannot be quite sure if they got them right or not. The multiple-choice nature of the English NT in Denmark may further add to students' uncertainty about how well they are doing on the test.

Even if the Danish students struggle to understand CATs, they nevertheless try to find ways to figure out how well they are faring. Completing the test as fast as possible appears to be a sign of success for some students. Another clue that students seem to use is the number of items they have taken, but they appear to interpret that information in two contradictory ways. Allerup and Kjeldsen (2017, p. 115) report

of the students' views that "it is considered prestigious to be presented with as few items as possible". However, Kousholt (2016) found that some young, primary level learners confused the number of the items they had taken with the number of items they had answered correctly. Even though the teacher told her students that they could not know how many items they had responded correctly, the erroneous interpretation persisted among some learners.

Freedom of Action and Student Agency During Assessment

The two tests differ in what choices students can make. In the ME, students can complete the tasks in any order, although analyses of the log files indicate that many take the items in the order they are listed. The students can return to previously completed items and change their answers. These are design features since computerised fixed tests can obviously be designed so that these actions are not possible.

In contrast, computer adaptive tests force test-takers to answer items in the order determined by the adaptive algorithm. Students cannot go back and change their answers as that would distort the calculations of student ability. However, in both the ME and NT, students can skip items but with somewhat different consequences. In the fixed ME, a skipped item automatically lowers the student's total score, whereas in a CAT skipping results in the test becoming longer as the system has to administer more items. In the NT, skipping may also lower the final score, as was mentioned earlier.

The Finnish students can also use pen and paper for planning, which adds another dimension to their interaction with the digital materials. However, in the Danish context the students' relationship with modality is much more constraining, since the students can do little else than select options in multiple-choice items.

Computerisation has also increased student agency in the listening tasks in the Finnish ME by allowing students to take as long as they like to read the questions before listening to the related recording; in the pre-digital listening tests, there were fixed length pauses for students to read the task before the recording commenced automatically. As to the listening tasks based on a video, the students can play them as many times as they want to. Because the English test in Denmark does not include listening, direct comparisons cannot be made, but the nature of the CAT, particularly its high degree of automatisation of scoring and standardisation makes it unlikely that test-takers could be given as much freedom of action – and agency – as in fixed tests.

If the Danish students do not have much agency when taking the NT, does this imply that the computer adaptive test has some agency or even more agency than the student? The answer probably depends on how independent the computer is considered and how we define independence. Some might argue the computer algorithm provides the material object (computer) with independence in the relationship between student and computer. After all, a computer programme such as a CAT algorithm certainly interacts with the student very differently from a textbook.

However, Burnett et al. (2014) findings revealed "…that the world of Google is a constructed one, and so on. In this sense, Street View…It is produced elsewhere, it is pre-selected and in order to read it we have to do two important things. We have to operate at the interface, and we have to believe in it by mapping it on to our unfolding experience" (p. 96). Therefore, programming is a language that is pre-structured and created by human coding, and thus, a computer is not independent but a component in the intra-action. Ultimately, computer agency probably depends on the degree to which their programmes can simulate human thinking. CAT algorithms are clearly more advanced than those applied in fixed tests since they do much more than just count correct answers. Systems that can automatically recognise and evaluate language learners' speaking are even more complex than CATs (e.g. Zechner & Evanini, 2020). All such developments increase computer agency and independence, but it is difficult to determine the amount of such agency and compare it with human agency.

Furthermore, one could argue in a new materialist vein that the children taking the Danish NTs have a relationship with the social semiotic representation of color as the computer projects their position in the test. These children have grown up with videogames (in conversation from student participant) and see color and time as being connected (Prensky, 2001). The children respond to the computer's shift in color as communicating where they are in the "race" (test). Therefore, the relationship with time (color), the young test-taker and the computer is established. This highlights, as Barad (2003) argues, that the relationship with materiality '"incorporates important material and discursive, social and scientific, human and nonhuman, and natural and cultural factors" (p. 808). How the children understand and race towards the meaning of color as if it was a videogame raises interesting questions about test familiarity and success.

Conclusion

This chapter explored what new materialism has to offer for interpreting current trends in language assessment by analysing two computerised assessment systems that differ in their design and implementation. Assessment materials have changed from purely concrete objects to a combination of concrete objects (computers, earphones) and digital materials (software, digital content), thus broadening the meaning of "material". Furthermore, the intra-action during the assessment context highlights a new agential cut between the different actors of the assessment process.

The two assessment systems illustrate how the general term "computerised testing" can mask considerable differences in interaction with the test and in agential relationships between stakeholders. The analyses also shed light on how test-takers' assumptions based on their experience with "normal" fixed tests affect their expectations about computer adaptive tests and how these expectations can lead to problems for both the testing system as well as the learners and

their teachers. However, intertwined with test-takers' expectations of what language tests should be like is their often extensive experience with new technologies and new media in general. Such technologically savvy young people are sometimes called digital natives (Prensky, 2001) whose way of communicating and learning differs from that of older generations. More recently, scholars (e.g. Helsper & Eynon, 2010) have argued that age alone does not explain why younger generations interact with computers in particular ways and that learners' prior experience, education, and gender also need to be considered. Our analysis of the two computerised assessment contexts has shed light on the similarities and differences in the participants' agency and interaction with the computer and other material aspects of the assessment. However, to obtain a deeper understanding of how test-takers experience, understand and interpret their interaction with the different digital assessment systems, more comprehensive investigations paying attention to the factors proposed by Helsper and Eyron (2010), among others, are needed.

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Chapter 4
"I Have Karelia in My Soul" – Intra-action of Students, Seniors and Artefacts in a Community-Engaged Service-Learning Collaboration

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Abstract In this chapter we examine a foreign language learning environment in a community-engaged setting in a Canadian city through a new materialist lens. As part of a service-learning project, Canadian students of Finnish language and culture visit a Finnish language seniors' centre regularly to participate in different activities and spend time with the Finnish-speaking seniors. We examine the assemblage of the participants (seniors and students) and one artefact, a map, and offer a close analysis of the intra-action that takes place during one visit at the centre. In our analysis, our service-learning collaboration does not merely give a voice and agency to seniors. Rather, the seniors actively take the opportunity to voice their knowledge, and doing that, give a voice to an old Finnish school map, which retells stories of the seniors' past in intra-action. Meanwhile the students also gain new knowledge.

Keywords Community-engagement · Higher education · Intra-action · New materialism · Service-learning · Seniors · Language learning

Introduction

While applied linguistics has traditionally placed language and language users in the centre of attention, a posthumanist approach suggests that we rethink our relationship with our environment and the objects in it (Pennycook, 2018, p. 1). Given that we live our everyday lives surrounded by, and indeed immersed in, matter

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(Coole & Frost, 2010, p. 1), concentrating solely on what humans do or what their intentions are, would ignore a large part of our reality, including the fact that material things can take an active role in it (Toohey, 2018, p. 27).

For new materialists, as MacLure (2013, pp. 659–660) explains, "discourse and matter are mutually implicated in the unfolding emergence of the world". New materialism considers people, discourses, and things in continuous relation, as being in constant change together, becoming different from what they were before (Toohey, 2018, p. 29; see also *sociomaterialism*, Engman & Hermes 2021; Fenwick, 2015; Guerrettaz et al., 2021; Ennser-Kananen & Saarinen, in this volume). This approach rejects the traditional philosophical dualism between human and non-human as well as the hierarchy it implies (Toohey, 2018, p. 26), for instance, the reduction of the non-human to context and/or mediations for human activity. Toohey (2018, pp. 168–169) adds that new materialism views also languaging as evanescent assembling of speakers and listeners, environments, and, for example, "memories of previous languaging" Toohey (2018, pp. 168–169) – all of which can be stored in the human body.

In this chapter we take a new materialist look at foreign language learning in a community-engaged service-learning context. Community-engaged service-learning pedagogy blends educational instruction with relevant and meaningful engagement in the society. It can be described as a course-based, "credit-bearing educational experience in which students participate in an organized service activity that meets identified community needs" (Bringle & Hatcher, 1996, p. 5). Community-engaged service-learning simultaneously also emphasizes a student perspective as in such a service activity, students gain further understanding of course content, a broader appreciation of the discipline, and an enhanced sense of civic responsibility (Bringle & Hatcher, 1996, p. 5). Our service-learning collaboration includes young Finnish as foreign language students at the University of Toronto and the Finnish seniors living in a Finnish senior centre, *Suomi-Koti* (see also Muhonen & Vaarala, 2018).

In our project, the students visit the *Suomi-Koti* regularly, participate in different activities and spend time with the Finnish-speaking seniors. They learn about Finnish culture by observing and interacting with the environment of the *Suomi-Koti*. Our participation and a long-term ethnographic field work suggest that the interiors and the very special material environment of the *Suomi-Koti* play a special role in these encounters. In this chapter, we explore the intra-action within an assemblage of artefacts and participants in this setting. The notion of assemblage offers a way to consider how things exist for each other, how the relations between things, people, and space matter (Pennycook, 2018, p. 129; see also Laihonen & Szabó and Nikula et al., Chaps. 6 and 8, this volume). We examine these encounters as intra-actions, which denotes an active relationship between the participants and the artefacts (Barad, 2003, 2007).

Human bodies, discourses, environments, and technologies are constantly changing, learning, and adapting in *intra-action*. Barad (2011, p. 451) contrasts intra-action with interaction, explaining that when two things are in interaction, they are seen as two separate entities with individual characteristics. However, if they are

seen as existing only in relation to one another, they intra-act and come into being through their entanglement (Barad, 2011, p. 451; Toohey, 2018, p. 29). In other words, while interaction assumes that there are separate individual agencies that precede their interaction, "the notion of intra-action recognizes that distinct agencies do not precede, but rather emerge through, their intra-action" (Barad, 2007, p. 33).

There is a need for inter- and transdisciplinary and engaged research that recognizes the entangled and material nature of humans, discourses, machines, other objects, and, for example, the natural environment (see Frodeman et al., 2017; Michael et al., 2020; Toohey, 2018, p. 25). In the field of second language learning, analyzing artefacts as part of the learning process is not new. In earlier literacy studies, artefacts have been described as material tools and accessories that are involved in the interaction (The New London Group, 1996). Thus, artefacts have long been considered a part of literacy events and an important factor in second/foreign language learning research (Pitkänen-Huhta, 2003). In literacy studies, literacy events have been described as consisting of settings, participants, artefacts, and activities; and texts are often used as artefacts in the learning spaces, such as in the classroom (see Barton, 2001; Sailors & Manning, 2019). Expanding on this work within literacy studies and related fields, our perspective gives objects even larger role and examines them as active part of an intra-action (rather than interaction).

Important existing research on new materialist or intra-active pedagogy has been conducted with younger children (see Donelly et al., 2020; Lenz Taguchi, 2009) or in classroom settings (see, for example, Guerrettaz & Johnston, 2013; Toohey, 2018). To this, we add the new perspective of young adults learning in a community-engaged context as part of their tertiary education. The intra-action also involves seniors in a setting that reflects the life world of seniors and their Finnish heritage. For this chapter, we focus on one material artefact, an old school map of Finland. We used data from a larger sociolinguistic and ethnographic study with the goal of offering new insights on the human-artefact intra-action.

Research Questions, Data, and Methods

We examine the assemblage of the participants (seniors and students) and artefacts and investigate what kind of story unfolds in the intra-action that takes place. We further analyze what role artefacts play in the intra-action. This chapter hones the following research questions:

- How does an artefact, a map, facilitate intra-action of the participants?
- What kind of information is exchanged between the human participants and the artefact (the map)?
- How do seniors and students relate to the reality they (choose to) share?

Applying a posthumanist approach, as Pennycook (2018, p. 6) writes, urges us to question our set ways and invites us to reflect on imagining humans in particular

ways, with no clear boundaries between humans and artefacts. New materialist analysis attempts to explore how artefacts themselves are important members of the assemblages created in communities; it recognizes "the significance of materiality in social and cultural practices" (MacLure, 2013, p. 659). The focus in our paper is on the role of artefacts and in the information that is exchanged in the intra-action of the participants and the artefacts. We further discuss, in reference to Pennycook (2018, p. 127), how we believe knowledge unfolds in these situations and what roles we assign to bodies, things, and places.

Following an interdisciplinary approach, we combine a detailed analysis of the intra-action with linguistic ethnographic methods (Creese, 2008; Heller, 2008; see also Muhonen, 2014; Lehtonen, 2015, p. 59). Linguistic ethnography considers that language and social life are intertwined, and that close analysis of situated language use can provide fundamental insights into everyday activity, including the dynamics of spatial and cultural production (Rampton et al., 2004, p. 2; Creese, 2008, p. 229).

Linguistic ethnography was also applied in the data collection. The data was collected by participating in service-learning activities in *Suomi-Koti* during the academic year 2016–2017. It consists, in total, of audio and video recordings of informal discussions and semi-structured student-led interviews. In addition, we have gathered ethnographically informed observations and photos during the encounters. The data further includes audio-recorded semi-structured and informal interviews and discussions with the participants. In this chapter, we focus on one video-recorded event that takes place in front of a map. On the map, Finland is featured in the centre. It is surrounded by the neighbouring Nordic countries Sweden and Norway. Part of Russia is shown on the east side of the map. The large map, which was used in Finnish schools in earlier years as a teaching material for geography, has been imported to *Suomi-Koti* from Finland.

In our study, the ethnographic investigations also include observations of the artefacts. Ethnographic participation can illuminate the "social processes and generate explanations for why people do and think the things they do" (Heller, 2008, p. 250). In our understanding, ethnography is not about objects but processes (Heller, 2008, p. 252), or, in our case, about intra-action. It is, as Van Maanen, (2011, p. xiii) writes, "the peculiar practice of representing the social reality of others through the analysis of one's own experience in the world of these others". As Bakhtin (1981) put it, "Everything means, is understood, as a part of a greater whole – there is a constant interaction between meanings, all of which have potential of conditioning others" (p. 426).

As we will demonstrate, one can consider the setting of an investigation as an essential part of meaning negotiation in the process of language learning. In our case, artefacts take on a twofold role: first, they offer a context and authentic framework for discourse between the participants and second, they themselves have a voice in the process.

The Lost Country – An Old School Map Intrigues a Multi-layered Intra-action

The new material approach observes the objects and artefacts in their or as part of their surroundings. Materialities and mobilities also offer a new way of thinking about the places and spaces of education (Brooks & Waters, 2018, p. 2; Guerrettaz et al., 2021; see also Jakonen & Jauni, and Laihonen & Szabó, Chaps. 2 and 6, in this volume). In the public space of the *Suomi-Koti*, one can observe a significant number of different artefacts and objects which have been collected by Finns who immigrated to Canada. On the walls, former prominent Finnish historical figures are represented by, for example, a framed picture of former president and a wartime Commander in Chief Carl Gustaf Mannerheim; a decorative glass plate depicting longtime president Urho Kekkonen adorns the wall. Art posters are framed expressing the paintings from many famous Finnish artists including even some from the late nineteenth century. Issues of *Sotaveteraanilehti*, a Finnish war veteran publication, sit in piles in different rooms. Finnish design is represented by Iittala glassware. Finnish national symbols, such as flags, as well as different traditional and culturally significant handiworks can be observed everywhere. When students spend time in *Suomi-Koti*, they are bound to come across a variety of such iconic cultural artefacts.

In the following, we will discuss and analyze our data in four parts. Firstly, we focus on what emerges in discussions between the seniors and students in front of the map on the country borders of the Republic of Finland. Secondly, we analyze how the participants elaborate memories of a lived history. Thirdly, we analyze a discourse on so-called "lost land" and after this follows a fourth and final part, where we will analyze a reflection written by one of the students that we call "feeling hopeful in the soul".

As mentioned earlier, this study focuses on the intra-action of students and seniors in front of a map of Finland. The map is in a very central location in the *Suomi-Koti*; it hangs in the hallway to the main hall which functions as a dining room, but also as the space where all the main festivities, events and gatherings are held. Everyone who enters the hall by-passes the map. The following took place in front of the map (Fig. 4.1).

We start our analysis of the intra-action with Reino (all names are pseudonyms), one of the seniors, who is discussing with Mark, one of the students, the country borders. The students have just had lunch in the hall and are about to take a tour of the building. As Kell (2015, p. 442) describes, "things make people happen" and "objects, in and of themselves, have consequences". The group notices the map, stops to view it, and a spontaneous conversation begins. Here, we consider the map as a valid participant, present in the intra-action as any other participant with a will and purpose (see also Guerrettaz & Johnston, 2013, p. 785, Michael et al., 2020). Mark and Reino are standing closest to the map, facing it.

Fig. 4.1 Intra-action in front of the map

Excerpt 4.1 Discussion of Finland's Country Borders

Reino (tämä) <this>
Mark what is (.) this here *(points towards the right corner of the map)*
Reino Russia
Mark ou yeah (.) and all this (.) this here *(moves his hand randomly across the Nordic countries)*
Reino Finland ei ei siin on (.) siin on (.) <no there is, there is> border is here *(points to the border between Finland and Sweden with his finger)*
Mark oukey
Reino Sweden *(finger touches Sweden on the map)*
Mark o:u right
Reino up here is Norway *(points to Norway)*

At the beginning of the conversation, Mark does not seem to be able to locate Finland's borders on the map as he rather arbitrarily points to the right corner of the map asking Reino to tell him "what this here". The map has a special color-coded design; Mark's gesturing across the map gives the impression that he is not certain about how to locate Finland on the map or make sense of the borders, which raises questions about whether the traditional map signifies different things to the seniors and to the young participants. In the era of interactive online maps, the map may not signal the same value and function to the young Canadian participants as it does to the seniors. The map may carry trajectories of its original historical time and space, it has been a common object in its original context in a school setting in the past, and it makes sense even here, where the seniors are familiar with it and able to read it. In the current time, for the contemporary young viewer, it may seem impractical and

belong to a past that is somewhat unreachable. We authors, however, learned to read this map in Finnish school.

Reino uses the map to demonstrate the location of the neighboring countries. Mark and the rest of the group learn about the borders by following Reino's gestures and explanations. According to Barad (2007, p. 33; 2011, p. 451), there is a mutual constitution of entangled agencies in intra-action; agency is co-constituted in the intra-activity of bodies, artefacts, social relations, and environments (Ehret et al., 2016, p. 352). Here, the seniors' and students' discourse, gestures, the map, and the *Suomi-Koti* as an environment are co-constituting the entangled agencies. The map and all the participants have agency in the intra-action and story making.

In this event, the artefact, the map, does not just provide input to a passive group of recipients. The environment provides a context, within which the active learners engage in languaging activities together with seniors, who are more knowledgeable about Finnish language, culture, and history. In our example, Reino takes the role of a teacher and mediates culturally important knowledge for the students. Mark takes an active role in facilitating the discourse by asking questions in an active intra-action with the map and Reino. The context provides an opportunity for the participants to engage in a meaningful intra-action in the situation. As students almost accidentally walk by this artefact, stop to chat in front of it, this intra-action unfolds and further develops.

The discussion above creates the frame for the follow-up intra-action, where the map now functions as a renewed artefact, which makes it possible to give new information for the student, as, for example, geography is being learned. Reino also mediates historically important knowledge. The artefact, which is familiar to Reino, becomes new to the students. As we will see in the second part of our analysis of the memory of lived history, the history of Finland and the Second World War develop another new angle for the discourse.

To analyze the following intra-action, it is useful to understand some details of Finland's history. Based on the geographical shape of Finland's map, Finland is commonly described as a maiden, who has a head, two arms and a long dress. In the Second World War, Finland lost geographical territories to the Soviet Union, including "one arm and a hem of the dress". In the ongoing intra-action, Mark has now learned the borders of Finland and utters "yeah (.) and here's the" while he shows the central part of Finland with his hand, confirming his understanding of the topic:

Excerpt 4.2 Memory of a Lived History Embodied

Mark   yeah (.) and here's the (*shows the central part of Finland with his hand*)
Reino   kaikki Suomea (.) ja <all is Finland and> (*glances down briefly*) Josef Stalin (.) that (.) stupid (.) dictator (..) He took about that much (…) that Finnish country (*points to an area on the map with his finger*)
Mark   oh okey
Reino   ja same here (.) here was other arm (.) (*points the area with his finger*)
Mark   yeah
Reino   now it's gone
Mark   yeah yeah

Reino   *(turns slowly to look at Mark)* and you know it was (.) we were too small
         to say no [...]

The map hanging on the wall is a permanent, stable artefact that allows Reino to reflect a discourse significant to his whole habitus. The intra-action continues when Reino suddenly comments in Finnish "kaikki Suomea (.) ja" <all is Finland and> and briefly pauses and glances down, apparently moved by the thought. The sudden switch to Finnish, together with the short pause and the downward glance, reflects an emotional connectedness to Finland as does the use of "we" (= Finnish people) in the last line "we were too small to say no". Autonomic responses which occur below the threshold of consciousness and cognition and are rooted in the body (Leys, 2011, p. 443). Reino's bodily reaction to the somewhat emotional topic is clearly visible in this intra-action. Talk, gestures, wistful gaze, embodiments and even silence perform in the intra-action collaboratively (Engman & Hermes, 2021, p. 91).

As Blackledge (2012, p. 6) writes, by looking at the fine grains of linguistic practice, one can sometimes find small nuances of phonological, lexical, semantic difference, which can intrigue a shift in positioning in participants' orientation to their social world. The strong emotion connected to the war memories and perhaps even being a (former) Finn made Reino emphasize his belonging with the use of "we". Davies (2014, p. 18) saw emotional speaking as a quality of a collective rather than an individual; it can be felt in the body (Toohey, 2018, p. 33). Here, the strong memory and the emotional heaviness of the topic makes Reino switch into his heritage language. The casual reading of the map has suddenly turned into a rather emotional intra-action about history, recalling Reino's personal memoirs and the collective memory of his generation of wartime and post-wartime history and immigration.

The analysis reflects the emotions that are embodied in the realities that are shared between the seniors and the students, triggered by the intra-action with the map. Not only can participants retell what happened in the past, but they can also convey how it felt, igniting the historical imagination in the present. As Creese (2008) writes, linguistic ethnographic methods allow one to shed light to the discussion in both micro and macro levels. Large structures of culture, heritage, and history can be identifiable even in the small instances of the language practices (Blackledge, 2012, p. 7). This excerpt demonstrates that the map triggers feelings and carries emotional meanings, these become embodied by the intra-actions. The conversation continues as the seniors then change the topic from discussing the borders of today and geography to the lost areas of the former republic of Finland. Our third part of the analysis focuses on the lost territory, Karelia. As we will see, Karelia, the lost land, becomes a very meaningful and emotional topic for the seniors. For students, this brings along new information and the intra-action continues as depicted in Excerpt 4.3.

After the long discourse Reino has been leading, Maija, one of the seniors, physically moves towards the map from the back and takes her place in front of it. By that gesture, she shows that she also has something to contribute to the intra-action.

Excerpt 4.3 Discourse on Lost Karelia

Maija   excuse me (*moves closer to the map*) missä on ne kaikki ne maat mitkä oli oli Suomee ennen <where is all the land which was Finland before> (*points to the eastern border of Finland*)

Reino   tässä (.) tässä näin <this here > Laatokka (.) järvi <lake Ladoga> (*points with finger*)

Maija   Karelia (*points with finger*)

Reino   tähän näin (.) sitten (.) tässä oli käsivarren (.) ylös <here, then, here was the arm (.) up>

Mark   that was

Maija   the land that was (.) was given away (*Maija and Reino are turning to Mark and looking at him*)

While standing in front of the map, Maija asks "missä on ne kaikki ne maat mitkä oli oli Suomee ennen (where is all the land which was Finland before)". By this she is referring to the fact that a significant part of Finnish land, known as Karelia, was surrendered to the Soviet Union in the Second World War as part of the peace treaty. When participants take different positions, as Maija here, "they act, together with other types of things and forces, to exclude, invite and regulate particular forms of participation" (Fenwick & Edwards, 2010, p. 7). We treat the human participants as part of the assemblage, participants are seen as co-evolving with other forms of life and enmeshed with the environment (Nayar, 2014, p. 13). When Maija steps into a new and more central physical position, the orientation of all the participants around the map changes and the intra-action triggered by the map takes new forms. Maija's actions assists the students to get a more comprehensive understanding on the subject because Reino then explains it the second time.

At the end of the sequence, both seniors turn to Mark and look at him; this seals the intra-action and offers a thematic cycle referring to Mark's original question about the borders of the republic of Finland. However, as we have seen from above, a great deal of more than just Finland's geographical boundaries have been passed on by the seniors in this short intra-action. Barad (2007, p. 136) writes that posthumanists consider subjects both from humanist and structuralist viewpoint, the human element alone is neither pure cause nor pure result; the participants positions can be seen both as "the natural and fixed" elements, belonging both to the interior and the exterior (Barad, 2007, p. 136), both humans and artefacts are in other words essential part of the assemblage and as we have seen here, also the meaning making in the final story.

Pennycook (2018, p. 6) points out that a posthumanist account "questions the boundaries between what is seen as inside and outside, where thought occurs and what role a supposedly exterior world may play in thought and language". "Posthumanism doesn't presume the separateness of any-'thing'" (Barad, 2007, p. 136). In this posthumanist stance, in addition to the assemblage of the human and the artefact, we are also discussing feelings and emotions as something *more real.* The seniors are telling about the lost land with a longing in their voice, almost as if the area of Karelia does not exist anymore – The loss of Karelia has obviously been a

life-changing experience for them and their ancestors. Although the land of Karelia still exists, a significant part of it now is on the Russian side of the Finland-Russia border. The Karelia of their youth, however, has been "lost", left to the other side of the border. Therefore, when the seniors talk about the history and their Karelia, different feelings emerge.

While we do not claim that the map can talk or have an active role alone, we suggest that the map should be considered as more than just an artefact hanging on the wall, similarly to Engman and Hermes (2021, p. 90), who see the land as an interlocutor, a participant, and a "living teacher". As mentioned earlier, the map is in a welcoming and central space and it almost seems like it is there to invite attention, waiting to be approached. With the close analysis of the situated intra-action, a spontaneous stop in front of the map triggered a multi-layered meaningful conversation. The map we are analyzing here has agency in what people say, think and feel about it; the artefact is a part of a "semiotic ecosystem" where historical trajectories of people, places, discourses, and objects come together (Scollon & Scollon, 2004, p. 89, 159) in this particular setting, in the seniors home in the diaspora. Most of the artefacts are more than just artefacts for the seniors and as this map, generate trajectories, memories, and stories.

Multi-layered Understanding of Space and Time, Past and Future

The object, the map, is available and it is present, the participants can touch it and rely on it to re-experience the past and describe the present reality. It is almost as if the map tells a story which is transferred through the voice of the seniors and their personal, somewhat historical, trajectories. Although the map cannot talk, it plays a part, takes meaning, and has a semiotic role (see also Pennycook, 2018, p. 46). It allows for meaningful and multi-layered intra-action and knowledge construction based on the artefacts at hand. This includes linguistic, cognitive, cultural, physical, and digital artefacts and may also create new artefacts "to formulate, embody, preserve and communicate new knowledge" (Stahl, 2002, p. 62). In addition, many different understandings of space and time are present in the above-described intra-action.

The intra-action with the map signifies different understandings and views of Karelia. Firstly, the space denotes certain geographical areas (e.g., Finland and Karelia). Secondly, there is a mutual understanding of the lost country, lost territories, which designate the parts of Finland lost during the Second World War (e.g., Karelia and the "left hand" of Finland). Next, the map presents current Finland, but also an old home country and the space the seniors have left and immigrated from after the Second World War. In this space, a special role is given to the birthplaces of the seniors as they point out in the same discussion earlier. Fourthly, Karelia is present in the current residence *Suomi-Koti*, the space where this interaction takes

place and where the map signifies all these spaces and invites the seniors to talk about them. Following this, Canada as the current home country and space where the distance to all these spaces perhaps even allows a critical view of the other spaces. In the present space the young generation of students is learning about Finland. Throughout all these spaces, the concept of home and transnational belonging prevails. It becomes clear that knowledge can be found in this assemblage, in a direct and ongoing material engagement, in a practice of intra-acting with the surrounding in a dynamic articulation (Barad, 2007, p. 379).

Just as the concept of space is multi-layered, also the concept of time can be understood in multiple ways. The intra-action with the map signifies different understandings of a time. Firstly, there are references to the time before the Second World War, as the intra-action recalls the geography of the former territory of the republic of Finland. This time exists in the memories of the Karelia addressed by the seniors. Secondly, the discussion refers to the time when the seniors still lived in Finland before their immigration to Canada. After that, it becomes the time in Canada, and for the seniors, at one point moving to the Finnish seniors home where intra-action with the artefacts and young learners occurs. Fourthly, and most importantly, the intra-action takes place in the present time as the students and the seniors meet in front of the map, which allows the seniors to make references to all the past times in the current moment. However, there is also time after the present time as the students also create their own relationship to the "lost Karelia", "lost Paradise" which finally also has implications for the future of the students, as we will demonstrate in the last part of this analysis.

In the fourth part of our analysis, we discuss the theme "cherishing hope in one's soul". Nate, one of the students present in this intra-action but not actively participating in the discussion excerpted for this analysis and the encounter with the map, wrote the following reflection after the *Suomi-Koti* visit. He reflects his experience on the service-learning in the following manner:

> Perhaps one of the most interesting parallels between my own immigration background and the immigration backgrounds of the residents is the idea of the "Holy Land", or the "Paradise Lost". In Finnish culture, Karelia holds a place of extreme importance, as the land in which the Kalevala, and by extension, Finnishness, was kept alive. (Reflections, Nate, April 2017).

Dahlberg and Moss (2009, p. xxiii) write that when the logic of affect is activated it gives rise to collective experimenting and unpredictability. The present intra-action seems to have triggered an multilayered emotional reaction even in the students, intriguing them to reflect what they have learned. This can be seen in the way the students show empathy to the seniors, and when they begin to recall immigration memories of their own family trajectories and stories. Thinking, liking and, for example, learning, according to Marks (1998), all happen within our bodies. In his reflection, Nate further mirrors his longing to Karelia in a similar manner the seniors have expressed in these mutual intra-actions.

> " – minä toivon että kesä tulee nopeasti, koska minä haluan käydä Suomessa, ja Karjalassa myös. Me puhuimme Karjalasta, Virosta ja Valamosta, ja nyt sielussa minulla on toivo

nähdä Karjalaa. Kaikki puhuvat Karjalasta, ja nyt minun täytyy käydä." (Nate, reflection, February 2017). <I wish that it's summer soon because I want to visit Finland, and Karelia too. We talked about Karelia, Estonia and Valamo Monastery, and now there is in my soul the hope to see Karelia. Everybody was talking about Karelia and now I have to visit> (Nate, reflection, February 2017)

Identities develop "in the moment through discursive practices, but also through memory" (Toohey, 2018, p. 97). The conversation of the map presents even this additional place, the student is also taken into a space of his own place of longing to the holy land, discussion familiar to him from his parents' and grandparents' past and immigration trajectories. This student reflection adds yet another layer of space and time into our analysis: Karelia is now even positioned "in their souls". The discursive and the material interact in the bodies (Alaimo & Hekman, 2008, p. 7); it functions as a contagion that people get "hooked on" (Toohey, 2018, p. 34). The discourse on Karelia therefore involves the embodiment of sensations among all the participants. Nate's wish to see Karelia in the future adds a new perspective.

The map guided the participants to a deep discourse leading the seniors back to their past lived experiences and memory lane and made the young students reflect on their own heritage and future. For the seniors, it is meaningful to transmit the experiences of past generations to the young students. Any individual's participation can become part of the community's shared historical knowledge, which is linguistically signalled and framed (Toohey, 2018, p. 97). The oral story of the collective history of the displaced Karelians touches everyone in the intra-action. The way in which the seniors communicate these experiences impresses on the students the importance of real-life learning and impacts on students' future. Nate reflects these learnings as an experience, which has an impact on his future endeavours. He wants to see Karelia because he can feel it in his soul; Karelia then becomes relevant even in the unfolding future.

The transferred information between the participants and the artefacts tells us about multi-layered mobility; the seniors – or even their parents – have lost Karelia, the seniors themselves have left their "home country", Finland, behind them. These experiences of lost country resonate with the experiences of some of the students, as their parents and they themselves have started a new life in Canada, as seen in Nate's reflection earlier. Pennycook (2018, p. 131) suggests that we should "consider the social, spatial, and embodied dimensions of language learning"; language learning happens in a much wider semiotic framework, which includes "touch, smell, taste, things and places" (see also Atkinson, 2019; Laihonen & Szabó, Chap. 6, this volume). In this chapter, we have demonstrated that learning can take place in many places but there are many more layers to learning — feelings, emotions, different participants have different kinds of agencies, and the role of teacher – here seniors and an artefact, an old map, become teachers.

Conclusions

In our study several artefacts representing Finland and Finnish cultural heritage were observed in the *Suomi-Koti*. These are objects that the seniors have brought from Finland, collected, and cherished. In this chapter, we have focused on an intra-action relating to one of them and demonstrated that intra-action between the participants also makes multi-layered learning possible. The service-learning context provides the students and seniors spontaneous intra-actions encounters which lead to meaningful conversations about language, history, geography, and belonging.

In the intertwining discourse between the artefacts and participants, the discourse moves between present and past, as well as historical, current, and future time. The participants move around in the space in front of map as the intra-action unfolds and features different actors. In addition, different spaces the participants recall, enter, are positioned in or talk about become relevant. Finland is mediated through artefacts and stories constructed by the participants. What Finland or Karelia is, where it is, and in what time it is featured shifts during this intra-action. We consider artefacts as forms of mobility as they and the stories they can intrigue, facilitate movement between different times, spaces and all the participants in the assemblage. When a journey takes place via stories and memories, artefacts come into life collaboratively in these stories. As we have demonstrated, artefacts, here the map, are especially significant in the life of the seniors living in the diaspora. Material world makes one recognize that humans participate in a shared and vital materiality (Bennett, 2010a, p. 14).

'New materialism' does not only impact our understanding of the world and the relationships between humans and non-humans, but also the methods that we use to research that world (see Brooks & Waters, 2018, p. 26). In our study, we have looked at the relationship between environments and objects in a new manner: human participants are considered a part of the material world, and vice versa. According to Pennycook (2018, p. 129), in a posthumanist approach, humans are no longer depicted as "distinct, inalienable creatures" who have the sole agency to control the environment but emerged together with their interior. As we have demonstrated in this chapter, in new materialism, as MacLure (2013, pp. 659–660) states, discourse and matter can emerge and unfold in the mutual space one participates in and is surrounded by. Here, both the seniors, students and the map as an artefact created an interesting multi-layered intra-action prompted by a shared materiality (see Bennett, 2010a, p. 14) which depicts current and past space and time. We have shown that artefacts can play a role in our lives, they can have agency to our stories, in assemblages "where different things and people and places and discourses come together" (Pennycook, 2018, p. 129). Here all these participants were closely interwoven into the material world, and by intra-acting together, a memorable and meaningful discourse was created.

Taking a posthumanist standpoint makes new connections and lines of thinking possible. The current climate of thought seeks an increased emphasis on space, place, things, and their interrelationships; there is a desire to expand the semiotic

terrain to go beyond language in relation to material surrounds and space (Pennycook, 2018, p. 8). As Brigstocke and Noorani (2016, p. 2) ask:

> What happens, though, when we attempt to attune ourselves to forms of agency that do not possess a conventionally recognized voice to be amplified? What new intersections among research, invention, and political agency might emerge when voices have to be assembled rather than merely amplified, and when new methods of listening need to be invented? (Brigstocke & Noorani, 2016, p. 2).

Critical work is often conceived in terms of "giving voice to marginalized subjects" (Brigstocke & Noorani, 2016, p. 2). Here our service-learning collaboration has not just *given* a voice and agency to seniors, the seniors are actively *taking* the opportunity to voice their knowledge; also, artefacts that are not traditionally considered to have anything to say, are an integral part of the story. Here we are further showing that one can also *give a voice to artefacts*; the old Finnish school map captured in the seniors' centre does retell stories of their past when in intra-action with the seniors and students.

Based on our study, we agree with Toohey (2018, p. 28) that fixed and essential qualities cannot be attributed to the animate or inanimate, or to human persons of non-human things but rather that material, people, animals, objects, nature, discourses proceed in relation to and with another (Toohey, 2018, p. 28). New materialism investigates what happens if materialities were actors alongside and within us, and further what is the significance when trajectories and powers irreducible to the meanings, intentions, or symbolic values humans can invest in them (Bennett, 2010b, p. 47). By participating and observing our data in the light of new materialism, we have described how intra-action of seniors, students and one meaningful artefact, the map, connects the lives, spaces, past and future and even emotions and feelings of the participants.

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Part III
Spatial and Embodied Materiality

Chapter 5
The Personal Repertoire and Its Materiality: Resources, Means and Modalities of Languaging

Hannele Dufva (iD)

Abstract The chapter is a theoretical discussion of the concept of *personal repertoire* and its application in the context of applied linguistics, particularly in the study of language learning and development. It questions conceptualisations that understand language learning as acquisition of abstract, decontextual and disembodied language knowledge and argues that learners' know-how is not based on any kind of 'mental grammar', but on a personal repertoire of different multimodal semiotic resources. Bringing together 'old' and 'new' arguments for materialism, personal repertoires are examined focussing on how embodied agentive activity is intertwined with the socially structured environments and their specific material features, tools and artefacts. The repertoire, or the know-how that emerges, is not, strictly speaking, 'language', but rather, a meshwork of 'skilled linguistic action' in the analysis of which embodiment and materiality are highly significant considerations. The viewpoint transcends the alleged gap between social and cognitive orientations of language learning research and discusses learning and use of language from an ecological point of view as 'languaging'.

Introduction: Learning and Knowing Language

The chapter is a theoretical discussion of personal know-how of language(s) in the context of applied linguistics, particularly in the study of language learning and development. The objective is to question the acontextual, demateral and disembodied conceptualisations of language that were typical of classical psycholinguistics and SLA (second language acquisition). Instead, language is approached from

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a "first-order perspective" (Love, 2004) and regarded as *languaging*, as different sets of embodied agentive activity that take place in a variety of social and material contexts. At the same time, this point of departure also points out the inadequacy of seeing language learning as acquisition of a 'mental grammar' – a collection of abstract knowledge that does not embed any reference to social use or bodily performance. Re-configuring 'language knowledge' as personal know-how, or, as a *personal repertoire*, the focus is shifted to investigating how individual agents cope with different types of semiotic resources in their social and material environments, and how they use different modalities for this. The repertoire, or the know-how that emerges, is not, strictly speaking, 'language' (in its abstract sense), but rather, a meshwork of 'skilled linguistic action' in the analysis of which embodiment and materiality are highly significant considerations.

To continue, the point of departure is ecological, and aims at transcending the alleged gap between social and cognitive orientations of language learning research. In line with most chapters in this volume, social and societal phenomena are approached as both "materially real and socially constructed" (Coole & Frost, 2010, p. 26; Ennser-Kananen & Saarinen, in this volume). Still, a further argument is introduced to suggest that the processes by which individuals learn and use language is similarly defined by materiality and embodiment, and thus not only social practices, but also cognitive processes are to be defined as embodied activity that takes place in a material world (Dufva, 2012). The chapter aims at explaining how embodied agentive activity is intertwined with the socially structured environments and their specific material features, tools and artefacts.

The discussion brings together different, "old" and "new" perspectives on materialism: observations from the Russian dialogical/sociocultural tradition (e.g. Voloshinov, 1973; Bakhtin, 1981; Vygotsky, 1981), contemporary sociolinguistics (e.g. Blommaert, 2010; Pennycook & Otsuji, 2015), new materialism (e.g. Fox and Alldred 2019) and distributed / embodied views on language and cognition (Chemero, 2011; Cowley, 2011). While the ontological and epistemological positions of the above may not be identical, and while their readings of materialism may differ, I will point out how certain commonalities in their arguments would be highly productive for re-formulating our understanding of agentive knowledge.

The starting points challenge the dichotomous representations of both individual vs. environment and mind vs. body relationship. In this, they also transcend the alleged 'gap' between social and cognitive perspectives of applied linguistics (Hulstijn et al., 2014) and argue that languaging – language learning and use – emerges in *learner-environment systems* (Järvilehto, 1998) that involve human actors but also non-human objects and artefacts. Thus, the social-cum-cognitive perspective (Dufva, 2010) on how human agents approach 'language', how they make it their own, and how they 'know' it, is ecological. Therefore, as Lantolf (2014) indicated, there is no gap between social and cognitive views (see also Douglas Fir Group, 2016). To understand the complex ecology of eventing, an agential cut is made into the entanglement of a variety of processes (Barad, 2007). Here, I focus on how personal know-how of languages emerges in the ecology of eventing and discuss it from the point of view of embodiment and materiality.

Below, language learners and users are examined as embodied agents who operate in particular physical and material environments and with resources that are afforded in particular kinds of materiality. Hence, it will be argued that the base for how languages are known and used is in different kinds of embodied activity in different types of material contexts. These arguments are used to present an alternative to classical, cognitivist views of "mental grammar" that postulate an abstract, acontextual and amodal system of language "inside one's head". Here, agentive know-how of language is conceptualised as a *personal repertoire* that helps the agents to navigate in the fluid and diverse world of languaging. Repertoire is defined as an assembly of semiotic resources which embed a link to particular social contexts and their particular means and modalities. This also entails a view that, rather than a set of static linguistic knowledge, repertoire can be understood as an assembly of social and multimodal know-how.

The chapter also aims at demonstrating that the field of applied linguistics needs an in-depth (re)consideration of the 'cognitive' aspects of language learning and use, which, since the social turn (Block, 2003), have been either ignored, or investigated from 'classical' cognitivist, internalist and individualist points of view. However, it is seen both timely and significant to go beyond the descriptions and discourses at social scenes and re-examine the cognitive dimension, in particular how individuals learn and use their first, second and additional languages. This is deemed not only as theoretically significant, but also vital for developing practices, such as, e.g. language education or assessment.

Materialism and Embodiment: Old and New Perspectives

Although one obvious materialist influence in the Russian dialogical and sociocultural tradition comes from Marxian tradition, one needs to note that Bakhtin, Voloshinov and Vygotsky were well-read on other traditions of continental philosophy, psychology and linguistics of their time – and thus also influenced by other sources (for the work of the Bakhtin Circle, see Brandist, 2002). I raise some points in their work that seem particularly pertinent for the discussion of materiality and embodiment.

First, the dialogical perspective implies that the focus of linguistic study should be on the concrete and material presence of language in different societal arenas, in societal heteroglossia (e.g. Voloshinov, 1973; Bakhtin, 1981, 1984, 1993). This involves the argument that language does not exist in abstraction but is material, given in bodily form. As Voloshinov (1973, p. 90) indicated, linguistic items do not work as *signs* until they are objectified "in some particular material (the material of gesture, inner word, outcry)". Similarly, language user is never a "disembodied spirit" (Bakhtin, 1993, p. 47), but an embodied being participating in lived dialogues "with his eyes, lips, hands, soul, spirit, with his whole body and deeds" (Bakhtin, 1984, p. 243).

Second, also the sociocultural tradition observes the significance of materiality, but is concerned particularly of the materiality of the social world, and human culture with its tools and artefacts. Their main arguments may be summarised in the claim that (language) learning and development is inherently intertwined with the social (material) world and its other human (embodied) agents (see, e.g. Leontiev, 1981; Vygotsky, 1987). The central observations are by no means outdated. Today, there are lively research traditions that discuss human cognition as distributed across the environment (e.g. Hutchins 2014; Li et al., 2020), that address human-artefact relationships (e.g. Kirsh, 2010; Salovaara, 2008; Guerrattaz, 2021), or that show the significance of human scaffolding to learning (e.g. Lantolf & Thorne, 2006; Strömmer, 2016).

Third, there are several contemporary fields of study, independent of the Russian tradition, that argue for the relevance of materiality. Among them is *new materialism* (e.g. Coole & Frost, 2010; de Freitas & Curinga, 2015; Fox & Alldred, 2019) that set out to reconsider and challenge some habitual assumptions and dichotomies underlying the twentieth century human and social sciences and argue for a shift of research focus from linguistic or social abstractions to activity that highlights bodies, spaces and time. Similarly, recent *sociolinguistic* research points out how crucial it is to turn from abstractions and analyse space as a material context and language as different semiotic *resources* (e.g. Makoni & Pennycook, 2007; Pennycook, 2017; Blommaert, 2010). At the same time, this raises ontological questions about dualistic representations of nature vs. society or human vs. non-human, as Pennycook (2018) in his paper on posthumanist approach to applied linguistics points out. However, similar concerns and arguments for materiality and embodiment have also been brought in in the *integrationalist* and *distributed* conceptualisations that analyse language in its "first-order" manifestation, as embodied 'languaging' (e.g. Love, 2004; Cowley, 2005). Finally, it is clear that recent views on *cognitive science* see cognition as *embodied* (Chemero, 2011) and/or *distributed* across the (material) environment and its tools (Hutchins, 1995; Cowley, 2011).

Although the theoretical strands above have different interpretations of materialism, their observations help to re-examine the agentive dimension of languaging, and see it as *interactivity* (Steffensen, 2013; Gahrn-Andersen et al., 2019), that is, as a complex network of embodied processes that helps human agents engage with the materiality of their world. In resonance with Barad's (2007, p. 139) philosophy of agential realism and her recognition of "the ontological inseparability/entanglement of intra-acting agencies", human agentive activity is regarded as a dimension in the ecology of eventing. Thus agency, or, agentive activity, is not defined by this or that pre-existing categorisation, and not 'located' within a single individual.

Know-How for Languaging: From Mental Grammars to Personal Repertoires

Know-How for Languaging: Against Mental Grammars

The point of departure for describing the principles that underlie a person's know-how of language is to recognise language learners/users as embodied agents that operate and are intertwined with their various natural and cultural habitats and need to be examined accordingly. This argument contests the theories that assume any kind of mental grammar, that is, an internal storage of language. First, the concept of mental grammar is what is called cognitivist (Still & Costall, 1991), that is, it reflects an internalist and individualist view on cognition, and implies that 'external' language is 'internalised', turned into (static) mental representations (for different views on representation, see Ramsey, 2007). Second, the assumptions of language are formalist and lead towards seeing mental representation as decontextual and amodal forms and structures. However, the conceptualisation of mental grammar as an internal library of essentially static formal rules and representations is problematic in several senses.

First of all, the metaphor of a speakers' know-how as a 'grammar' is misleading in itself. Grammars are artefacts that result from reflective, conscious analysis by a linguist or a pedagogue (Voloshinov, 1973). However, as Voloshinov (1973, p. 38) points out, the purposes and processes by which a scholar devises a linguistic or pedagogical grammar are simply unlike to the purposes and processes of agents involved language learning. To postulate a mental grammar is a hypothesis at best and a fallacy at worst – and it is proposed that it would be replaced by considering know-how as a repertoire.

Second, the assumption that a speaker's know-how is insensitive to the diversity of its social and ideological environment is a repercussion of a monolingual research bias and the idea that agents develop their know-how with one single language in mind. It seems to be a fact that most if not all 'external' grammars have been based on the notion of one boundaried (and homogeneous) language (Blommaert 2005), and, when used in education as a singular ideal and prescriptive model, have aimed at standardization of practices and have thus both spread and amplified the monolingual bias. Rather inevitably, however, to describe a person's know-how of language(s) as a grammar smuggles in the principles of such external grammars and leads one to imagine that learners' goal is to develop a system of a homogeneous 'language', a national language, or a named language. Still, this view is not genuinely substantiated by any research evidence, and may not be at all how learners approach language. A more likely explanation – and my working hypothesis - is that learners work on the basis of what is available in their communities and networks. Thus they appropriate a variety of resources from a variety of contexts, and their know-how may consist of different 'languages', but also of

different situated usages, dialects, genres, styles etc. (Dufva et al., 2014). This would also, arguably, entail in know-how that is practical and "ready-for-use" in different socially situated contexts.

Third, to assume that the speakers' know-how is 'language' *in abstracto* fails to account the role of different means and modalities by which languaging happens – the material uses of language in the social world and the embodiment of users. Consider language learning: in order to learn a 'word', for example, one needs to be exposed to its usage, either in spoken interaction or in the visual landscapes of written or printed media – and the exposure means that the agent encounters it with relevant particular means of their sensory capacities: hearing, seeing or, perhaps touching. Still further, to know a 'word' means that you can use in some specific manner – articulation, signing, writing, typing etc. To assume that know-how of language is 'linguistic', and insensitive to the modality of uses, is theoretically inelegant as this fails to account by what means agents turn their 'linguistic' knowledge into "real" language use – how they understand and use modality-specific and multimodal usages.

To conclude, while a 'grammar' – either external or internal – has commonly portrayed language in terms of formal and abstract representations, independent of diverse contexts and modalities, the obvious driving force for developing personal know-how would seem to lie in an ability to deal with the variety of material and embodied usages of the social world. My suggestion is that instead of an internal image of any named language, what language users need is multi-purpose networks of resources that are basically not only multilingual, but also multimodal. These networks of know-how are here named as repertoires.

Knowhow for Languaging: Repertoire

The concept of repertoire has its roots in early sociolinguistics and ethnography where it was referred to "the totality of linguistic resources – available to members of particular communities" (Gumperz & Hymes, 1986/1972, pp. 20–21; see also Gumperz 1964). Although often discussed in the sense of a community reservoir, it is clear that agentive aspects are not necessarily denied or excluded. This is perhaps most obvious in Dell Hymes' notion of *communicative competence* (Hymes, 1972) which suggests that individual speakers *do* have specific contexts and purposes in mind and that they aim at utterances that are socially 'appropriate' rather than grammatically 'correct' (Hymes, 1996, p. 33).[1] Unfortunately, while Hymes' concept has been wildly popular in the field of language teaching, his observations were never developed into a full-fledged psycholinguistic argument.

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[1] Communicative competence is Hymes' explicit response to Chomsky's conceptualisation of competence vs. performance.

Agentive dimensions of repertoire have also been discussed in more recent sociolinguistic research, particularly in the extensive literature on multilingualism. Similarly to the present argument, several studies have challenged the monolingual idea that individuals set out to acquire one particular language, or that they acquire any 'named languages' in parallel or sequentially. As Blommaert (2008) argues, individual repertoires are now often seen as *polyglot*, consisting of a range of multilingual resources that are adopted for social action in different contexts. Thus repertoire is not described as a grammar but reconceptualised as a communicative and indexical biography that portrays the person's social and cultural trajectory. Even further into an agentive argument, Blommaert and Backus' (2013, pp. 6–7, 22), drawing on the framework of construction grammar, say that a repertoire can be understood as a constructicon i.e. a collection of constructs. Busch's (2012, 2017) notion of *experiental repertoire,* similarly embraces agentive aspects, and moreover, draws on the works of Derrida, Butler and Merleau-Ponty, to highlight the significance of embodiment and emotion that are part and parcel of one's multilingual experience (for other recent discussions, see, e.g. Pennycook & Otsuji, 2015; Canagarajah, 2018a, b; Pennycook, 2018).

Drawing on the insightful arguments present in the sociolinguistic literature, it seems evident that no ready-made theory for what repertoire is or is not, is to be found there. While some authors admit an agentive dimension, others seem to deny it. For example, although Pennycook's (2017) discussion of *emergent repertoire* seems to draw on distributed perspective, similarly to my own starting points, he fairly explicitly denies its individual dimension: "…rather than being individual, biographical or something that people possess, repertoires are better considered as an emergent property deriving from the interactions between people, artefacts and space."

My own interpretation is that repertoire is indeed useful as a metaphor for the subjective, agentive know-how of language. But as the theoretical points of departure above indicate, this does not deny the social dimension, but rather transcends the assumed social vs. cognitive antinomy (Cole & Wertsch, 1996). Repertoire is individual in the sense that it reflects the trajectory and experiences of a unique individual, but it is social as it has its origins in collective resources and usages. What human agents learn, know and can do is deeply related with the language use at social arenas. But as each agent has a different trajectory – with different exposure to resources and with different experiences – the repertoires can never be identical.

Thus, like Pennycook (2017) I also see repertoire as emergent. The know-how certainly *emerges* in learning, in events where the resources are first met, then perhaps rehearsed and appropriated. However, when we *use* language – do languaging by saying or writing something in language "we already know" – the processes are slightly different. Languaging certainly emerges in the sense that the outcome is influenced by the constellations of the particular situation and that each situation differs from another. Utterances or sentences that emerge are never a mechanical repetition – unless you use a machine for copying them. However, in another very significant sense, languaging *re-emerges*. Agents do not draw only on the external

circumstances, or on-going interaction, but on what they have heard, said, seen, written or done *before*; or in other words, their own biography, or their capacity to *remember* and relate what they remember to their on-line activity (for an embodied view of remembering, see Sutton & Williamson, 2014). Although interactivity reaches *beyond* a single agent (for a view on joint remembering, see Bietti, 2010), it is as clear that it is not achieved *without* an agent. Therefore, for me, it is simply impossible to imagine an explanation of language learning or use where the agents' capacity to participate in interactivity is overlooked.

Below, I will further discuss the role of the materiality of the resources and embodiment of speakers in developing further hypotheses of how personal know-how – a personal repertoire – emerges and develops.

Materiality Within the Repertoire: Social Know-How Is Contextual and Material Know-How

Personal repertoire is introduced as a concept for approaching human agents' know-how of languaging, and proposed as an alternative metaphor for views that conceptualise the know-how as an 'internal catalogue' of rules and representations of a 'language'. Thus, considering everyday languaging activities, it seems reasonable to suggest that agents do not really find '*language* knowledge' as useful as, to use a slightly clumsy formulation, '*sociolinguistic* know-how'. Repertoires are not developed as a grammarian's exercise but assembled for a purpose: for navigating in the social world and its different contexts and for achieving various types of situated, meaningful action therein; thus they are not only 'multilingual' for doing translanguaging (Li, 2018) but multi-genre, multi-register and so on. Echoing Hymes, it is not decontextual items and rules that speakers need but a know-how that embeds how, when, why and where to use it.

Hence, as linguistic resources unquestionably are available for learners in particular contexts, they are not just pieces of 'language' but indexical, in the sense that they communicate particular styles, registers, genres, varieties, languages and so on – and particular ideologies present in the societal heteroglossia (Voloshinov, 1973; Bakhtin, 1986). As Hymes (1972) suggested, human agents aim at saying something that is *appropriate* rather than something that is grammatically correct[2]. The simplest explanation is therefore to assume that social know-how is somehow coded in the person's repertoire. Instead of 'language', repertoires can be imagined as collections of different types of resources that allow flexible and situation-sensitive language use: know-how that helps you to read a newspaper article, tell a

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[2] Note, however, that appropriateness should not be understood as a reference to any single social norm or a particular standardised practice, but as responsivity to act upon different dimensions of the particular situation (for a discussion, see, e.g. Flores & Rosa, 2015).

joke, send a text message, participate in classroom interaction. At the same time, social practices are associated with particular materialities and embodied processes.

The development of a repertoire can be approached as a chronotope (Bakhtin, 1981): personal know-how is intertwined with the agent's experienced and embodied trajectory of encounters in particular times and particular spaces. Social scenes are not to be considered as abstract 'linguistic contexts', but as particular material spaces (see also Costall, 1995) that are defined by particular conditions and means – by their geography, architecture, artefacts, tools, art, documents and various other aspects. Thus a personal trajectory of languaging embraces embodied experiences of actual spaces: memories of the first grade classroom, a faraway home country, visits to the library, circle of friends. It is their affordances and their constraints that make the language that agents know.

In sum, language learning does not imply a linear process by which learners copy external language or "add" an abstract linguistic item – a word or a grammatical rule – in their private internal storage. Rather, they develop a repertoire that is an assembly of a variety of embodied resources that grows chronotopically and that is influenced by the materiality of spaces, scenes, events and persons along each unique trajectory (see also Canagarajah 2018a, b; Dufva, 2020). As repertoires reflect the life-span of particular, embodied learners, and as no trajectory can be absolutely identical with another, also repertoires need to be individual. No repertoire is a mechanical copy of an imagined 'language', but not a mechanical copy of social usages either. Everybody has a voice of their own – a voice that echoes the social heteroglossia, but similarly adds to its multivoicedness.

Embodiment of Repertoires: Modality-Specific and Multimodal Know-How

As suggested above, social action in itself involves materiality. But as the linguistic resources manifest in different modalities and as they are enacted upon by different bodily means, human agents, arguably, should have capabilities for first, operating with particular modality-specific ways, and second, for coping with the obvious multimodality that is present in language use. Again, the ability to learn and use language cannot be imagined as a 'linguistic' process, but needs to be examined focussing on how agents interact with different modalities and material tools.

To illustrate, let us consider how infants learn spoken interaction. To what extent is it 'language' that infants learn and to what extent it is just participation in essentially human interactivity? From the very beginning, infants are exposed to a variety of auditory, visual and tactile elements of spoken interaction, commonly in familiar environments. What children learn is how to navigate in their auditory and visual environments, how to appropriate the resources that are available for them and how to become active participants themselves. Language learning, in this sense, refers to a highly complex set of intertwining processes that involve different types of

sensory and motor action but also cognitive processes and social considerations. Children watch and listen, attend and observe, imitate and articulate. The main actors in learning spoken interaction are clearly human bodies – the infant and other participants – but also the material environment with its artefacts and its bodily comforts and discomforts. And while infants learn to be humans, they also over the early months and years learn to be humans in particular ways – learning "to do interaction" embeds the embodied interactivity but also the particular social and cultural norms and values that are attached.

The embodied processes of learning to do spoken interaction, however, are blatantly different from those that occur when children learn literacy, when they learn to read and write. Literacy means learning a new set of embodied processes and learning to operate with new sets of tools, often also in different environments. New types of linguistic resources are met on different arenas of writing and print and new embodied processes are launched (for an embodied view on reading, see Trasmundi & Cowley, 2020). Learners encounter visual language in printed books, magazines, advertisements in the linguistic landscape, hand-written words on blackboard, type-written texts on paper, computer screen or smartphone etc. Learning to write, respectively, involves learning how to use one or several of the optional material tools: pens, pencils, brushes, keyboards, that is, learning a new motor skill. Material artefacts are not genuinely external tools only, but rather, part and parcel of the learning process and the particular skill to be learned. Although children in literate societies are acquainted with literacy from their infancy on, the skills are often ultimately learned at school and in its classrooms and are associated with formal instruction. Literacy therefore also embeds that children acquire new sets of norms, values and expectations. The geography of the classroom, its seating arrangements, its activities using either the blackboard, tablets or pencil and paper, its textbooks and other materials do not only give young pupils a new material environment but also a new model for social action: new ways of languaging are associated with new norms and new ways of talking about language.

This means that learning "to do spoken interaction" involves particular sets of embodied processes as does also learning "to do literacy" – and that each modality has a variety of "sub-genres" that are defined by different contexts. This is something that should definitely be observed in speculations about the nature of the know-how. It should be obvious that one 'linguistic grammar' cannot be responsible for the ability to cope with spoken, written and signed language and the multitude of their variations, but that somehow, the modality- and context-specific knowledge needs to be coded in one's knowhow.

Hence, as important as it is to assume an ability that helps language users *to operate across different social and material contexts*, it is also necessary to assume a capacity to operate *across modalities.* For example, the acquisition of literacy means that children do not have one set of language knowledge, but two kinds of know-how – and that they somehow need to relate these with each other. Thus beginning readers need some sort of understanding how the visually presented discrete entities of writing might relate with the continuous acoustic flows of spoken interaction they have been accustomed to listen to, and thus need to learn

"sameness" between certain visual signs and spoken utterances. Although human interaction is inherently multimodal – a flow of voices, images and sensations – today languaging involves not only several modalities but also several material means in parallel: one gives an oral presentation accompanied by visually presented slides, one listens and watches a film reading the subtitles at the same time, one checks one's calendar when talking with somebody and writes down an appointment, and so on.

My argument is, then, that it is not sensible to postulate such a database for human languaging that is acontextual but that it is as unproductive to assume an amodal set of know-how. It is therefore suggested that the resources that are assembled in one's repertoire embrace a link both to the (material) social context and to the specific (embodied) sensorimotor activity required. It may be needless to say that the outcome can be imagined only as a highly complex network that helps its user to cope with specific activity but that also helps to operate across the different activities: it embeds context-sensitive but cross-contextual knowhow, and similarly, modality-specific and cross-modal know-how.

Finally, I have preferred to speak of know-how instead of knowledge. This is in accordance with the speculation that personal repertoire could be further investigated as an assembly of *skilled action* (Cowley, 2018) that is connected both with human embodiment and materiality of the environments. That is, know-how is not 'know-that' knowledge – such as mental representations of language usually were conceptualised – but 'know-how' knowledge (Devitt, 2011). Hence, agentive know-how develops through a series of processes that can be analysed as *enskillment* (Newgarden et al., 2015). Unlike a 'grammar', a repertoire is *action potential* for *doing* languaging in its different material and embodied contexts. Language users are not Cartesian agents but embodied speakers that possess both species-specific and unique capacities and whose abilities allow flexibility and agility for moving in the complex networks of languaging.

Personal Repertoires: Materialism, Nature and Nurture

Personal repertoires, being *chronotopic*, show traces of the learner's trajectory. The trajectory is not a straightforward path but rather a dynamic, criss-cross meshwork that is attached to different environments and modalities. Above, I proposed a view of repertoire as a collection of material and embodied means, described language learning as enskillment and discussed personal repertoire as an assemblage of skilled action. However, it seems evident that there are differences in the ways the know-how develops in naturalistic and formal environments. While agents in "natural" environments often learn by, e.g., spontaneous observation and imitation, in "formal" environments they are more or less rigorously instructed.

The differences between nature and nurture are by no means categorical. Informal environments, such as family interaction, can be highly instructive whereas formal environments offer many opportunities beyond teacher talk and teaching materials.

A more noticeable difference between formal and naturalistic environments is that the normativity of the school frequently offers an interpretation of "proper" that differs from the casualties of everyday interaction. Duly, while it is true that at school children learn to sophisticate their spontaneously acquired skilled action and that they acquire new skills, they also may be exposed to new ways of talking about language. This talk may recycle language ideologies that, e.g., conceptualise language exclusively in terms of national languages, that define native speaker competence as the ultimate goal of foreign language learning, that devalue multilingual activity or that subscribe to overall prescriptivism. Some of these ways of talking may echo highly conservative views on language and, moreover, views that are in no way substantiated by contemporary research. If these are offered as authoritative views, they neither enhance the students' own language awareness nor their agency, but instead, present them a prescriptive model to imitate.

Hence, the ways in which languages are talked about and taught at school and other institutions are highly significant, both to individual learners and to the society. Any instance of interactivity is constrained by sets of underlying values, norms and power relations, and personal repertoires emerge from circumstances that either give or deny access to different resources, means and tools, and that produce (in)equity and (in)justice (Badwan, 2021). These issues, most explicitly, intertwine with social and material realities, and ultimately, with ethic concerns (Pennycook, 2018). Finally, while ethical and political considerations apply in any context of language studies, it seems reasonable to suggest that they are particularly relevant for researchers and practitioners concerned with practices of language education (for views on language education that highlight ecology and materiality of learning, and see its entanglement with social issues, see e.g. van Lier, 2004, 2007; Canagarajah, 2018a, b; Toohey, 2018; Badwan, 2021). One obvious example is textbooks: while they are material artefacts that provide many kinds of lexical, grammatical or textual affordances for learning, at the same time they mediate norms, values and ideologies through their representations and discourses (see Saarinen & Huhta, Chap. 9, in this volume).

Discussion and Conclusion

The notion of personal repertoire was intended for re-opening a discussion on how the individual agents participate interactively. I strongly feel that without going back to "psycholinguistics" and reconsidering its conceptualisations, the study of language learning and use is at a dead end. Individual agents are never sole actors and never alone on the scenes of languaging. Still, for me, personally, they are the protagonists. Above, my specific purpose was to re-ground the psycholinguistic arguments on the materiality of the world and embodiment of human agents. To represent people as Cartesian rational agents would mean to play down the significance of "the actuality of world" and people's "compellent, ought-to-be relationship to the world" (Bakhtin, 1993, p. 47).

It needs to be pointed out that an agentive view does not downplay the worth of socially oriented research, but rather, argues that views of languaging as dematerialised, linguistic social action are insufficient, particularly when theorising language learning and language education that involve deeply human interests and issues of wellbeing. Here, human languaging was approached as an ecology of eventing that does not deny the aspect we call social, but attaches it with embodiment of human agents and materiality of the environment and its different tools. The view can also be associated with Barad's (2007, p. 141) views that refute the *a priori* categorisations and that aims at understanding human agency within the ecology of eventing, and as a dynamic set of forces. Agency is not anyone's property but emerges in coordinations between human bodies, artefacts, and space.

One final disclaimer. Above, particular attention was given to the significance of materiality and embodiment. The argument does *not* suggest a naïve materialist and mechanist description of language learning and use as mere 'articulation' or 'writing' or the like. Nor does it subscribe to a view that "language resides in the brain". Clearly, however, there is a variety of "invisible" and "inaudible" dimensions that are present in interactivity. For example, while we can often watch, listen to and record how language users to relate with the present environment, we cannot necessarily see how they relate the *here-and-now* eventing to what is *not-here-and-not-now* (Steffensen, 2013; Steffensen & Pedersen, 2014; Cowley & Steffensen, 2015; see also Dufva & Aro, 2012; Dufva, 2019) that is, how they remember and anticipate. In most cases, we cannot see or hear how learning actually happens either, and similarly, while we sometimes see or hear an emotion, the meanings and values of conversation often lack a tangible manifestation. Simply, one needs to acknowledge that there exists a number of capacities by which language users are able to give meaning and to operate across time and space beyond their current environment: to remember, to categorise, to anticipate, to plan, to analyse, to give value, to imagine. Also these "immaterial" dimensions – that might be called cognitive and metacognitive - contribute to how agents operate. While embodiment and materiality ultimately may play a role in the development and use of these capacities, the issues, clearly, need to be explored and investigated in much more detail.

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Chapter 6
Material Change: The Case of Co-located Schools

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Abstract In this chapter, our context is a co-located Swedish and Finnish medium high school campus. From a posthumanist viewpoint, we study the roles and functions of language(s) in the semiotic assemblages of learning environments and ask how language(s) feature as an integral and material part of the change in the spatial repertoire of learning environments. We investigate how the principle of separation of schools by medium of instruction, typical for Finnish education, becomes undermined through a new multilingual soundscape in the co-located schools, where the school community hears and uses many languages every day. In doing this, the co-located schools not only challenge Finnish language ideologies and practices, but may also promote language learning in a more effective manner than structured, curriculum based 'planned' forms of multilingual education. In the long run, the placing of Finnish and Swedish language schools in one location has led to teachers' recognition of the new assemblage as a resource for pedagogical change.

Keywords Co-located schools · Educational change · Learning environment · Posthumanism · Schoolscape · Semiotic assemblage

Introduction

In an article of *Helsingin Sanomat* (HS), a major Finnish newspaper, the journalist Jussi Konttinen asks who decided to design Finnish schools as open spaces and why. He concludes that new pedagogical norms of e.g. collaborative, student-centred learning call for work in flexible groups of pupils and teachers.

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Further, the newspaper article argues that the old school buildings with permanent classroom walls do not enable such learning, because they are designed for static, set size groups and teacher-fronted teaching arrangements (Konttinen, 2020.)

Teachers might cling on the pedagogical tradition and thus resist reform initiatives (cf. Brooks & Waters, 2018) such as the promotion of co-teaching, mentioned in the new Finnish National Core Curriculum (NCC, 2014) in force since 2016. However, according to the *Helsingin Sanomat* article cited above, there is no explicit normative central policy behind the trend of building open spaces. Konttinen (2020) argues that the decisions are made by private school architecture developers. In the opinion of the developers cited in the HS article, a change in the learning environment by building open learning environments, will help break teacher resistance and has the potential to bring about the needed change in pedagogical practices.

In this chapter, which we approach from a posthumanist viewpoint (Pennycook, 2018), our focus lies on the roles and functions of language(s) in the spatial and semiotic assemblages of learning environments. Our goal is to investigate how language(s) feature as an integral and material part of the change in the spatial repertoire of learning environments with a focus on the undermining of the monolingual habitus and separation of languages in education. More specifically we ask, how changes in the physical learning environment initiate change in language practices and language ideologies circulated in the given school community?

The significance of spatial arrangements, material objects (e.g. furniture), things, embodiment, senses and their potential with change in educational practices have been recognized by school environment developers in Finland (see Luminen et al., 2018; Konttinen, 2020) and elsewhere (see e.g. Chiles & Care, 2015; Brooks & Waters, 2018). However, language(s), their presence, forms of use and functions for learning have barely been included in such general level discussions on developing learning environments and their design.

From a posthumanist perspective, Pennycook (2018, p. 43) proposes that things or objects may have (partial) agency (see also Muhonen & Vaarala, Chap. 3, this volume). In this framework, material objects play a crucial role (they have "thing-power", Pennycook, 2018, p. 53) in shaping the activities such as communicative routines in a given context. Practices, that is, "repeated social and material acts that have gained sufficient stability to reproduce themselves" (p. 53), as well as places, things, senses and bodies constitute the semiotic *assemblage* in which agency is distributed together with human intentions and competencies. Pennycook's idea of *spatial repertoires* of languages or communicative resources explains the distribution of agency further. That is, sociolinguistic repertoires enacted for instance on a busy marketplace are understood best in terms of "spatial distribution, social practices and material embodiment rather than individual competence of the sociolinguistic actor" (Pennycook, 2018, p. 47). Pennycook (2018, p. 54) notices that the idea of *assemblages* was developed partly as "an argument against an overemphasis on the stability of things and […] languages as systems." In this manner, an element of *change* in practices, or *fluidity* of language is always included in these assemblages.

Monolingual Habitus and the Separation of Languages in Education

The separation of different languages through and in schooling has a long history in language education (Gogolin, 1997). Typically, only one language operates as the language of instruction and administration nationwide. In most educational systems, the prevailing approach is to devote formal language arts classes to specific languages and, in the varied contexts of bilingual education, regulate how much each language is used in the teaching and learning of subject matter (see Gogolin, 1997; Piller, 2016; Gorter & Cenoz, 2017.)

On the level of curricula, the question of separation of languages is changing in Finnish educational policy documents. In the current Finnish National Core Curriculum (NCC, 2014), there is on the one hand, an emphasis on multiculturalism and language awareness, and on the other hand, passages stressing language separation (e.g. recurrent reference to *parallel* multilingualism). That is, cultural and linguistic diversity is conceptualized as the parallel or separate existence and learning of different languages and associated cultural identities. For instance, in the case of bilingual education the teacher is stated to have "a monolingual role in the group" (NCC, 2014, p. 154) and that "as the language of instruction changes, so does the teacher" (p. 154). In sum, on the ideological level there is change, but in practice the traditional language education policy, as described by Gorter and Cenoz (2017, p. 235), prevails: "When two or more languages are used at school, each language is usually assigned a specific time in the school timetable and it is often thought as desirable that only the target language is used in class." It is thus clear that language pedagogies in Finland are designed to reproduce the *monolingual habitus* (Gogolin, 1997). In other words, in a traditional (Gorter & Cenoz, 2017, p. 235) setup like the Finnish one, education is organized institutionally in a monolingual manner, following the principle of language separation and language isolation in bi/multilingual situations (Gorter & Cenoz, 2017), even though the participants of education are often multilingual (see also Piller, 2016, p. 31).

In a similar vein, Pennycook in *Posthumanist Applied Linguistics* criticizes the still current mainstream communicative language teaching method:

> Communicative language teaching assumes that to understand each other we should use one and only one language, thereby presupposing the notions that communication is the purpose of language, that single languages guarantee understanding and that intersubjective conformity is the goal of language education. (Pennycook, 2018, p. 104)

In other words, Pennycook finds the strive for total, diversity-free, shared and context independent understanding as the underlying reason for separating languages in education. On the top of its ontological and epistemological problems, this language ideology misses "the plurilingual nature of classroom interaction and communicative repertoires of both learners and teachers in multilingual settings" (Lin, 2013, p. 522, cited in Pennycook, 2018, p. 104). More recent theories of language include among others translanguaging, which promises a non-authoritative, genuinely multilingual, practice oriented and context sensitive approach to language

teaching (see e.g. Li, 2018). However, as Pennycook (2018, p. 130) warns, translanguaging pedagogies can easily get reduced to immaterial, cognitive bilingual activities, which often get further reduced to parallel use of two languages (see Heller, 2006).

Schoolscapes and Linguistic Soundscapes

There is now a fairly established field investigating how school premises and the material conditions are perceived and interpreted as facilitating or restricting school community members' actions or pedagogical design (e.g. Chiles & Care, 2015). Ideas by Luminen et al. (2018) on learning environments serving the pedagogical reform (e.g. co-teaching) introduced in the current Finnish national curriculum (NCC, 2014) are based on the concept of open learning spaces, but they also include insights on furniture, learning technologies and details such as the use of colours or the suitable materials for sound insulation. However, language is notably absent from the guidelines of designing learning environments. Thus, the most influential sources behind many recently built schools in Finland (cf. Konttinen, 2020) offer no guidance on how material change could provide a remedy to the problem of the monolingual habitus in education.

The concept of *schoolscapes* was introduced by Kara Brown (e.g. 2012) to build a theoretical lens to deal with language in materials terms. The concept of schoolscape has its history in the field of Linguistic Landscape research. Linguistic Landscape studies has begun as investigation of texts and later as study of broader visual semiotics. Schoolscape studies (see Szabó, 2015; Laihonen & Szabó, 2018) also look beyond policy and language practices and frame language and educational practices as spatialized and embodied.

The term schoolscape, similarly to Pennycook's (2018) semiotic assemblages, draws attention to the broad notion of varied and functional uses of language(s) (or (trans)languaging, see Jakonen et al., 2018) including traditional texts, images, sounds, digital literacy, mobile screens, virtual communication and all kinds of spatial and material arrangements of interaction in the learning environment (see also Muhonen & Vaarala, Chap. 3, this volume). Our rapidly changing and highly mobile contemporary world shapes and is shaped by the linguistic ecology of public spaces including schoolscapes. It is especially this spatial and material approach that can add significant insights to how schoolscapes shared by students and school staff with different language backgrounds can shape and enhance functional multilingual practices. Envisioning and designing learning environments that meet the needs of current and future learners both inside traditional school settings and outside them 'in the wild' is an essential task in applied linguistics and education research searching for new models of language teaching and learning (e.g. Kajander et al., 2015).

The emerging body of schoolscape studies has asked among others, what does the environment offer for learning, and how images, multimodal texts and artefacts can be used to enhance (language) learning and communication? The topics have

become very diverse (for an overview see Laihonen & Szabó, 2018) and capturing change has been among the most popular ones. For example, Brown (2018) has explored changes triggered by the introduction of a new national and regional language educational policy in Estonia. Menken et al. (2018) in turn report on a project redesigning the linguistic landscapes of twenty-three New York City schools which resulted in an impressive policy and language pedagogy impact. For example, a school acquired multilingual resources for the school library (p. 112). Such acquisitions enable learners to access demanding reading assignments, such as a novel, in their first language (p. 115). Further, some schools replaced their English-only program to bilingual instruction as a result of a chain of changes induced by the redesign of the schoolscape (p. 121).

In his attempt to break the hierarchy of senses and investigate significant aspects of languages and senses – as part of semiotic assemblages – Pennycook (2018, Chap. 4), introduces the study of different *scapes* such as sensory, semiotic and linguistic landscapes, smellscapes, soundscapes and skinscapes. His research program manifests a recent extension of Linguistic Landscape research reaching to other senses, such as smell, touch and taste. Following Pennycook (2018, p. 58) seeing and hearing have been considered as "higher" senses in comparison to smell, touch and taste, which have been long neglected in research. However, there have been few studies on the soundscape either. According to Scarvaglieri et al. (2013, p. 62), soundscape has been mainly studied from the perspective of acoustics. Human voices have been mentioned most often as disturbing noise, which should be controlled by the use of noise absorbing materials and other solutions (Mäkelä et al., 2018; Luminen et al., 2018). However, according to Scarvaglieri et al. (2013, p. 644): "it is linguistic action that serves as a bridge between a physical space and its soundscape and the social space in which people live and interact". Backhaus' study (2016), investigating the pragmatics of English railroad announcements in Japan and Scarvaglieri et al. (2013) and Pappenhagen et al.'s (2016) investigation of "oral language diversity" at different districts of Hamburg, have been among the few examinations of languages in the soundscape yet. This chapter will extend the notion of schoolscape to include the soundscape as well.

The Case of Co-located Schools in Finland[1]

Finland is officially a bilingual country. Countries with more official languages typically have educational systems based on separation by the language of instruction (see Gorter & Cenoz, 2017). In the case of Finland there is a Finnish medium and a Swedish medium educational system, and Finnish-medium and Swedish-medium institutions typically have separate campuses. This might be the only way

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[1] Our ongoing research on co-located schools has been carried out in co-operation with Kati Kajander, Tuuli From, Fritjof Sahlström, Riikka Alanen and Hannele Dufva. We are grateful for their input to this chapter.

to provide equal opportunities for education for all speakers of the official languages and to shelter the lesser used national language, Swedish, from language shift to the language spoken by a numerical majority of inhabitants, Finnish. However, as a result of local economic exigency in Finland, there are a growing number of cases – approximately 40 to date (2020) – in which two autonomously administered schools with different languages of instruction have been co-located in a shared physical space (see From, 2020.) These schools have varying degrees of shared infrastructure and interaction, though mostly not with the intent of advancing pedagogical change or multilingualism in Finnish school environments (see Helakorpi et al., 2013; From, 2020).

According to the Finnish regulations, a school can have only one language of instruction (and administration), and thus these co-located schools retain their institutional autonomy and they cannot formally merge due to the different languages of instruction (see From, 2020). Co-operation between the schools is not forbidden, and most often the co-located schools have begun to co-operate to a varying degree. For our research, co-located schools serve as accidental laboratories to examine the transformative potential of multilingual learning environments. Unlike bilingual programs, with parallel language policies and select pupil groups, co-located schools are non-choice and generated from economic concerns, making the use of educational spaces more efficient, which has been another justification behind the current trend of building open learning spaces in Finland (see Luminen et al., 2018).

Lack of Policy and Co-located Schools

According to the HS article we cited in the beginning of this chapter, there is "no law, official recommendation or a national political decision" behind the trend of building open learning environments in Finland. According to the journalist (Konttinen, 2020), in practice, architectural instructions, regulations and recommendations (cf. Luminen et al., 2018) have standardised open space schools in Finland. In the case of co-located schools there is no national policy either. Even though the phenomenon is quite widespread (ca. 40 shared campuses), the category of co-located schools has not been included in any policy documents. For example, Pyykkö (2017) in her comprehensive overview of the situation of multilingualism in Finland, does not mention co-located schools at all. There is no relevant pedagogical design in the Finnish National Curriculum either that could be connected to the tendency of co-locating schools. The only policy traceable behind the trend is the efficient and economical use of public-school space.

Even though no national policy or recommendations on co-located schools can be found, there have been political discussions, mainly among the Swedish speaking public and political circles in Finland. The debates on co-located schools have focused on questions of space (i.e. the issue of a sheltered *svenska rum* [Swedish space] for Swedish language) rather than pedagogical programs or curriculum. There have been certain concerns about maintaining the autonomy of Swedish

medium education in Finland and on the feared negative effects the sharing of premises might have on the language development of the Swedish speaking pupils (see From, 2020). However, the discussions have reached a conclusion that the effects of co-locating depend heavily on local conditions, and thus the decision should be left to the municipal level (see Slotte-Lüttge et al., 2013). Local educational policy, even though covert, resonates with Pennycook's criticisms of universalism (2018, p. 36). In other words, a national one size fits all policy most often fails to do justice to diversity and the local cultural and material relations.

Insights from an Investigation of a Co-located High School Campus

The empirical part of this chapter is based on the project *Multilingual school – multilingual learning environment* (see Szabó et al., 2018). We have been cooperating with two co-located high schools since their moving together in 2013. To generate data, we have initiated specific activities such as teacher- and student-led walking tours (see Szabó, 2015, Szabó & Troyer, 2017) on campus, and a video recording session with students with the goal of presenting the co-located character of their schools to external audiences. We have been partners in the self-reflection process of the school communities to foster the renewal of their organizational practices. Both schools are located in a town with a Swedish speaking majority population in Western Finland. In 2013, the Finnish-medium general upper secondary school (in Finnish: *lukio*) moved to the building of the Swedish-medium general upper secondary school (in Swedish: *gymnasium*). *Lukio's* buildings had poor indoor air quality and the town leadership considered moving the two schools together as the most cost-effective solution. The process of moving together took place on a tight schedule, the planning focused on infrastructure, facilities and spaces, and, according to our research participants, there was no plan on pedagogical co-operation (see Szabó et al., 2018).

Changes in the Linguistic Landscape and Soundscape

In our example, a Finnish medium high school (*lukio* hereafter) had moved into the Swedish medium high school's (*gymnasium* hereafter) premises. However, as mentioned above, no pedagogical or administrative merger of the two schools took place. Instead, they remained two autonomous schools with different languages of instruction and administration. The merger was material, but some spaces remained separated. Most importantly, the staff's premises were constructed separately. The distance between them was also considerable: the teachers' lounge and offices for the *gymnasium* remained on the top floor and the new teachers' lounge for *lukio* was constructed on the bottom floor. Also, the signs for the two teachers' lounges and

Fig. 6.1 *Keep the door closed!* in Finnish (top) and Swedish (bottom). (Photograph by Tamás Péter Szabó)

different offices have remained monolingual, Swedish only for *gymnasium* and Finnish only for *lukio*. According to From's (2020, p. 8) analysis of a similar case, the organisation of separate teachers' lounges enables the maintenance of separate social spaces and thus separate communities.

The co-located schools sometimes have separate classrooms as well (see Helakorpi et al., 2013; From, 2020, p. 6) for both schools, but this was not the case here. The schools shared most classrooms and all the larger spaces, such as the canteen and the gym. The signs in these locations were most often in Swedish, but also bilingual signs had begun to appear.

The sign on Fig. 6.1 has Finnish above Swedish. It appeared at the door of a storage room, mainly used by the Finnish medium school, since it was attached to an arts classroom used by a *lukio* teacher. Since the Finnish medium high-school moved into the building of a Swedish medium high-school this sign was most likely placed by *lukio* in the shared space. In this manner, the Finnish medium *lukio*, smaller also in size, indicates attunement in (re)construction of the schoolscape through the inclusion of Swedish in their signage. The movement towards bilingual schoolscape in such top-down regulatory signs indicates a change from separate spaces to a shared social space. On other occasions, signs in Finnish have appeared next to Swedish, which could be interpreted as symbolic occupation of a space.

The two posters in Fig. 6.2 can be found side by side in the school canteen. The posters are a part of *Vilkas* campaign by two major Finnish food companies promoting Finnish food products in canteens. Thus the images display vegetables and berries grown in Finland. They have a similar text in Swedish and Finnish (*Eat well, every day* in Swedish and *You can always eat well* in Finnish). The images display slightly different meals, typically lunch and breakfast. This kind of doubling of

Fig. 6.2 *Eat well, every day* in Swedish and *You can always eat well* in Finnish. (Photograph by Tamás Péter Szabó)

similar messages can be described as *parallel* monolingualism (cf. NCC, 2014; Gorter & Cenoz, 2017) and in this context the independent but parallel use of Swedish and Finnish can be read as occupying the space by two equal educational institutions. At the same time, the canteen was one of the spaces, which was shared by the schools both in principle and in everyday practice.

The posters contribute a multimodal message of what "eating well always/every day" could mean in the Finnish school canteen context, thus adding up an element of Finnish food and (parallel) bilingualism to the semiotic assemblage of a shared campus. In Finland, all high-school students are entitled to a free lunch, and consequently there are few commercial advertisements in these public-school canteens. These quasi-public posters thus seem to transmit an ideology of Finnish food as "better", that is, safe, healthy and tasty food. In general, such bilingual, but parallel visual schoolscape elements can already be seen to undermine the basic spatial ideology (see From, 2020) of keeping Finland's two national languages administratively separate as languages of education.

Looking at less institutional or top-down controlled signs and spaces, more multilingualism pops up. One example of a bottom-up schoolscape was photographed in a room called *Calmer*. It displayed student agency in two ways: it had been designed by a student and it was used and controlled by students.

The *Calmer* is a room, which was designed by a *gymnasium* student for an art project. It is a small room with some pillows and a blackboard. It has functioned as a place where anybody could retreat for a moment. The blackboard on Fig. 6.3 was placed in the room. Blackboards are typical objects in the school semiotic assemblages. In traditional frontal teaching practice, teachers write on a blackboard and students typically copy the texts. In this case, the writings on the blackboard display the agency of students and convey less formal, even graffiti type messages.

Fig. 6.3 Blackboard in the *Calmer* room. (Photograph by Tamás Péter Szabó)

On the calmer blackboard, there were writings in Swedish, Finnish and English, while most of the writing appeared to be in Swedish. However, there was no grouping of texts according to language nor parallel texts as in the previous top-down institutional signs. The blackboard indicates a spontaneous direction of change, creating a community across the language border indicated in the institutional schoolscape.

So far, we have investigated the visual dimension of languages in the learning environment. Next, we move on to the investigation of the *soundscape*. On the soundscape we did not gather systematic data due to lack of permits (cf. Scarvaglieri et al., 2013). We did, however, observe the soundscape during our fieldwork, and it was a frequent topic in the (walking) interviews (see Szabó et al., 2018). It seemed that the soundscape often displayed parallel monolingualism in a similar manner as the texts, but there were certain meeting places where a multilingual soundscape appeared as a rule, such as the canteen.

To begin with classrooms, the students had the possibility to take courses from the other high school. Only few students used this resource. Institutionally shared courses were organized in foreign languages (German, French and Russian), where there would not have been enough students to organize the courses separately (see Szabó et al., 2018). In the discussions, the language choice during such shared foreign language classes was mentioned as very flexible.

Various school festivities were the most often mentioned multilingual soundscapes. They were shared events, such as Christmas parties and (Finland) Swedish and Finnish traditional events, where the other school was invited as a guest. In the shared events, the program was in both languages, in some cases the Swedish

medium students performed in Finnish and vice versa. The events are examples of planned and even promoted multilingual new soundscapes as an outcome of co-locating the schools.

In the next example, we explore an everyday meeting place, the student's café, where a multilingual soundscape emerges in a less planned and structured way. The following excerpt was recorded during a walking interview. In the course of the interview, a daily meeting place and a shared project for the students of the two high schools is discussed between a student (S) and a researcher (R) in Finnish. The interviewee is a female student of *lukio*, she uses *us* and *them* to refer to students of *lukio* (*us*) and *gymnasium* (*them*).

Excerpt 6.1 Students' Café (Original Interview in Finnish) [R = researcher, S = student]

S: this is the students' café

R: yeah

S: the students' union runs it and it is open two breaks a day usually it is shared with the Swedish speaking so: that Monday Wednesday Friday is theirs and

R: yeah

S: Tuesday Thursday ours. it changes always in midterm.

R: are ya working there yourself

S: yea I do I am also here

R: uhhuh (.) how about (.) are the customers always the same though?

S: pretty much. Mostly people want coffee so-

R: and what you serve is the same

S: yeah (.) the Swedish speaking though might have more money they have then cash machines and such- otherwise it's pretty same we serve, there is coffee and-

R: what about do you speak Finnish when you are selling and Swedish when they are or what

S: well yeah, if people can speak Swedish that's the Finnish speaking they do speak with them but there aren't much communication going on it's more like just one coffee and-

R: that's it

S: yeah

R: what about the tables here do you sit mixed here?

S: yeah people do a lot of homework here in free periods and sit around during breaks

R: yeah ok

S: there is no-

R: are the Finnish speaking and Swedish speaking mixed [here]?

S: [yea they are] it connects a lot that we come to the same school many friends are connected Finnish and Swedish speaking-

The student recycles a typical historical and social (see Meinander, 2016) stereotype ('Swedish speakers are richer') circulated among the Finnish speaking population: "the Swedish speaking … have more money". This leads to a further

material difference in the student café when it is run by the Swedish medium students: "they have cash machines". In this manner, the student describes the semiotic assemblage (Pennycook, 2018) of the café. She also sets a contrast based on some nuances between *gymnasium* and *lukio* running the café in a somewhat stereotypical way; that is, constructing different social identities and thus slightly different assemblages through material means and objects, such as "having more money" or the "cash machine". It is remarkable that, in the view of the student, language or communication seem to play very little role in the café: "it's more like just *one coffee*".

The first function of the tables in the café seems to be study: "people do a lot of homework here". However, the answer to the question regarding whether the different student bodies mingle in this space ("are the Finnish speaking and Swedish speaking mixed [here]?") asserts that "coming" to the same school connects "Finnish and Swedish speaking" students, among which there are "many friends". It is such meeting spaces as the student café, during breaks, where the students can hear other language(s) spoken and used every day. It is also mentioned, by this *lukio* student, that the Finnish speaking will provide service in the café in Swedish "if they can speak it". This is a reference to the common Finnish-Swedish bilingual repertoire of local people, and it sets a contrast with the otherwise systematic discursive separation of Finnish and Swedish speakers which is re-constructed in the interview by both the interviewer (e.g. "Finnish speaking and Swedish speaking mixed") and the interviewee (e.g. "us" and "them"). In sum, it appears that wherever there is bottom-up shared space, the students mingle and fluid bilingualism (aka translanguaging) will appear. Furthermore, different objects, such as furniture (tables and chairs, sofas) seem to facilitate such meetings, and material objects (coffee, cash-machines, blackboards etc.) have agency or 'thing power' (Pennycook, 2018, p. 53) in shaping the communication in these spaces or discourses about them.

In the classrooms, the national monolingual language of instruction policy dominates (i.e., use either Finnish or Swedish but not both). As mentioned above, this policy is undermined regularly only during the shared less popular foreign language classes (e.g. Russian, French and German) in this co-located school campus (see Szabó et al., 2018). The "breaks" and "free-time" are mentioned as time slots when the students use shared spaces of uncontrolled communication and (potentially) fluid multilingual soundscape. Such spaces, and the fluid multilingual practices there have emerged beyond any curriculum or top-down policy, due to the spontaneous need to occupy a space and use material objects without paying attention to the language barrier (cf. From, 2020). All this has emerged because the two student bodies now share a building. The teachers' lounges, as mentioned above, were kept separate. This is in line with our general observation (see Szabó et al., 2018) that there is a clear difference between the teachers and students in their practices, policies and views about languages in education and how they have changed since moving together.

Language Ideological Changes Among the Students

In this part, we will briefly outline some discourses and views of the students and teachers with regards to the new developments of the roles and functions of language(s) in the semiotic assemblages of learning environments. How has the co-locating changed not only the schoolscapes but also the views and discourses about spatial language repertoires in education? According to a series of online questionnaire surveys among students conducted in 2013, 2014 and 2015 (Kajander et al., 2015), students had a mainly positive view of the change, although they reported that their use of languages, including Finnish, Swedish and English, was more diverse and flexible in out-of-school contexts than in the school. In 2016, when we visited the schools, there was a growing optimism with regards to the future of the co-located schools. For example, during walking interviews, students repeatedly claimed that being co-located is a resource, which could prove beneficial already for pupils in basic education. Furthermore, the students envisioned a school where there would be no single language of instruction. In the following walking interview, three *gymnasium* students discuss whether a future school would be co-located or have separate buildings.

Excerpt 6.2 Win-win (Originally in Swedish) [R = researcher, S = student]
R: if you think about both schools in the future, how will it be, will there be two separate buildings [or?]
S1: [I ho]pe n[ot]
S2: [no]
S1: [I hope not]
S2: [If I can have] a word no
S1: mm mm
S2: It is nice and it works
S3: It is unnecessary to have two
S2: um there is that too
S1: I think it is cheaper to have only one building than several: mm mm I see- I see only advantages so it- it is a win-win situation…

In this excerpt, the three students unanimously state that a co-located school is better than a single school per campus arrangement. The expressions "I hope" and "if I can have a word" indicate that the students do not have a say in the decisions on school buildings. That is, the semiotic assemblage in schools (schoolscape) is mostly the result of top-down, central (municipal or national) decisions (see also Brooks & Waters, 2018, p. 33). However, the comment "it is cheaper to have only one building" indicates that the official justification for moving together has been internalized by a student. There are also more emotional responses, "it is nice", and an overall conclusion that there are only advantages in having two schools in one building ("it is a win-win situation"). In this way, the students give preference to a shared campus and larger social space with more diverse and vibrant semiotic assemblages (Pennycook, 2018, p. 52.). Separate spaces, in turn, are deemed

"unnecessary" by one of the students. The language dimensions, such as the lack of protection for a minority language in a shared space, were not mentioned in this discussion.

Language Ideological Changes Among the Teachers

Both principals stated in the interviews that the teachers were not in favour of co-locating the two schools when it happened. From the teachers' perspective, the change was deemed as a significant one. According to Brooke and Waters (2018, p. 33), teachers most likely resist any large scale transformation of the learning environment and often prefer incremental reforms and continuity. In comparison to the students, there were many explicit and transparent discourses about language in the teacher interviews and language was mentioned as the major challenge in co-location. Teachers' professional identity was often described as fundamentally monolingual (cf. From, 2020).

In this bilingual environment, a teacher could still work monolingually, since teachers were not expected to use any other language than the language of instruction at work. As one teacher at *lukio* stated in an interview about his memories of change in the linguistic environment from the time before becoming co-located: "this work in Finnish-speaking schools was like, well it was in Finnish with Finnish speaking people and Finnish-speaking parents in, and so on, you know, it was the Finnish language". In this manner, the teacher is aware that in an otherwise bilingual, but Swedish dominant city, the Finnish school was a Finnish speaking oasis (see Heller, 2006, p. 114 for the idea of a school as a linguistic and cultural oasis), that is, a monolingual Finnish social space and community (cf. From, 2020, p. 9).

In a similar manner, the principal of the *gymnasium* at the time of the moving together stressed that the gymnasium was a monolingual Swedish language environment before the co-location:

> and I think that we should respect it, that they have been employed in a Swedish school, their work is entirely Swedish-speaking. Ah, then we have to say okay, that's the way. and we have also expressed it, mmhm, especially at the beginning, very clearly that you do not have to speak Finnish.

In sum, through the change of moving together into a shared building the professional identity of high-school teachers as monolingual professionals was made explicit. The fears were further exacerbated for example so that teachers were stressed about having to use the other language (Finnish or Swedish) with colleagues from the other high school. This could also have motivated the construction of separate teachers' lounges and the big distance between them, *lukio* on the bottom floor and *gymnasium* on the top floor. In this way, separate social spaces were created and maintained to avoid linguistic diversity in the language ecology of the teachers (cf. Pennycook, 2018, p. 134).

In 2016, after several years have passed since the co-locating, teachers' views have changed and the fears and presumptions about the change had turned to acceptance and among some to a curiosity and openness towards cooperation across the language border. Now, also some shared staff meetings have been organized to coordinate co-operation, creating a regular meeting place for teachers as well.

Mainly the principals have become to stress the discourse of having two schools in the same building as a resource for both schools. In an interview in 2016, one of them concluded:

> and really it's because we now had time for pedagogical planning. We can now plan together. and you know teaching and, let's say, use shared resources. In both sides teachers have really good qualities which you notice, if you keep your eyes open so ((laughs)), so it's worth taking the whole building into use picking the good sides of what there is.

In this manner, the principal is seeing the larger diversity of teachers as a pedagogical asset. The principal also suggests "taking the whole building into use", which can be interpreted as a maximal sharing of the material environment, instead of maintaining separate spaces. That is, resources and agency are understood as both human and material (cf. Pennycook, 2018, p. 141).

Conclusions

Our analysis of a co-located campus as collection of "local language practices and assemblages" and "the ways in which people, politics, place, economics, policy and things come together" (Pennycook, 2018, p. 142), indicates that a change in the material learning environment may promote linguistic diversity in education in a more forceful manner than structured, curriculum-based forms of designed multilingualism.

The new, more vibrant and diverse semiotic assemblage of a co-located Swedish and Finnish medium high school analyzed in this chapter was in general becoming more multilingual and flexible. The schoolscape contained bilingual top-down signs, indicating that some spaces, such as the canteen or the student café, were actively shared by two institutions with different languages of instruction. Top-down signs and teachers' language ideologies indicated a slow, gradual and cautious transformation, from the monolingual habitus and practices in the schoolscape as well as communicative practices and traditional educational language ideologies, towards an acceptance of bilingualism and opening up of spaces for community level bilingual activities (Pennycook, 2018, p. 130). According to the teacher interviews, bilingualism did not include the professional level. On a professional level, the traditional idea (see Gorter & Cenoz, 2017) of the monolingual role model of a teacher as mentioned in the Finnish National Core Curriculum (2014, p. 154), holds sway.

Bottom-up signs in a space controlled by students display fluid linguistic diversity, in other words, translanguaging practices. One token of transformation of spaces and typically normative objects to 'common' use (Pennycook, 2018, p. 139) can be seen in the emerging translanguaging practices documented on the blackboard of the *Calmer* (see Fig. 6.3), where no central authority appears to control the language practices (Pennycook, 2018, p. 139).

The student interviews in turn convinced us that the monolingual habitus in education can change already through a new multilingual soundscape, where the school community hears many languages every day. The shared, regular meeting places, such as the student café, were designed and transformed by the students and the material objects (e.g. furniture) and actions (e.g. buying coffee), where language as communication or as competences were argued to play a marginal role. This indicates that linguistic diversity is by no means conceptualized *as a problem* for the students unlike it was by the teachers in interviews.

The semiotic assemblages of bottom-up meeting places were not designed according to the language of instruction (such as classrooms) or separated ownership and location according to the institution (such as teachers lounges). Thus, they appeared to be more open to 'occupation' (Pennycook, 2018, p. 141) of the resources offered by the space and material objects there. This resulted in undermining the monolingual habitus of the national core curriculum and teacher profession, both defined by traditional norms of language use in education.

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Chapter 7
The Socio-Material Value of Language Choices in Mozambique and Finland

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and Sonja Kosunen

Abstract This chapter explores parental choice of language programs from a socio-material standpoint. It uses a DeleuzoGuattarian framework of smooth and striated spaces to understand how parents in Mozambique and Finland position themselves when making choices concerning their children's language education. We analyzed interviews from Finland and focus groups and policy documents from Mozambique to understand the materialities and social discourses that constitute parental choice. We found that in Finland, materiality as a physical space (e.g., school location) factored into caregivers' decision making when selecting schools for their children. In Mozambique, in turn, materiality as socioeconomic stability or advancement was a recurring theme. In the Mozambican context income and educational outcome (associated with Portuguese) were important factors for school/language choice, whereas in Finland social distinction was key. Based on our analysis, we draw conclusions about the nature of choice, arguing that a socio-material approach and the concept of assemblage are well-suited to understand the complexity of it.

Keywords Finland · Language choice · Language education · Materiality · Mozambique · Smooth and striated

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Introduction: Examining Choice

Although longstanding research in language education and policy has drawn a more complex picture, popular discourses persist that promote the ideas that parents choose educational pathways for (or with) their children, that students choose to learn a language, or that communities choose their language practices. Our chapter complicates this notion of choice. In doing so, we draw on social constructionism and new materialism to understand how parental or familial choices about schooling shape and are shaped by social and material realities. For this purpose, we examine interview data from Finland and focus groups as well as policy documents from Mozambique, asking how parental school choice, particularly in relation to language programs, is addressed in reference to the materialities and social discourses that impact this choice.

In Mozambique, local African languages[1] have traditionally been given little constitutional and societal recognition in comparison to the lingua franca Portuguese. In this context, a bilingual program with 17 local languages, driven by support from communities and families, illustrated and initiated a discursive shift towards a recognition of the different values of minoritized languages (Chimbutane, 2011). In Finland, where the core curriculum (officially) keeps curricular differences between schools minimal, teachers (in general) receive the same education and training, and student achievement does not differ greatly between schools (Sulkunen et al., 2010), school selection is often assumed to be a non-issue. Yet, as research has shown (Kosunen, 2014), school choice in cities, where possible, tends to be realized along the existing divides in families' social, cultural, and economic capital. Given these multiple and interacting language ideological and educational factors, both contexts lend themselves to examining language choice in education and analyzing the larger socio-material realities that motivate it. We do this within a framework that brings together social constructionism and new materialism in that it examines material and social/cultural values of so-called "foreign[2]" languages and lingua francas and the smooth and striated spaces (see next section, Deleuze & Guattari, 1987) from which educational choices are made.

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[1] African languages spoken in Mozambique are officially referred to as "national languages", irrespective of their geographic coverage or number of speakers.

[2] We use the term "foreign" with hesitation. We are aware of its negative connotations of non-belonging and otherness but use it to engage with a field where that term is still commonly used (foreign language education, American Council on the Teaching of Foreign Languages, etc.).

Theoretical Framework: Smooth and Striated Spaces

Some strands of what has been termed "new materialism" are trying to overcome the human versus non-human binary by understanding material and non-material realities as intertwined in a process of being and becoming together (see also Muhonen & Vaarala, Chap. 4, this volume). As part of such approaches, Deleuze and Guattari (1987) make a distinction between "smooth" and "striated" spaces. In their framework, the former refers to spaces that do not restrict physical movement and allow for multidirectional growth, "imagination and creative action" (Toohey, 2018, p. 31), such as an ocean. The latter, in turn, refers to "habitual, permanent and conventional knowledge" that direct physical movement into predetermined "paths planned by and used by others" (p. 31), such as a city plan. Our chapter examines the striated and smooth spaces of parental choice.

It is important to note that Deleuze and Guattari understand smooth and striated spaces neither as separated categories, nor as value judgement. Rather, they emphasize that the smooth and the striated only exist as hybrid, or, in their words, "exist only in mixture: smooth space is constantly being translated, transversed into a striated space, striated space is constantly being reversed, returned to a smooth space" (Deleuze & Guattari, 1987, p. 523). In addition, they stress that smoothness does not guarantee liberation or emancipation: "Of course, smooth spaces are not in themselves liberatory. But the struggle is changed or displaced in them, and life reconstitutes its stakes, confronts new obstacles, invents new paces, switches adversaries. Never believe that a smooth space will suffice to save us" (p. 500). This is echoed by Hodgson and Standish (2006), who, in their critique of the liminal and limited existence of smooth spaces in academia, remind us of Deleuze and Guattari's warning to consider smooth spaces a silver bullet: "The suggestion is not to seek smoothness as an endgame but to allow orientation towards becoming and uncertainty and to resist the smooth becoming striated" (p. 573). Similarly, our chapter tries to make visible how striation can be resisted or smoothness of educational choice can create opportunities for increasing social equity.

Given the interconnection between striated spaces and the emerging educational inequities found in the analysis in these two contexts, the interconnection between striation and inequity calls for further examination and discussion. Our chapter identifies school choices as striated and/or smooth spaces that regulate and allow, hinder or support movement, activity, and creativity. However, we also pay attention to how such spaces exist in hybridity, what options for transformation of striated spaces there are, and how a possibility of a smooth space can be turned into a liberating reality. This is particularly relevant in postcolonial contexts such as Mozambique where the prevalence of diglossic colonial language ideologies and practices continues to constrain the development of pluralist and inclusive forms of citizenship, including in education settings. Transforming striated spaces such as these presupposes recognising and critically addressing language related social inequities, thus paving spaces for social justice. In our analysis, we use smoothness and striation as both in a literal and a metaphorical sense. In reference

to material realities, it may, for instance, describe spaces or movement; in reference to social processes it describes possibilities for thought and action. The concept of materialities helps us bring together aspects of choice that are traditionally kept separate, such as spaces, discourses, (social, financial, and other) resources, and ideologies.

In line with our theoretical framework, our methodological approach is inspired by what Lather and St. Pierre (2013) have termed "post-qualitative research" (p. 629). Our chapter is an attempt to open our work for understandings of research(er) entanglements that puts into question what we have learned about research processes (as linear), data, researcher positions, (e.g. subject vs. object), and representation, to name a few (Lather and St. Pierre, 2013). Although our data was collected very much in a "humanist qualitative research" paradigm (p. 630), which centers the human researcher subject, sees them as separate from the "research object" or "research problem", and assumes a certain linearity of research activities (e.g., from planning to implementing to reporting), we also approach our work as a space of reflection and unlearning of what we have been taught, for instance about "choice" and "comparability" of data, and the idea of having to produce concrete "results" for implementation. We see our chapter as carrying characteristics of what Lather (2013) has described as "QUAL 2.0", "QUAL 3.0", and "QUAL 4.0" (p. 635) i.e. as research that is still "grounded in humanist concepts of language, reality, knowledge, power" (QUAL 2.0), etc. However, it also "begins to use postmodern theories to open up concepts associated with qualitative inquiry: validity, voice, data, empathy", etc. (QUAL 3.0) and also aims to "imagine and accomplish an inquiry that might produce different knowledge and produce knowledge differently" (QUAL 4.0) (p. 635).

Context and Data

We operate in a context that is shaped by many interconnected global processes, including but not limited to neoliberalism, neocolonialism, mobility/migration, globalization, and need for and lack of educational equality. These larger processes permeate all layers of society and thus also shape what languages are being taught and learned at local schools. Although we bring together two ostensibly different contexts, we look at them through the same lens as we ask how parental choice regarding their children's schooling manifests itself in terms of sociomateriality, particularly as smoothness and/or striation.

As chapter authors, we were navigating the data analysis and writing process between different national and institutional contexts and racial affiliations. As two white European women from Finland and Austria and a Black man from Mozambique, we are grappling with our positionalities in the histories and presences of epistemic colonialism, which operates, for instance, through the systematic (re)framing of data from formerly colonized countries through theoretical frameworks that were developed in the Global North. At the point of writing this piece,

we did not address our positionalities explicitly but found the sharing of work and ideas collaborative and fruitful. There is clearly more to be unpacked about how we are entangled in larger socio-political processes in such transnational collaborations.

Mozambique: Language Ideology, Policy and Education in a Post-colonial Context

Mozambique is a former Portuguese colony located in Southern Africa. The country became independent in 1975, after 10 years of armed struggle led by the *Frente de Libertação de Moçambique* (Mozambican Liberation Front, hereafter Frelimo[3]). According to the latest population census, Mozambique has a population of 27.9 million inhabitants, of whom 39% are illiterate and 66.6% live in rural areas (INE, 2019). There are over 20 African languages spoken in the country, in addition to Portuguese and a few foreign languages. Results of the 2017 census show that African languages and Portuguese are spoken by about 90% and 60% of the population, respectively (INE, 2019). In the absence of African languages that assume the role of a vernacular lingua franca, Portuguese has taken the place of the *de facto* lingua franca.

Data from the four censuses conducted so far (1980–2017) indicate that while the proportion of speakers of African languages as a first language is gradually decreasing, the proportion of speakers of Portuguese as a first language is on the rise, which can be taken as a sign of language shift from African languages such as Changana, Ronga, Chope, Chuabo, and Macua to Portuguese. As is discussed and substantiated in this chapter, the diglossic language ideologies, policies and practices that have been attested in post-colonial Mozambique, including in education, have a bearing on the expansion of Portuguese and on the relative retraction of African languages.

Post-colonial language ideologies and policies as well as views commonly held in relation to Portuguese and African languages in Mozambique still reflect the colonial monolingual legacy. Indeed, after 45 years of independence, Portuguese continues to be the sole official language of the country and the *de facto* language of education and socioeconomic mobility, whereas African languages remain minoritized and relegated to informal domains.

However, there have been some transformations since 1990, when for the first time it was enshrined in the Constitution that the State promotes the development and increased used of African languages in public life, including in education (cf. RM, 1990, Article 5). After that, other legal provisions favouring multilingualism and multiculturalism have followed. Among other things, the new discourses and

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[3] Frelimo is the main political party in Mozambique and has been in power since independence in 1975.

legal provisions on languages in Mozambique open spaces for the promotion and development of African languages and associated cultural practices as well as for sociopolitical participation. The introduction of bilingual education in Mozambique since 2003 is one remarkable consequence of this current openness of 'ideological and implementational spaces' (Hornberger, 2005) in the country. The bilingual programme adopts an early-exit model in which an African language from the catchment area is used as a medium of learning and teaching in the first 3 years of schooling, a role that is then taken up by Portuguese from grade 4. After transition, the model provides for continued study of African languages up to grade 7. Among other gains, Chimbutane (2011, 2018b) shows how the introduction of African languages in education has been enabling pupils' participation in classes and also expanding spaces for community participation and agency in education and language planning, in particular in rural areas, where Portuguese is a scarce resource.

Despite these enabling legislative and policy provisions in favor of African languages, substantial challenges remain, which jeopardize pupils' effective learning, including limitations in human capacity and scarcity of teaching and learning resources. These factors are exacerbated by the fact that, given the colonial legacy, African languages are still not "tied to material and symbolic wealth" (Stroud, 2001, p. 351). This situation explains, at least in part, why many parents and guardians opt out of bilingual education even in cases when they value and are keen to preserve their heritage languages and associated cultures.

Finland: Language Choice in a Public School System

Finland is one of the Nordic countries with a population of about 5,5 million and two constitutionally supported national languages, Finnish and Swedish, of which the latter is spoken by about 5.6%. Other minorities include the Indigenous Sami-population, Sign language users, and long-established minorities of Roma, Tatars, Jews, Karelians, and Russians. In 2018, about 7.1% of the population had a first language other than Finnish, Swedish, or Sami (Statistics Finland, 2019).

Finnish comprehensive education is known for its relatively uniform educational system and has a reputation for high-quality teaching for all (Antikainen, 2006), although critical voices exist (e.g. Kosunen & Hansen, 2018; Seppänen et al., 2019) and recent studies have pointed to different forms of educational segregation (Bernelius & Vaattovaara, 2016; Kosunen et al., 2016; Berisha & Seppänen, 2017). As the educational governance in the country is decentralised, exploring the practices city by city becomes relevant.

Previous studies (e.g. Seppänen, 2006; Kosunen et al. 2016) have shown how school choices function as a distinctive mechanism in terms of social class background in Finland. School choices were facilitated by the Basic Education Act in the end of 1990s. With less than 3% of independent schools (which are fully state-subsidized), the Finnish school landscape is usually considered to be public

(Seppänen, 2003) and the difference between public and private institutions is not typically considered a relevant point of analysis (see Seppänen & Kosunen, 2015). Nevertheless, research has shown that distinctive choices are made between public institutions, which means selection and selectivity do play a role. The central mechanisms of selection known thus far have mainly been examined in the contexts of programs with a special focus such as mathematics, music or arts. For these, schools may use aptitude tests to select and group pupils based on their scores (see e.g. Seppänen, 2006; Poikolainen & Silmäri-Salo, 2015). One strategy that has received rather little attention, even though it produces almost as much selection as other forms of focus classes (Kosunen et al., 2016), are the language choices during primary education. In our case city, Espoo, in 2009, 8.3% of pupils studied Swedish, 2.9% French, 5.2% German, and 0.2% Russian as their additional (i.e. non-compulsory) language ("A2-language"). (Education Statistics Finland, 2019).

Methodological Approach

Data from the Mozambican context was taken from a larger research project called *Comunidade Moçambicana Bilingue* – 'Mozambican Bilingual Community' – 2015–2019, where 270 bilingual students from high education level responded to a questionnaire and 53 parents participated in focus group discussions (FGD). The group of students, identified as the post-independence generation, comprised participants between 18–40 years of age and the ages of parents ranged from 40 to more than 60 years. Data was gathered in three urban areas in Mozambique – Maputo, Xai-Xai and Quelimane. This chapter only considers data from focus group discussions with parents. Topics for focus group discussions included, among others (1) the value attributed to Portuguese and African languages, (2) parents' perceptions and attitudes about their children's competence and fluency in African languages, and (3) parents' perceptions and attitudes towards language shift from African languages into Portuguese. The following objectives were set for FGD: (1) to characterise the attitudes and perceptions of parents in relation to Portuguese and African languages; (2) to identify the factors that could have contributed to parents' choice of language(s) for their children's socialisation and formal education; (3) to capture insights that could help understand and explain different sociolinguistic dimensions characterising the post-independence generation, such as language shift into Portuguese, erosion of their African home languages as well as their attitudes and perceptions about Portuguese and African languages; and (4) to collect parents' opinions about actions and/or strategies that could be adopted in order to promote the use and maintenance of African languages and to inform the development of language policies that are inclusive of African languages in Mozambique. The rich data gathered through FGD is suitable for the present study in particular considering that it reveals how parents' choice of their children's language(s) of socialisation and formal education is strongly

influenced by micro-level socio-political factors, including the unequal symbolic and material value of Portuguese and African languages in societal linguistic markets. On average, FGD lasted about 1.5 hours and were conducted in Portuguese and/or in African languages, based on participants' choice. The encounters were audio recorded and fully transcribed.

The Finnish data stems from a larger research project (Parents and School Choice, Academy of Finland 2009–2013), for which 96 parents of 12–13-year-olds were interviewed. The children were about to enter lower secondary education within the comprehensive school system. The interviews lasted for about 1.5 hours each and dealt with educational choices in general, but especially the recent choice of lower secondary school and the embedded strategies. Themes such as the way to school, moving around in the urban space, friendships, school-wellbeing, willingness to apply for focus classes and language choices were discussed. Interviews were recorded and fully transcribed. It is important to note that our goal here is not to juxtapose two comparable contexts, but rather to examine a phenomenon from different viewpoints. We are interested in how language operates in relation to parental choice in different educational and national contexts.

Transcriptions from both contexts were analysed thematically. The analysis was informed by the theoretical framework of smoothness and striation, which we operationalized by scanning the data for references to experienced restrictions or facilitations of material and social movement, including for instance spaces, objects, social dynamics, and financial resources. This process included a close reading of the data followed by an identification of recurring themes, such as "physical spaces", "financial matters", and "child wellbeing", which we then reviewed, collapsed, and merged to best represent the data and speak to the following two research questions:

1. How does parental school/program choice interact with smooth and striated socio-material realities?
2. What role does language play in this process?

In the following, we present the findings from the two contexts and show the ways in which language operates as a matter of educational choice in socio-material realities.

Findings and Discussion

Parents' perceptions of a school or the value of a language have a bearing on the choices they make for primary socialization and formal education of their children. The following section offers an analysis of the most common themes around language choice in parental discourses.

Materialities of Portuguese and African Languages and Parents' Educational Choices in Mozambique: Affordances, Challenges and Dilemmas

Parents' Perceptions and Attitudes About the Value of Portuguese and African Languages

Overall, for the parents who participated in focus group discussions, Portuguese is important as an instrument for access to formal education and socioeconomic mobility as well as a lingua franca and symbol of national unity. In contrast, African languages are perceived as symbols of ethnolinguistic identity, repositories of traditional values and practices, and as vehicles of intergenerational communication or intra-ethnic integration. We use a few interview excerpts to illustrate some of these perceptions and constructs.

> I think that the Portuguese language is very important to our society. This is because… for example, there are many languages in our country. So, by using Portuguese we can easily understand each other. Even in this room where we are, each of us has his/her own mother tongue. In this context, the Portuguese language is what unites us, is what allows us to have a common goal. (LM, 02/10/16)

For this participant, Portuguese emerges as the unifying language of the Mozambican nation, a notion that epitomizes the colonial and post-colonial discourse on multilingualism as a problem (cf. Chimbutane, 2018a, b) and identifies the colonial language as the solution that holds together the post-colonial nation-state building project. Portuguese was also described as the language of modernity and progress, as defined in colonial and Western terms.

> The Portuguese language is valuable because it opens us new horizons, provides us knowledge. (…) Acquiring knowledge in Portuguese is easier because one can learn faster. If, instead of Portuguese, you use our heritage languages, then learning becomes very difficult. The Portuguese language makes things easier both at home and at school. (FZ, 11/08/16)

For this parent, Portuguese is the language that opens up new horizons and allows fast and easy acquisition of knowledge, here problematically understood as formal, Western knowledge. In contrast, heritage African languages are assumed to be inadequate vehicles for acquisition of the sort of knowledge that the speaker regards as legitimate, allegedly because these languages make the task difficult. Again, this excerpt echoes the colonial view of African languages as inappropriate media of formal education and the construction of African knowledge as backwards, when compared to the assumed 'modern' and 'progressive' Western knowledge.

The excerpts and analysis provided so far may lead one to conclude that the parents interviewed or the Mozambican people in general neglect African languages and associated cultural capital. This would represent a striated perspective of (post)colonialism, in the sense that citizens' perceptions and attitudes are formatted in such a way that Portuguese (and not African languages) and associated cultural and symbolic capital are the legitimate conditions for citizenry and access to material rewards. We understand this alignment with (post)colonial thinking as the striated

path that has been predetermined by hegemonic forces and restricts parents' movement of thought and action as it centers around Portuguese as condition *sine qua non*. However, as will be shown below, while negative perceptions and attitudes do exist, the overwhelming majority of participants in the study support the promotion and preservation of African languages and associated cultures. Salient in the following excerpt is the essentialist view of language as a symbol of identity and its link with ones' heritage culture.

> I think that our heritage languages are very important. First of all, a language is the symbol of ones' identity. So, since language is an element of identity, then it also identifies us with our culture. When we underestimate our language, we are automatically underestimating our culture. (IL, 4/10/16)

In addition to the identity symbolism, the following excerpt brings another salient role often ascribed to heritage African languages – the social integrative role.

> In my view, in addition to identity, our languages also allow communication between the child and his/her parents and grandparents. This is because, sometimes our children… they like to speak Portuguese but their grandparents can only speak a dialect [heritage language]. (OU, 4/10/16)

As is often the case, since older people, in particular from rural Mozambique, do not speak Portuguese, African languages emerge as the vehicles that allow communication among family members of different generations. Therefore, in order to communicate with part of their family members and be integrated in all family networks, in addition to Portuguese some parents pass their African mother tongues to their children, even if these are not the first languages that these new generations acquire.

In all, although African languages are certainly valued, the striated perspective of (post)colonialism remains intact by juxtaposing Portuguese and African languages in these ways. Against this backdrop, parents' choice of Portuguese as the language of socialization and formal education of their children can be considered an adaptation strategy to the striation of monolingual and assimilationist language policies and practices in place since colonial rule in Mozambique. In this sense, the possession of Portuguese and associated symbolic and cultural capital is seen as a resource that allows unrestricted navigation of societal spaces, a way of smoothing striated spaces. As we will see, smoothness exists within these parental choices as well.

Parents' Language Education Choices and Motivations

As parents' choice of language(s) of early socialization and formal education is influenced by the perceived sociomaterial value of Portuguese and African languages, the view of Portuguese as the language of legitimate knowledge and socioeconomic mobility is the main driver of parents' overwhelming preference for Portuguese. The need to assure academic success to their children emerges as one of the reasons why parents prefer to socialize and educate their children in Portuguese:

> We needed to look forward. We never know what comes next. It [the choice for Portuguese-medium education] was to try to get them run faster than we did, you know! Since the use of two languages [a mother tongue and Portuguese] made us face huge difficulties in school. We know those difficulties very well. We tried a shortcut for our children. And the shortcut resulted in this, you see! (BP, 13/05/16)

This participant is an example of the older generations of parents who started schooling without or barely speaking Portuguese and faced learning difficulties, which prevented many of them from finishing even primary education. Underlined in this account is the perception that their African first languages or their bilingualism were the seed sources of their academic failure. To avoid that their children went through the same challenges, these parents opted for socializing their children in Portuguese, hoping that this would be the way to get their children "run faster" than they did, i.e. to learn Portuguese and school content in this language as quickly and as easily as possible. However, in the last part of the excerpt, when this parent concludes that "the shortcut resulted in this, you see!", he seems to regret the policy of exclusive use of Portuguese in the education of his children. In the focus group discussion from which this excerpt was taken, he (and other parents) expressed concern about the fact that by using Portuguese only, their children could not interact with some family members who were sole speakers of African languages and some were struggling to work in public sectors, including the health sector, in which knowledge of African languages was key for effective service delivery. These can be regarded as negative socio-material effects of the assimilationist language-in-education policy adopted in Mozambique since colonial rule.

Adding to the previous analysis, the excerpt which follows shows how parents perceive that knowledge of Portuguese, academic success and socioeconomic affordances are intrinsically linked.

> Portuguese is a language that I like so much! That is why I sent my children to school for them to learn it. Today this language is even useful to my grandchildren, who were born by my children. Why I did this? I did this because our heritage language does not allow you to get a graduate or doctorate degree. That is just a language that is part of our tradition, a language that they must not forget. In contrast, with the Portuguese language they can get a job, can progress in their professional careers, can earn good salaries and can manage to take care of me, as I am aged. I did not use my money to get the shoes I am wearing now. Whose money was that? It was my grandchildren's money. Why? Because they learnt the Portuguese language. Portuguese will help them in their future lives. Tomorrow you will get a graduate or doctorate degree and you will be somebody in life. Why? Thanks to the Portuguese language. (MM, 05/6/16)

This account substantiates the material view of Portuguese as a necessary condition for education success and socioeconomic mobility. As the participant argues, Portuguese is the passport to higher education degree success, professional advancement and well-paid jobs. He presents his grandchildren as examples of education and professional success, which allows them to take care of him. Portuguese is viewed as the language that allows navigation in the striated social and socioeconomic spaces blocked to sole speakers of minoritized African languages. The excerpt also raises crucial questions about the negotiability of social and material realities (Ennser-Kananen & Saarinen, Chap. 1, this volume). In a sense, the family

operated and hoped to excel within the striated space of asymmetrical, (post)colonial language hierarchies. A plethora of aspects led to their choice: their own schooling experience, the available programs, their cultural values and backgrounds, the societal and communal discourses, and their socioeconomic realities, to name a few. Amidst these factors, we argue, their options for creating a smooth space, from which unconventional or creative choices can be made, were very limited. This points to the idea that smoothness is not available or negotiable for all people and communities in the same way, an important aspect to consider in questions of choice.

Despite the strong tendency to the exclusive choice of Portuguese, there are also parents who tend to opt for a bilingual or multilingual language policy – Portuguese and African language(s). This is illustrated through the following account:

> Well, I especially choose the Changana language for primary socialization of my children so that they can get used to speak this language, as it is part of our tradition. I don't forbid them from learning Portuguese… that is why I send them to school so that they can learn Portuguese. No, I don't prevent them from learning this language… they can carry on! In fact I even feel happy when they can speak and have knowledge of this language. However, I wouldn't like to see them forget their language… the home language. (JM, 05/6/16)

This excerpt illustrates further the construction of African languages as symbols of ethnolinguistic identity, as part of the tradition that needs to be preserved. This is part of the chief motivations for primary socialization in these languages, hence the need to add Portuguese for instrumental reasons. That is, for some parents the policy is not to choose either Portuguese or African languages, they want their children to learn both although for different reasons – Portuguese for perceived symbolic and instrumental reasons and African languages more for symbolic reasons. This perspective substantiates the new materialism view that material and social realities are not mutually exclusive but intertwined in a process of being and becoming together. Through a lens of smoothness and striation, we have seen so far that some parents are quite intentional about making educational choices for their children that follow the striated linguistic hierarchies that colonial processes have put in place. However, these choices are neither "free" nor are they absolute. The expressed doubt and regret as well as the limitedness of available choices make it clear that in the absence of smoothness, which would be the freedom to make creative, unconventional choices, choosing striation is neither completely satisfying nor completely voluntary.

Challenges of Using Minoritized African Languages in Education in Post-colonial Contexts

This perceived value of Portuguese and its associated capital makes it a much sought-after language, which is underscored by the increasing proportion of Mozambican speakers of Portuguese as a first language. As Mufwene (2004) has pointed out, language shift and language death result from individuals' and communities' adaptive responses to changing socioeconomic ecology, including the perception that the acquisition of a high status language is crucial for their survival.

Thus, parents' choice of Portuguese can be taken as an adaptive strategy to striated social, socioeconomic and political spaces that have constrained and minoritized languages and their speakers.

The evidence presented in this chapter suggests that, despite the convincing educational and social advantages of bilingualism/multilingualism as presented in the literature, these still need to draw on and reflect the experience of the post-colonial contexts. Specifically, there is a need for convincing evidence showing that having an African first language or being a bilingual/multilingual does not hinder the acquisition of Portuguese and associated cultural and material capital but, on the contrary, is an enabling condition. For that to happen, bilingual schools in Mozambique need to produce convincing results showing that in post-colonial contexts students are better-off when they are educated bilingually. Such results would not only fulfil Mozambican parents' desire to see their children equipped with the sought after Portuguese language and associated cultural capital but also their desire to preserve their ethnolinguistic identity and integration. In addition, African languages and associated cultural capital would start to be perceived as valid forms of material and immaterial capital, with currency even in the job market.

Opening up constitutional and/or policy spaces for African languages is, while an important step, not enough (e.g. Bamgbose, 1999; Kamwangamalu, 2009; Bamgbose, 2011; Chimbutane, 2018a). Education programmes based on low-status languages, such as African languages in Mozambique, will only be condoned by parents if they lead to the acquisition of the resources equated with upward socioeconomic mobility or, at least, if they can lead to the reconstruction of low-status languages as valid forms of cultural capital in mainstream markets. Therefore, as argued in Chimbutane (2011, 2018a), in order to win the hearts of an increasing number of speakers of African languages, especially those of middle class parents, who tend to give greater weight to socioeconomic mobility than to language maintenance, bilingual programmes involving the use of heritage languages have to be designed and implemented in such a way that, in addition to the symbolic/heritage language, children achieve high levels of proficiency and academic attainment in the much sought-after language(s) of capital value. In other words, in order to smoothen the striation of language use and ideologies in postcolonial contexts, it is paramount to assign low-status languages an economic value and make them appealing in the market places alongside high-status languages. This, of course, has to go hand in hand with strengthening the position of the speakers of undervalued languages.

Language as a Distinctive Strategy of School Choice in Finland

In the Finnish context, school choice in comprehensive education has been a widely studied phenomenon over the past decade (see e.g. Seppänen et al., 2015; Kosunen et al., 2016). Attending classes with a special focus means that the pupils take an aptitude-test and, in case they are admitted, may join a selected group of peers and

stay in this cohort in all or most subjects throughout their lower secondary schooling. The schools are allowed to test their pupils in the subject matter related to the school's focal area, such as mathematics, music or sports, and select their student population based on these tests. The choice of focus classes has been considered a way of creating social distinction within the otherwise fairly uniform comprehensive school system, as it is known that the ones that exercise their options, in Finland as well as internationally, are families from higher social classes, particularly upper middle class and upper class (see Seppänen, 2006; Kosunen & Seppänen, 2015; Seppänen et al., 2015).

Previous findings (Kosunen et al., 2016) indicate that exactly as shown a decade earlier (Seppänen, 2006), some of the schools function as magnets (pull-factor) and some as schools to be avoided (push-factor). Often the pull-factors are related to an interesting profile and a good reputation of a particular program with a special focus (see Kosunen, 2014; Kosunen et al., 2016).

> If they asked me about my own children, which choice would I make… Let's put it this way: I think that in [the local school] where [child 1] is I'm really happy that he's in a hobby-based [class with a special focus], in comparison to being in just any of the classes in that school. But when I think of [child 2] in another school… I think in there it does not make a difference in which class you are. (Heikki, upper middle class)

> The [classes with special focus] are slightly more selective, in all ways. What can you do ((laughs)), that in a way, to put it bluntly, but it is what it is, the leftovers are left in the regular class and there you have all sorts of people. (Laura, lower middle class)

Parallel to the Mozambican case, we understand striation in the Finnish context as parental choice of regular schools and programs without any focus classes or aptitude tests. As the excerpts above show, this is sometimes pejoratively associated with being part of the "leftovers" and of "all sorts of people". In turn, part of smoothness is not merely opting into focus strands, but having the option not to do so, for instance because, according to "Heikki", in some schools all strands offer high quality education, so that "it does not make a difference".

The choice of a class with a special focus means that in some cities, unlike in general, the families become responsible for covering the costs for travel to school. This may turn out to be a material obstacle to some families, especially for those with limited economic resources and many children.

> First of all I believe that parents that are not that well educated or are in a weaker social position, they don't want to or support their children into anything with something special. Those kids go to the comprehensive school in the local school, end of story. They don't even think about it. Those parents don't care to find out or think about transport, how to get there and support the child, but the child just goes to school and period. So in that case yes, it is the kids of the so called better families that apply for those emphasized classes. (Hanna, middle class)

In this excerpt, Hanna sees striation as due to lack of education and lack of care. In other words, she associates what we call striated decisions with ignorance that is at least partly self-inflicted. This discourse of smoothness and striation as a choice also

includes material realities, the implication being that even transportation issues can be solved by "finding out", "caring", and "thinking".

Even if this mother describes the social and cultural components related to the choice, also the economic and material resources related to this question play a role. In the Finnish context, it is common for students as young as age seven to commute to school on their own. What is noteworthy is that in the capital region, where educational governance is decentralized and all cities are responsible for schooling in their area, sometimes the way to the nearest school in the hometown is longer than to the one in the next municipality. The possibility of applying to another school than the local one made the everyday-life in some families easier due to material, traffic-related reasons.

> Well, there is this physical feature that our daughter can take a bus straight from next to our house to in front of the school. That she can take a bus, and that was an important feature as well. Just as far in [the home city] there would have been a high school, but it would have been a lot more difficult to transfer there. (Paul, middle class)

In Paul's case, material realities (transportation, proximity) heavily influenced the opting for the language-focused program. Interestingly, although material and practical realities shaped the family's decision, their choice is not associated with lack of information/education or care because it led to the more socially valued educational choice. The middle-class family managed to utilize the system of educational choice in a way that makes the everyday-life of the thirteen-year-old teenager easier. Reasoning related to the socially distinctive power of a selective choice was absent in this discourse that was built around the theme of traffic. Just as well, in areas where the difference between schools were not perceived as big nor were there schools with a bad reputation, the practicalities and material surroundings of the schools were emphasized in the choice discourse:

> We decided to move both of our kids to [the nearest, new] school, as it is 100 meters, so what sense would it make to send children somewhere there over the roads. (Mikael, upper middle class)

In some of the cases the officially nearest school based on local school allocation policies would have been for example on the other side of a motorway, even if nearby. Many parents disliked the idea of children either crossing or going under bridges of these huge motorways, especially so in the winter time, when it is dark in Finland both in the morning as well as in the afternoon. In these cases, different options of influencing the school allocation were considered. One of them was the choice of a class with a special focus.

Mikael reports on sending his children to the nearest school for reasons related to materialities (physical proximity). Similarly to Heikki's case above, the fact that his discourse is relatively free of social consideration may be due to having only good options. This could be described as smoothness: the ability to make choices relatively free from social striations and being able to consider instead the material realities of the neighborhood.

Another point of distinction in the Finnish school choices, used also in this manner, are the language-choices the pupils and their families are conducting within

comprehensive education. Unlike in the Mozambican case, these choices do not refer to local but foreign languages.

> In that [catchment area] … there are these moments of anxiety and slightly tactics … for example we have told our [child] who's going to high school, that he should not drop the [intense language class], as it may be, that then they will admit him to the [less favored class]. (Mari, upper middle class)

When thoroughly investigating the socio-economically distinctive power of a foreign language choice (Kosunen et al., 2016), it seemed to function as a means for social segregation as effectively as parental choices of other focus programs (art, music, etc.). However, as seen in the previous excerpt, parents' reasoning that undergirded language-based choices did not reveal as much moral conflict or concern about their *de facto* participating in dynamics of social segregation.

In some of the cases the social capital in the form of what is 'normal' among friends in certain schools, was pushing children to choose less commonly learned languages. In this analysis, it seems evident that the linkage between cultural capital (as in knowledge in foreign languages) and social capital (as in having friends studying the same languages and presumably ending up in same schools) exists, and is naturalized:

> Interviewer: So has he started another foreign language in addition to English in primary school?
> Anna, upper class: French at fourth grade. …
> Interviewer: How did you end up with that?
> Anna: He wanted himself. I didn't do anything. I just asked, as we got the note [from school] that what do you want? All his friends are going, he said, he'll take [French].

In this context, the presentation of smoothness as the most common option ("all his friends are going"), naturalizes the choice and removes any need for explanation. In general, it should be noted that apart from the few exceptions around schools with unfavorable reputations, the choice of a language seemed like a choice of any subject in the discourse of these parents.

> Interviewer: How did she end up taking French from the first grade?
> Leo, upper class: If I don't remember wrong, it went so that you chose either French or German in the first grade, and she ended up taking French, unlike her brother, her older brother chose German right from the beginning.

Looking at the larger picture of this phenomenon (see Kosunen et al., 2016), the early choices of less common languages clearly functioned as socially distinctive choices within the system, which did not cause extra financial costs to families as they operated as choices of and within local schools. Thereby the strategy of choosing some other language than English to study was working as a manner of distinction either intentionally or unintentionally, but it was evident that it seemed to be almost as effective as a socio-economic divider as the choice of special focus classes. In addition, the choices of so-called "long languages" (i.e. extended language programs) are already made at the primary school stage, when the children are between 7–9 years old. Thus, the influence of the parents in the long-term educational strategies and planning and the amounts of different forms of capital

embedded in these choices, which they are able to mobilize, play an important role, as shown in the next excerpt:

> We discussed this [sport emphasized class], as my daughter dances and plays [a ballgame] and does horse riding, that would it be something related to these hobbies. … one of her friends went there and we discussed that a bit. But as there were other friends going there, and it would have been slightly difficult to reach [physically], that was also dropped out. … we even discussed the language choices, we sat down to a table went through the choices that if you wanted to read this and that language, which are not just basic options like English or German or something else, then you would have needed to choose certain schools. But she wasn't really into that. (Sebastian, upper class)

> Oscar, upper class: …so we didn't want to give too many instructions, where to go. We went through the options. Why [school A] was out of the picture, as there is no long French.
> Interviewer: That's right, so it's a language choice.
> Oscar: In [school B] there is, in [school C] there is. [School A] would have been a natural choice in all other cases, but she wanted to continue in the [focus class] and she absolutely likes French. So we had only these two options. And then she managed to get through the aptitude-tests [to the class with a special focus], so she's going. And of course there was a role in the fact that can you really [physically] make it by taking one bus? And yes. That was a criteria as well, if it is feasible to get there.

Interestingly, this is the first mention of language in discourses of parental choice regarding language-focused programs. Language seems to be one of many material and social factors that shape this choice. Further, this excerpt shows how the dual strategy of choosing both, a special focus program and an less common language (see Kosunen et al., 2016), is functioning socially as the most distinctive one. Students who have chosen a long language other than English and are additionally choosing a class with a special focus show a strong tendency to come from higher SES backgrounds in the city scape.

Several things have emerged from analyzing Finnish parents' choice discourses through a lens of smoothness and striation. Striation has been associated by upper class parents with making less socially valued or legitimate choices and explained through lack of education or caring. However, smoothness leading to the same choices has not been marked.

Conclusions

Concluding this chapter but hopefully stimulating further discussion, we offer a few key points that the analysis of parental discourses in Mozambique and Finland unearthed.

Materiality

As our analysis showed, materiality played an important role in the two different contexts. On the one hand, for some of the Finnish parents, materiality as a physical space (e.g., school location, see also Laihonen & Szabó, Chap. 6, this volume) factored into their decision making when selecting a school for their children. Although there was a strong sense that parents were or should be invested in the social environment of their children, in other words in being part of a selected and selective circle of high-SES groups, in some cases physical proximity or barriers (e.g. the presence of motorways on the way to school) overruled such sociocultural factors, particularly when social factors could be ruled out. This can be also related to the relatively low risk of making a 'bad' choice of a school in the comprehensive school stage, which opens possibilities for considering physical space and other material restrictions. In the Mozambican context, materiality as socioeconomic stability or advancement, sometimes mentioned as what the older generation was deprived of, showed to be a strong theme in the parents' discourse around language choice, although this did not necessarily run counter to a deep appreciation of African languages. It differed from the Finnish context in that income and educational outcome (associated with Portuguese) were explicitly or unmistakably mentioned as important factors, whereas in Finland the socially distinctive argument was dominant (but not always explicit).

In relation to materiality, its varying degrees of negotiability are important to note. For instance, while some parents in Finland are in positions and have the means to (at least partially) change or defy the physical limitations of a cityspace (e.g. by arranging transportation), for others such moves of smoothing a striation may not be available. Non- or limited negotiability may also be connected to larger societal forces such as ideologies or discourses. For example, referring back to the Mozambican context, the negotiability of materiality as socioeconomic advancement does not usually hinge on an individual or even a community, so that even in contexts where a lot of appreciation of African languages exists, language choice driven by material desires cannot always be viewed as negotiable. Thus the contextual factors around language-policies and -practices are fuelling different parental practices in terms of materiality in these two contexts.

Language

In regards to language, our analysis showed that, in the Finnish context, language programs tended to be seen as a protective measure against students ending up in the "leftover class" from the point of view of these primarily middle-class families. In other words, parents considered language/school choices as sociocultural positioning within a socioeconomic elite by choosing the only officially available option for joining a socioeconomically distinctive group of families (or avoiding undesirable

peer groups) within a comprehensive school system. While language choice was also regarded as opening or closing doors in Mozambique, this was not to access an elitist circle or affirm one's social status, but rather to gain financial stability and educational credentials for a secure future, preserve or gain linguistic and cultural identities (usually connected to African languages) or participate in an (imagined) national unity discourse (usually connected to Portuguese). In other words, although social advancement may play a role in both contexts, language choice in Mozambican data was less driven by the desire to set oneself apart, but rather to gain access to different forms of capital (e.g., knowledge, salary) and foster or an integrative sociocultural space (e.g., across generations and communities).

What is noteworthy against this backdrop is the position language assumed in relation to knowledge and learning. Whereas in Mozambique languages as key to perceived legitimate (i.e. western, formal) knowledge was an important theme, often along the problematic striation of Portuguese being the key to academic knowledge and African languages standing in the way of that, the language itself was usually not an important factor in the Finnish data. Rather than foregrounding the language itself in their schooling choice, parents presented language, if they mentioned it at all, within the frame of child preferences. This underlines the argument that language choice is often not first and foremost about language (Saarinen & Ennser-Kananen, 2020), but, for instance, like in our case, about social status.

What has to be taken into account is the comparison between a so-called foreign language context (Finland) with a post-colonial context (Mozambique) and its linguistic diversity (many minoritized languages with Portuguese as de facto lingua franca). In Mozambique, languages are associated with culture, identity, and socioeconomic mobility, the stakes of language choice are relatively high compared to Finland, where the choice of a "foreign" language seems less weighty as, for instance, intergenerational communication is not usually at stake. Whether or not the stakes of choice are (perceived as) high (and for whom and under which circumstances) affects the negotiability of a decision, or to put it differently, the ability to negotiate language choice depends on what is (perceived to be) at stake and is thus not equally distributed, neither within nor between the two contexts.

Choice

Based on the previous ones, our last conclusion has to be simply that choice is complicated, and, compared to many other educational choices, language-choice especially so, given its multiple variations of function. As we have seen, it can have social distinction and upward mobility as goals or consequences, which illustrates how choices are "made", how they are perceived, and how negotiable they are, particularly when it comes to their material components. In short, all aspects of choice and choice-making are permeated by power dynamics, without necessarily following traditional hegemonies.

Choice is commonly seen as something people have and make. The underlying assumption is that humans have the ability and agency to consider several options and rationally decide for one. This decision-making agency is traditionally assigned to humans, and humans tend to be seen as lacking if their performance of this agency is (considered) lacking in some respect. In this chapter, we have allowed for more complexity in this process. Rather than starting from the idea that "humans make choices", we conclude based on our analyses that a more appropriate framing of choice would be as an assemblage, i.e. as multiplicity of elements that can be "added, subtracted, and recombined with one another ad infinitum" (Nail, 2017, p. 23). Such a concept of choice compels us to ask not "What is …? but rather, how? where? when? from what viewpoint?" (p. 24) and broadens the concept to include material and social factors, including for example policies, discourses, financial means, possessions, and physical spaces. All these factors shape each other and together bring about a "choice" that consists of more than a human's decision, which reinscribes or renegotiates striation and smoothness.

Such a broadening and complicating of the concept of choice has important implications. When we consider choice as a socio-material assemblage, the (non-)negotiability of choices becomes more pronounced, so that choice cannot be viewed as innocently flexible or dynamic anymore. As we have seen, material realities and physical spaces, i.e. social and material striations are not usually easy to negotiate, at least not for everyone in every context. The framework of smoothness and striation as well as the assemblage approach to choice thus allowed us to focus on equity issues (or prevented us from losing sight of them) because they push us to ask: What aspects of school choice are negotiable to whom and which ones aren't and to whom?

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Part IV
Assemblages of Human and Non-human

Chapter 8
Rhizoanalysis of Sociomaterial Entanglements in Teacher Interviews

Tarja Nikula , **Anne Pitkänen-Huhta** , **Sari Sulkunen** ,
and Johanna Saario

Abstract This chapter explores how the entangled relationship between the material and social in teachers' perceptions of change can be empirically investigated. More specifically, the chapter adopts a DeleuzoGuattarian rhizoanalytic assemblage approach and the notion of *becoming* to capture the dynamic and fluid nature of social and material affects. The study re-analyses three teacher interviews from data sets originally collected for different research purposes but with the theme of change relevant in each interview. The findings show that rhizomatic analysis and approaching interviews as assemblages can yield important insights about material realities. For example, they indicate how teachers' ways of becoming depend on complex and unpredictable intra-actions of social and material reality and how different aspects of materiality may constrain or come into conflict with each other and have agency. The chapter concludes by discussing the methodological implications of the essentially non-hierarchical rhizoanalytic approach.

Keywords Affects · Assemblage · Becoming · Rhizomatic analysis · Teacher interviews

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Introduction

Education is a key institution in society with a multi-faceted role in relation to societal change. While various societal, ideological and political developments put demands on education and call for change to ensure relevant skills and capacities for the future, education also plays its role in supporting the dominant system and maintaining continuity, and in that sense resists change. Moreover, change and its effects can be depicted and experienced as both positive and advantageous, as well as negative and disruptive. This potential dynamics and various tensions between different orientations to change form the backdrop for this chapter. We address the core theme of the volume – the potential of socio-material research approaches for language education – from the perspective of teachers, as we explore what kind of material aspects are entangled with social ones as the teachers address the theme of change. In this process, we are interested in how teachers respond to change or calls for change, whether and where they envisage change, whose change it is, and how it affects people, practices, and ways of being, and how it connects to materiality.

In exploring this topic, we use interviews with secondary school teachers as data. The interviews derive from three different data sets. The theme of change is relevant for each set. Two data sets were motivated by the latest renewal of the National Core Curricula in Finland and their emphases in highlighting the notions of language-aware school, disciplinary literacies, multiliteracy, and multilingualism. The third one was motivated by the changing conditions brought about by growing diversity in schools and the increasing number of multilingual migrant learners. The use of these data involves two types of methodological experimenting: exploring how to study sociomateriality empirically, and considering the usefulness of re-analysing existing interview data (cf. van den Berg, 2005).

In order to bring into dialogue social constructivist and materialist viewpoints, we will adopt a rhizomatic assemblage orientation informed by Deleuze and Guattari (2017/1988). A rhizoanalytic approach to teacher interviews is hence a way for us to explore how the intertwining social and material aspects can be empirically examined. We are interested in seeing how rhizoanalysis "can disrupt commonsense understandings" (Honan, 2004, p. 267) of the relations between teachers' talk and materiality, and what insights unpacking the conventional hierarchical and linear representations of data can yield.

The questions we ask in this chapter are:

1. What kind of rhizomatic relations become evident in the data when teachers reflect on change?
2. How materiality emerges and is entangled with the social in the teachers' accounts?

Education as Rhizomatic Assemblage: A DeleuzoGuattarian Approach

According to MacLure (2013, p. 658–659), new materialist research paradigms call for approaches and methods "that reject the hierarchical logic of representation". We respond to this call by adopting a *rhizomatic assemblage* orientation, inspired by Deleuze and Guattari (2017/1988; see also Honan 2004, 2007; Fox & Alldred, 2015; Toohey, 2018). Rhizomatic assemblage refers to any network of bits of social life brought into contact with another. Its key feature is a shift from representational logic and linearity to recognizing the multiple, simultaneous affective flows and 'lines of flight' (Honan, 2004, p. 269) that engage with social and material realities in a continuous process of affecting and being affected. Fox and Alldred (2015, p. 401) argue, drawing on Deleuze and Guattari (2017/1988, p. 256) and Massumi (2017/1988, p. xvi), that such DeleuzoGuattarian notion of *affect,* i.e. the capacity to affect and be affected, replaces the more static notion of human agency in representing a change in an entity. This change may be physical, psychological, emotional or social. Furthermore, because affect is not only a human but a material characteristic, it breaks down the dualism between the two and directs attention to the totality of creative and affective flows in an assemblage. This resonates with Barad's (2007) notion of *intra-action,* which highlights distinct agencies coming into being and emerging through their entanglement with each other (see also Muhonen & Vaarala, Chap. 4, this volume).

Closely related to the idea of affective flows within an assemblage is the notion of *becoming*, a phase of change in the state or capacities of an entity. This key concept captures the dynamic, creative and fluid nature of social and material affects as opposed to the more static notion of *being* (Deleuze & Guattari, 2017/1988; Fox & Alldred, 2015). This resembles Barad's (2007) notion of *new agential cuts*, i.e., new ways of approaching the lines along which agency is assigned or distributed, seeing it as a constant process of enactment rather than something that 'is' or something that one 'has'. Similarly, Leander and Wells Rowe (2006, p. 433) talk about parallel becoming(s) with unpredictable and creative affective movements and argue that these "rework the problem of identity". Such dynamic notion of becoming means recognizing that affective flows are unpredictable and that assemblages can produce new ones in an endless rhizomatic manner.

Adopting a rhizomatic assemblage perspective means that instead of treating interviews as direct representations of teachers' views of reality, with clear-cut causalities or linear and hierarchical relationships, it is important to identify the multiplicity and rhizomaticity of various affective flows involved. As regards materiality, we align with Fox and Alldred's (2019: introduction, para. 1) observation that apart from material things, materiality can also include "abstract concepts, human constructs, and human epiphenomena such as imagination, memory, and thoughts; though not themselves 'material', such elements have the capacity to produce material effects".

Next, based on Fox and Alldred (2015, p. 401–403), we will discuss the implications of adopting the DeleuzoGuattarian new materialist approach for social inquiry. *The first implication* involves shifting the unit of analysis from human agents to the assemblage, resulting in the focus on the capacities for interaction produced by affective flows. Consequently, the methods used and the language describing the analysis need to adapt to this new focus. This means that even though our interviewees are teachers, our focus lies on the linguistically coded assemblage of (change in) education rather than on the teacher as a human agent.

The second implication of new materialism (Fox & Alldred, 2015, p. 402) concerns the processual character of assemblages and questions of power. This means that rather than seeing power and control as fixed social structures, they are socially and spatio-temporally specific occurrences within flows of affect in assemblages. Similarly, Honan (2004) reminds that Deleuzian theories see power relations as fluid. In her study, this fluidity was reflected in teachers reading policy texts multi-dimensionally rather than linearly and with compliance, which was interpreted as a signal of their authority and powerful role. In the same vein, and in accordance with the dynamic and potentially tension-ridden approaches to change depicted in the introduction above, we will approach the assemblages of teachers' reflections on and evaluations of change as dynamic processes and as specific to certain spatio-temporal conditions without assuming fixed (power) relations.

Thirdly, Fox and Alldred (2015, p. 402) argue that DeleuzoGuattarian ontology dissolves conventional categories such as those between the material and the cultural, as well as between micro, meso and macro levels of social life, which encompass the levels of individual and specific contexts, groups and communities as well those of social structures and institutions. The relations within an assemblage cut across these categories and are rhizomatic rather than straightforward causal effects. In our case, approaching rhizomatic relations as cutting across conventional categories means that we seek to disengage ourselves from the tradition of thematic analysis, and to adopt what MacLure (2013, p. 659–660) calls a flattened logic instead of the hierarchy of representation. This means approaching the relations between elements of change in teachers' reflections as part of one rhizomatic assemblage rather than representing macro and micro level elements in a hierarchical manner.

The fourth, an already mentioned, key concept in this ontology is *becoming(s)*, which captures the dynamic nature of materiality (Fox & Alldred, 2015, p. 402) and has been characterized as unpredictable creative and affective movements (Leander & Wells Rowe, 2006, p. 433). For us, this means placing focus on tracking the changes teachers reflect on. Rather than asking who teachers are, we ask who they are becoming and what role do material aspects play in this becoming when they reflect on changes and pedagogy. It is also important to bear in mind Fox and Alldred's (2015, p. 403) fifth implication concerning the researcher's role as a part of the assemblage, and the need to see researcher and data as research-assemblage that "shapes the knowledge it produces".

Rhizomatic Analysis of Teachers' Reflections on Change

As stated in the introduction, we re-analyse three sets of teacher interviews and approach each of them as a case. Before a closer look at the cases, a few words are in order about our methodology for studying sociomaterial entanglements within the assemblages of teacher interviews. In line with the theoretical underpinnings described above, we have sought to account for the dynamic, non-hierarchical and non-linear nature of assemblages both in the analysis and in reporting. Figure 8.1 offers a visual snapshot of what we mean by rhizomatic assemblage; it serves as an abstraction of our approach rather than an overview of findings.

The nodes in Fig. 8.1 depict viewpoints, raised by the teacher and deemed relevant for the key analytical focus in the study, teachers' takes on change. In Liisa's interview, an example of such a viewpoint is the curricular contents not meeting the classroom realities. The bigger nodes are for recurring themes, and the lines between bigger and smaller nodes illustrate the nonlinearity in how points raised became linked during the interview. The words in capital letters indicate the nodes clustering into major topics around which the points raised by the participants were accumulating. These, naturally, reflect the original purpose of the interviews but also the usual ways in which education tends to be talked about, for example with reference to classroom practices, teacher identities and curricula, but here our focus is on materiality. As pointed out above, our view of materiality encompasses not only material things but also the capacity of the non-material concepts to produce material effects. As Guerrettaz et al. (2021, p. 4) put it, we are interested in the "entangled interrelationships of the material world in relation to social processes, structures, and dynamics".

The web-like organisation illustrates that the points teachers raise are often connected in unexpected non-hierarchical ways. For example, a teacher may bring up educational structures both in relation to classroom practices and professional community, connecting lines indicating such thematic re-occurrence. The links between the nodes do not imply direction, linearity or hierarchy. Rather, the ensuing web of

Fig. 8.1 Liisa's interview as rhizomatic assemblage
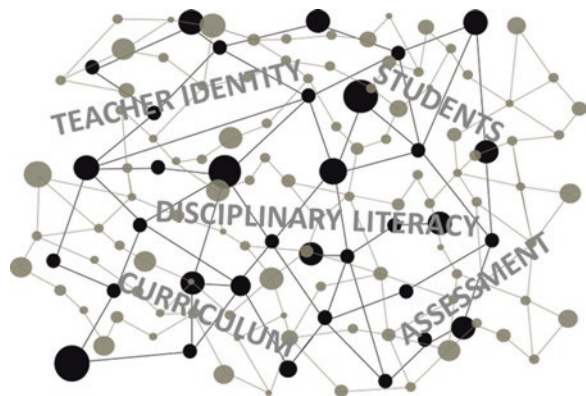
connections resembles neural networks where signals may traverse in unpredictable directions. In a similar manner, rhizoanalysis can follow different trajectories and hence, as Honan (2004) points out, have many plausible readings. This brings us to the point raised by researchers working with the DeleuzoGuattarian approach that rhizomes can be entered from various points. De Freitas (2012), for example, argues for the abundance of both entry and exit points in rhizomatic assemblages. This also enables disengagement from conventional linear readings of the data (see Alvermann, 2000, p. 118) and a flattened logic with the absence of hierarchical organization in an assemblage. This approach also justifies the re-analysis of existing data pools, to discover new readings of old phenomena.

For this study, we chose *student* as the common entry point to the datasets. This was a way to avoid a linear approach to the data because the student was not a similar starting point for all the interviews and hence offered an opportunity to step into the middle of rhizomes. At the same time, reflecting on students and their learning intersected with many other issues but not in an identical manner across the interviews, i.e., the same entry point resulted in different rhizomatic relations across the assemblages.

In the following, we illustrate with data examples[1] our key observations of affective flows and processes of becoming and what they suggest about the intra-action of the social and the material in the assemblages.

The Case of Liisa

Liisa (all names are pseudonyms), an experienced science teacher, is one of the seven secondary school teachers interviewed in 2016 before the implementation of the new Core Curriculum for Basic Education in Finland when schools were preparing local curricula. The data were collected by Kristiina Skinnari and Tarja Nikula. The original purpose was to learn how subject teachers in both mainstream and CLIL schools orient to such new language-related emphases in the curriculum as language awareness, disciplinary literacies and multilingualism (Skinnari & Nikula, 2017). This re-analysis shifts the gaze on examining how materiality is entangled in Liisa's reflections on curriculum change, clustered around the major topics of professional community, teacher identity, students, and pedagogical practices, i.e. represented as backgrounded capitals for this interview (see Fig. 8.1).

In this interview, choosing students as the entry point leads to a phase during the early parts of the interview where Liisa reflects on curricular contents and students' needs. Materiality manifests in the way curricular contents become depicted as coming into conflict with the material realities of everyday life, as students struggle with grasping the concrete need for maths knowledge, a position that Liisa aligns

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[1] All the interviews were conducted in Finnish. The data extracts have been translated into English by the authors and are presented with simplified transcription conventions for clarity.

with. There are thus intersecting rhizomatic connections, signalling tensions between the policy level depicted in the curricular aims and students' lived experiences of what is necessary:

> L: I see the overemphatic importance of maths in the curriculum and aims of basic education, also at secondary level, quite out of proportion, even in basic education we have a lot of content that people simply won't need in their everyday […] especially in maths there are quite a lot of struggles with students on why these things need to be studied, where are they needed […] it seems quite unclear and unnecessary to students, with no connection to everyday life

Given the original purpose of the interview, Liisa's reflections shift from students to the ongoing work on the local curriculum. In the next extract, she describes consternation over what she perceives as the work on the local curriculum ignoring such new (national) core curriculum emphases as phenomenon-based teaching and student-centeredness, and instead of these, focusing on the contents-to-be-learnt. She is also reporting about the blunt response she received from her colleagues when commenting on this. Here, materiality emerges as a concrete list of contents, 'placed' (in the teacher's words) in different years in the curriculum, with a tangible effect of constraining and defining teaching. This rhizome, then, shows how Liisa is involved in a process of becoming that reworks her professional identity and highlights her dissatisfaction and sense of difference:

> L: but I was even more shocked when the version that came for comments had completely ignored the general part of the new curriculum, it was all about placing contents in different school years, with no mention of phenomenon-based [pedagogy] or students' active role in personal or student-based teaching […] and I commented the first draft and got a quite blunt response, well the curriculum does list all these contents so all of these we need to teach

The process of becoming that makes salient tensions in Liisa's identity is also visible in the complex rhizomatic relationship between herself, the professional community and the notion of change, illustrated by the following extract. Here, Liisa describes the professional community of mathematics teachers as resistant to change, and comments on nothing ever changing in textbooks. The non-change thus becomes manifested through the materiality of the textbook. Liisa strongly positions herself in opposition to this by reference to feelings of misfit between herself and others. The unchanging nature of textbooks is thus intra-acting with Liisa's views on, and frustration with, her professional community:

> L: I have the feeling that teachers of mathematical subjects are considerably more resistant to change than other teachers […] this is my impression and experience based on working with colleagues and following textbooks, nothing in them is ever changing [...] it's like 'cos Socrates taught this way and 'cos Socrates drew these same figures in the sand, so nothing has changed for the better so let's keep on doing the same

The perspective of students re-emerges in the assemblage when Liisa discusses the new curricular emphasis for project-based teaching in the light of her own experiences. Her comment shows how, in her view, the material concreteness of practical hands-on experiments, introduced to support students, in fact makes learning more

difficult for them, which stands in contrast to the widely held beliefs of the benefits of project-based learning (e.g., Bell, 2010):

> L: we often try experimenting, that students either fiddle with something on their own or I show demos and they watch and then we try to discuss what happened, in that form of working it'd be really important to make observations, to see and hear what happened, but for students that's really difficult they don't want to do that, they rather want to jump right on to reasons why

In the following example, Liisa again comments on hands-on experiments and how they can lead to a dead-end in learning due to lack of student interest. Materiality is entangled here in two ways: as contents 'crammed' into the restricted space available in the curriculum, and the tangible hands-on process of the experiment itself:

> L: there's the problem that it [using experiments] takes a lot of time, and when the curriculum still in effect crams in so much content it means that students don't understand what experiments try to teach, they don't get it, they see them more as entertaining events in the class and they don't see that the matter to be learnt is in the event

In one of the examples above, Liisa's reference to students 'fiddling' creates a powerful image of their embodied resistance and superficial engagement with the task. Another similar case occurs when Liisa describes students' resistance to her experiment of teaching algebra without tests and with the intention to support students' individualized learning paths. Instead of just saying that students rejected the idea, her references to their lingering, chattering and fiddling with mobile phones depicts the resistance as physical and embodied and, hence, material:

> L: last spring I offered in 7th grade maths an algebra course without any tests [...] I taught small groups as they progressed [...] it didn't work out, my aim was that some would proceed quicker and I'd teach different things to different students but it turned out poorly, the students who proceeded quickly didn't want to proceed independently, instead they wanted to linger with the same pace and use time for blabbering and chattering and fiddling with their mobiles

Overall, the re-analysis of the interview as an assemblage from the viewpoint of material entanglements shows a complexity of affective flows. These flows loop back and forth to produce different types of becomings that reveal, for example, how Liisa sees herself as a teacher in relation to her professional community, to changing curriculum emphases, and to lived classroom experiences. Rhizomatic analysis indicates how materiality, even if not predominant given the original focus of the interviews on teacher thoughts and perceptions, has an important role in bringing to the fore the tension-ridden relationship between the curricular objectives and classroom realities. In material terms, and based on the type of rhizomatic analysis depicted in Fig. 8.1 with clusters of major topics emerging, the curriculum as depicted by Liisa appears as a space crammed full of and listing contents, with power to determine what should be done in classrooms. Classroom practices, on the other hand, are experienced as tied into the concreteness of time, place and student reactions. The teacher's role is portrayed as managing the in-betweenness of the two.

The Case of Tomi

The interview with Tomi is part of a set of interviews conducted with upper secondary school history teachers in a research project (Engaging in disciplinary thinking: historical literacy practices in Finnish general upper secondary schools, PI Minna-Riitta Luukka) focusing on disciplinary literacy practices. The data analysed here were collected by Johanna Saario and Sari Sulkunen. The data consist of two interviews conducted in 2017 that complement each other thematically. In the first interview, the frame was the then new national curriculum and particularly its emphasis on disciplinary literacy practices. In history teaching, this was expected to result in a change towards a more skills-based approach. In the second interview, the focus was on assessment, particularly evaluating history essays.

In his interviews, Tomi raised various issues in discussing his teaching in the context of the skills-based national curriculum. He considers macro, meso, and micro levels of education which manifest the entanglement of material and social. In the assemblage of Tomi's account of change, teacher identity, student population, emphasis on disciplinary literacy, continuous assessment and educational policies and structures are related to each other in rhizomatic ways. These would be represented as backgrounded capital letters for his interviews (cf. Figure 8.1), indicating the major topics around which the points raised by Tomi were clustering. Materiality as material things, for example the digital learning environment Tablet School, is entangled with teaching and assessment practices of disciplinary literacy as well as policy documents. However, in discussing Tomi's case, instead of material objects we focus on how various "bits of social life"(Leander & Wells Rowe, 2006, 433) at school intra-act with and produce material effects.

In the long example below, the teacher first presents an opposition between students and himself as a teacher who is familiar with the topics. This contrast is highlighted by the rather material expression 'the other side'. Tomi continues by referring to the Finnish history course, which is his area of expertise. Here he loops back to the beginning of the interview where he had described his earlier profession as a historian. Tomi ponders if he is too much of an insider and if he succeeds in his attempts to teach history in an understandable manner; he also expresses concern for students' learning. Thus, even though the teacher ponders his pedagogical expertise, the example shows how students and their learning are in his focus.

I: […] to what extent have those [literacy practices] you just mentioned, then been a part of your teaching, that they are taught

T: I certainly have tried to first teach them before they are kind of used, so that, of course if there are examples it is easier to go through it that way, so that I can always explain things, but you never sort of know how the other side receives it and has it been understood, I don't know but, especially Finnish history course is the kind of cup of tea that I've wondered myself, whether I'm too inside in it and talking about the kind of things that no one necessarily understands, even though I have the impression I'm speaking with clarity

I: well what do the students say

T: well here's the thing, in recent times not much at all, well this has probably been talked about before, I think we have rather much passive folks –

[…]

T: well one thing is that the [student] material has changed so that back then we had these so-called good students, they got in with at least an eight and half average grade, you can't sort of do anything about it, so it shows, in many students somehow as a sort of passivity, they don't sort of want to make a fuss about themselves in the class […]

T: but it could also be that somehow the group is characterized by a sort of passivity, and then there could be something, like we have discussed this a lot with colleagues, that there are a few of those, who sort of keep the conversation alive and if it is really passive, the group, then even they stop talking

[…]

T: then the group can of course be split up, so that often it always helps to break the group, give some reflection exercises talk amongst yourselves, and then maybe one should support the group spirit every now and then

I: but does this high school system sort of work for supporting group spirit, as in what kind of opportunities are there for it

T: well there aren't in a way, as every one of these teaching groups are different, basically no groups are similar and that is one thing which, that too I suppose, it is not just the student composition that explains everything, so that probably when you stuff forty people, of which the other half has never seen each other, so maybe that doesn't necessarily activate […]

When asked about the response from students, Tomi moves on to describing the lack of feedback and students' passiveness. He connects this passiveness to students now having lower performance level when entering the school than earlier. Here he refers to students as 'student material' (literal translation from Finnish), which is again quite a concrete and administrative choice of words and mentions how it has 'changed'. Tomi alludes to the admittance policies of the school, which now welcome students with lower average grades. Social interaction with and among students is presented as something that entwines with school policies. The teacher further relates students' passiveness in class to peer pressure, which affects even the active students, considering the ways to adjust his teaching to these conditions. This part of the example makes visible the affective flows between social interaction, material school policies and teacher's pedagogical practices within the assemblage. Teacher mentions re-organizing the group as well as supporting the group spirit as means to tackle the issue. Tomi's choice of verbs (e.g. 'break', 'split up') denotes teacher driven material processes: the teacher's solution to support the interaction is to orchestrate the class rather mechanically.

The interviewer then asks if the upper secondary school's 'system' provides opportunities for support, thus guiding Tomi's attention to structural questions. This illustrates how the researcher is part of the assemblage affecting the 'reading' of change (Fox & Alldred, 2015). Tomi loops back to seeking explanation for students' passiveness in class, contemplating this from the perspective of the structures of upper secondary education rather than student characteristics and competences (see above). The course-based programme in a big school leads to changing student groups and when groups get bigger students do not really know each other. Again, the teacher uses very material wordings, such as the verb 'stuff'. Thus, intra-action among students and the material aspects of education are in interplay when the teacher ponders his pedagogical practices.

In sum, Tomi's dynamic and continuous reflections on the interview topic, the new curriculum emphases on disciplinary literacy and language awareness, form complex rhizomatic relations in which material and social intra-act, and the materiality cuts across various levels from educational structures to classroom practices. Unlike Liisa, Tomi's interview does not display strong tensions between the new curriculum and classroom practices, and he appears compliant to changing conditions at school. However, some threads seem to flee to another direction. For example, when talking about 'student material' intra-acting with material and social aspects, Tomi sees this as a clear change from earlier years. This challenges pedagogy when he aims to ensure that all students understand him. Moreover, in the assemblage, Tomi's expertise in Finnish history and his aim to meet students' needs produce different types of becomings. Throughout the interview, the becoming of a "teacher responding to students' needs" produces differences between the current state of affairs, i.e., managing big student groups, and his aspirations. The re-analysis of the interviews with flattened logic of rhizomes makes visible how the becomings above are emerging through the entanglement of material and social.

The Case of Elisa

Elisa is one of seven teachers of English who were interviewed by Anne Pitkänen-Huhta and Katja Mäntylä in 2015. The focus was on how teachers acknowledge and support multilingual migrant learners in their classrooms. Elisa is a teacher in the secondary school, teaching a special group of migrants aiming to complete compulsory basic education. The students were recent newcomers of different ages and with varying linguistic backgrounds.

Elisa raised various issues relating to teaching a multilingual/multicultural group, seen as a change in current Finnish society. This situation is implicitly and explicitly contrasted in many ways to a mainstream group, considered the norm. Teaching this special group is constrained by very material conditions, which connect to issues of educational practices, student's backgrounds, teacher identity and the essence of the content of teaching. These would be represented as words in capitalized letters in the assemblage for her interview similar to the one in Fig. 8.1 above.

Multilingualism is strongly present in this class and many students have already learnt several languages during their travels. In addition to the complex linguistic variation, their knowledge of English also varies greatly and many of the students have limited and scattered schooling experiences in general. Thus, working with this group is complicated both by the lack of a common language and the differences in educational experiences. The complexities in the students' backgrounds lead Elisa to consider the unfairness of the teaching materials, which have mostly been designed for a mainstream group of young learners.

E: [the materials] are still very constructive, and they really are very unfair to immigrant students, they would rather need it the other way round, so that there's a rule, bang, and then we practise, because that's maybe the adult's experience, they have to learn to study ten different subjects, which are all learnt differently, so they cannot figure everything out even if it would be good for them

Elisa's account concerning materials is rhizomatically connected to learning experiences and the linguistic background of this group. This material condition is beyond Elisa's control and she becomes the protector of her students, as she has noticed how an adult multilingual learner would need to approach learning in a different way and the situation of these learners is compared to mainstream learners, as all subjects and the different ways of learning are new to them.

The very material reality of the learning materials used in class leads to issues of inadequacy as a teacher. Elisa expresses disappointment in her own actions:

E: vocabulary is the thing that I'm most disappointed with, after so many years I haven't been able to figure out how or had the energy to do anything, because it's a huge job, you could do more

Elisa has been up against the material conditions of teaching, as familiar learning materials do not work with these students, a group that does not conform to the assumed target group of the learning materials. She feels that as a teacher she has not been up to the task in that she has not been creative enough to come up with good material for her students, and she has not had the energy to 'to do anything' in terms of material help for her students although she knows she could do more.

With the student as an entry point, the varied background of the students also becomes a question of what is actually taught to them:

E: what was shocking to me were the life stories, it took me so much time, so that luckily we had time then […] to teach every now and then, but that was a surprise, but there were other teachers who had so much experience so that quickly there was support, 'don't try that, that is too demanding' or 'don't be disappointed if there are situations when you don't get into contents at all,' if you talk about life, then you talk about life

The traumatic life stories of the students were a surprise to Elisa, which led her to think what the essence of teaching actually is. At first she was happy if she could teach English at least a little but then, with the support of more experienced colleagues, she realized that talking about life is more important than learning English. Elisa comes back to this point, when she is asked what is best in teaching these students:

E: then there's the joy of learning, and the fact that you can teach more than just English, that we learn to look for things, and it's such that we always discover something, and you can really be of help, you can really do something, and they don't all learn any English, but they learn something, and often after these lessons, although they are really tough to teach, after them you feel that you have done something

Being able to teach life instead of just English is rewarding for Elisa. She feels that she can really help the students, even if they might not learn English. The content of teaching becomes something very concrete – material – that is 'looked for', 'discovered' and 'done'. Elisa is thus becoming a teacher of something greater than the

language subject she originally started with. She moves from feelings of inadequacy as the teacher to being a teacher of life (instead of English).

The rhizomatic analysis shows how one entry point into the assemblage leads to different kinds of becomings for Elisa and how the various interconnected affective flows are linked to social and material conditions. Materiality is strongly present in the clashes between the new educational practices that the students meet and have no space to negotiate. Elisa becomes the protector of her students when they all face the unfair material conditions created by the learning materials made for mainstream students. These material conditions lead Elisa to feel disappointed and inadequate as a teacher who has not done enough for her students. At the same time, there are also feelings of joy and accomplishment, as this group makes Elisa a teacher of life, instead of just a teacher of the conventional school subject of English. The re-analysis of the data has geared attention to how materiality frames the actions in the classroom and in this case, makes the teacher question her own position as a teacher and the very essence of teaching and learning.

Discussion

We set out to examine three sets of teacher interviews as assemblages to find out what kind of rhizomatic relations become evident when teachers reflect on change, and to explore the socio-material intra-action in these relations. The rhizomatic assemblage perspective highlighted that rather than being "a repository of truths" (Honan, 2004, p. 269, referring to Grosz, 1994), interviews are spaces enabling various, often contradictory processes "of becoming individuated" (de Freitas & Curinga, 2015, p. 259). Student as the entry point led to different kinds of rhizomatic relations in each interview. Each interview was different with regard to material entanglements in how the teachers were reading change. Liisa's case highlighted tensions between the curricular objectives – whether old or new – and lived classroom realities, while Tomi's and Elisa's cases reflected openness to students' changing needs. What the different cases had in common was all interviewees pondering on their identities as teachers, showing that these identities are dynamic, in flux, and tied to multiple affective flows and becomings.

As regards materiality, our analysis has also shown how interview data, despite its obvious focus on talk, can yield insights about material realities (see also Chimbutane, Ennser-Kananen & Kosunen, Chap. 7, this volume). The interviews showed how power and agency reside in the interplay between the social (e.g. readings of the curriculum, professional identity) and the material (e.g. curriculum, educational structures, classroom practices, materials, working with peers) in an assemblage. The data also showed how different aspects of materiality may constrain or come into conflict with each other and have agency (e.g. curricular guidelines and classroom practices, pedagogical practices and school policies, mainstream teaching materials and multilingual students). Teachers' ways of becoming thus depend on complex and unpredictable intra-actions of social and material reality.

This, in turn, explains why educational change, when encountering the lived realities of teachers and students, is also largely an unpredictable and diffuse rather than a straightforward and linear process.

A methodological question to ask is whether the rhizomatic assemblage analysis enabled us to reach these readings or whether the same results would have emerged through a more conventional linear reading of the data. Similar topics would probably have emerged, but we argue that we would have perceived the relations between them differently and as more hierarchical. Conventional thematic analysis would have led us to interpret the data in terms of categories and the (unexpected) connections between different phenomena made visible by the rhizomatic analysis might have been lost. Rhizomatic assemblage analysis makes it possible to connect a minor observation in the data to larger structural issues, or a prominent phenomenon to an important side-track. Examples in our data include the tension between the teachers' relations to colleagues, curricula and students, as well as the role of the teaching/learning materials, which were connected to teacher identity and questioning the contents of the subjects taught. Had we used thematic categorization, would we have seen that Elisa's concern about the unfair teaching materials was connected to her pondering if she is teaching English at all? Would we have spotted social interaction, material school policies and teacher's pedagogical practices intra-acting in Tomi's accounts of change?

Following DeleuzoGuattarian thinking, it has to be noted that our reading of the data is only one possible reading and our entry point into the assemblage only one possible entry point. With a different entry, new kinds of connections might be found. However, rather than an indication of endless relativity, finding ways of looking at things differently offers a step away from the well-trodden paths. It makes us question the nature of knowledge, reminding us that rather than static or a matter of neat categories, knowledge is contingent, situated, changing and always partial.

Among the challenges we encountered was writing up rhizomatic analysis. The normative conventions of academic writing impose linearity and hierarchy into our observations, which "expects well-defined research problems, methodologically collected data, rigorous analyses, clearly stated implications, and considered recommendations" (Honan et al., 2018, p. 3). In this chapter, we wished to look at our data as rhizomatic assemblages and dynamic connections, but we did not dare (yet) step away from the conventions of academic writing. Maybe we could have presented our data in the form of a three-act play (see Bansel & Linnell, 2018). Whatever way we would have chosen, it would still have been our interpretation of the assemblages and any reader could have read the text differently. By bringing our different data sets into dialogue here, we shook them into one kind of assemblage, but the reader may see other kinds of assemblages.

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Chapter 9
The Ideal Learner as Envisioned by *Can Do* Statements and Grammar Revisions: How Textbook Agency Is Constructed

Taina Saarinen 🔗 **and Ari Huhta** 🔗

Abstract In this chapter, we analyse the features of textbooks that enable and facilitate their role as material agents in the classroom. Rather than analyse the ways textbooks are used in interaction with humans, we analyse the elements in the textbook itself that facilitate intra-action and the ensuing material agency. Based on a discursive analysis of self-assessment in one textbook and discussing that construct against the Finnish national core curriculum and previous research, we present an 'ideal imaginary' of classroom activities as construed in the textbook. This helps us understand the textbooks in their pedagogical ergonomics; i.e. as socio-material in the classroom. We conclude by discussing the ideological nature of the textbooks not only as describing, but materially constructing a learner agency that understands learning both as constructivist and behaviourist. This merging of pedagogic ideals promotes a particular kind of disciplined behaviour to the extent that learner behaviour and learning are inseparably intertwined.

Keywords Self-assessment · Textbook · Discourse analysis · Socio-materiality · Ideal learner

Introduction

In this chapter, we analyse the material agency (Canagarajah, 2018) that textbooks may possess as non-human agents in the classroom. Based on a discursive analysis of self-assessment in one textbook, we present an 'ideal imaginary' of learner and learning as construed in the textbook and discuss the elements in the textbook that

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facilitate this ideal. As this chapter focuses on the discursive analysis of textbooks and curricula, we do not analyse classroom dynamics and classroom inter/intra-action. However, we find that our analysis helps us understand the role of textbooks in their "pedagogical ergonomics", i.e. the socio-material human-object engagements in the classroom, which can include social, material, or cognitive elements (Guerrettaz, 2021, 44–46). In other words, the textbook is not just about the cognitive (what to learn) but also about the social (how, where, and with whom do we do the learning) and the material (doing the learning with what is commonly understood as learning materials such as handouts, books, pens etc. but also with our bodies, chairs, desks, school spaces, etc). Thus, we analyse the textbook not merely from the point of view of their cognitive contents but also from the perspective of the kind of social and material activity they facilitate or restrict.

We chose textbooks and teachers' guides as our data because of their significant role in language classrooms in the comprehensive school in general (Canale, 2021) and in Finland in particular (Luukka et al., 2008). Assessment, as our analytical focus, presents us with an example of a technology of governance that supports a particular kind of learner agency and consequently a particular image of an ideal learner. In our analysis, textbooks act as a meeting point of curriculum goals and pedagogical practises, and as examples of a hidden curriculum, representing the norms and values of the society, such as for instance gender representations (Lee, 2014), culture (Tajeddin & Teimournezhad, 2015), or political ideologies (Jalalian Daghigh & Abdul Rahim, 2021). Focusing further on self-assessment, we analyse the ways in which material tasks, exercises, activities, and tests proposed in the textbook construe a representation of the expected agency of the learner.

Assessment is among key activities in the curriculum, as well as an integral activity in all education so much so that reference is often made to learning, teaching, and assessing as the three main aspects of language education. The well-documented tension between the purposes of assessment as development and control is present also in textbook assessment, as the summative and formative types alternate in the textbook tasks. High stakes tests such as the Finnish Matriculation examination (see Huhta & Boivin, Chap. 3, this volume) have been analysed and criticised from the perspectives of student aptitude and students' socioeconomic backgrounds (see Vanttaja, 2002 for an extensive discussion). However, classroom assessments are less commonly understood as possessing a gatekeeper function. Such analyses are important because, in school contexts, assessment results in technologies of governance, or of "governing a school population by convenient means" (Meadmore, 2006, p.9).

We take our data from one English e-textbook and teachers' guide for basic (comprehensive) education, and the latest Finnish National Core Curriculum (NCC, 2014; FNAE, 2020) for comprehensive school. This results in an intertwined "mutual entailment" (Toohey, 2018, p. 3) of the social and the material in the textbook and teachers' materials, forming a "mutual constitution of entangled agencies" (Barad, 2007, p. 33). In other words, self-assessment in the textbook and teacher's guide, and as presented in the National Core Curriculum, provide us with an entry point into analysing and interpreting the ways in which some learner activities are construed as materially, socially, and cognitively valuable.

The Potential Material Agency of / in Textbooks and Curriculum and the Learning Ideals Presented by Assessment

Textbooks are an integral part of school contexts that have implications for pedagogy and curriculum. They embed "cultural and social knowledge, historical perspectives and political ideologies" (Curdt-Christiansen & Weninger, 2015, p. 1), and have for long represented an understanding of what constitutes societally legitimate knowledge in education (Curiel & Durán, 2021). Additionally, they have participated in the extramural commodification of education (Kauppinen et al., 2008). Textbooks are extensively researched compared to other materials or artefacts used in the classroom and for learning (Guerrettaz, 2021). What we intend to do here is a socio-material reading of the social, material, and cognitive elements in the textbook that promote particular kinds of learner activities by providing structure around classroom activities (Guerrettaz & Johnston, 2013). In this, the books present an imaginary or ideal way of learning, operationalizing answers and behaviour that are presented as desired in the assessment section of the National Core Curriculum (NCC, 2014; FNAE, 2020).

Textbooks and Their Potential for Enacting Agency

Studies of textbooks tend to conceptualise textbooks as material objects: they are *used by students* (for instance Kauppinen et al., 2008 on Finnish textbooks; Bikowski & Casal, 2018 on digital textbooks) or studied as *cultural artefacts or repositories (*see Weninger, 2021 for a review). Rather than being mere objects in this binary relationship, however, textbooks are also a didactic genre that can strongly guide pupils' engagement (Weninger, 2021). Weninger discusses textbooks as representation vs. textbooks as interaction and goes on to suggest that any critical textbook analysis should take into account the "ideological nature of meaning-making by examining the interplay of multimodal representations, the interactive meaning of textbooks' multimodal material as well as the pedagogic-didactic frame within which learners encounter them" (p. 133). In other words, the form and content of textbooks cannot be separated from the larger educational and curricular contexts, and neither textbooks nor these contexts are ideologically neutral.

Textbooks have also been studied from the perspective of socialising students into particular ideologies or affecting the ways in which students work. In this sense, they have also been assigned some kind of agency. Canale (2021), summarising main points from a special issue on language textbooks in *Language, Culture and Education*, states that a "deeper articulation between representation, interaction and learning is needed to further explore the dynamics of structural and situated power and agency in language textbook studies. (p. 204)".

Bori (2021) and Curdt-Christiansen (2021) approach textbooks as framing and shaping learners' social identities (see Canale, 2021). Bori (2021), in further

discussing textbooks as "self-responsibilization" (p. 12) finds that textbooks play an important role in "modelling the students' conduct to discipline themselves according to the neoliberal principles of flexibility, competition and self-responsibility". For Canale, all this means that textbook characters 'behave' in a particular way and that the textbook 'talks' or addresses readers and learners (Canale, 2021, p. 202); again, indicating agency assigned to the textbooks.

According to Kauppinen et al. (2008), textbooks tend to direct students to work alone (p. 229); they conceptualise language as separate skills to be learned (p. 228–229); and they put the teacher in a challenging position of having to develop their pedagogical practices and draft new material (p. 229). Even with local curricula that have been designed with the intention to bridge the gap between the national frame and existing local practises, their nature and level of detail vary greatly.

There is also an apparent difference between print and digital textbooks when it comes to learner agency. Tossavainen (2019) criticises traditional (print) textbooks for their linearity. While they are undoubtedly designed to be adapted to different needs and uses, in the end they are "designed to adapt to match prevalent teaching methods" and do not challenge teachers or learners to take up new teaching and study cultures (p. 158–159).

In an extensive review on digital textbooks, Bikowski and Casal (2018) found that students may consider digital textbooks challenging for learning, for reasons also discussed by Tossavainen, and may, in fact, prefer print texts. Bikowski and Casal also suggest that students recognize the "human-like roles played by their devices", which supports Thorne's (2016) view of the difficulty of conceptualizing artefacts and humans as distinctly independent from one another (p. 131) (see also Jakonen & Jauni, Chap. 2, this volume ; Muhonen & Vaarala, Chap. 4, this volume). However, in Thorne's review of digital learning environments (2016), few studies found that students saw digital devices as occupying personalised roles in learning environments. This may be due to the devices in most studies being computers rather than mobile devices or applications, which seem to be more likely to be perceived as having distributed agency, i.e. as being both humans and artefacts (see also Jakonen & Jauni, Chap. 2, this volume; Huhta & Boivin, Chap. 3, this volume). It seems that as learning technologies (especially mobile applications) become more interactive and engaging, their users tend to assign personality in addition to agency to their devices (Bikowski & Casal, 2018, p. 131). In our data from a desktop e-book, we focus on the ways in which the learners, teachers, and curriculum contents are being discursively represented as having agency.

New Materialism, Textbooks, and Agency

Instead of analysing textbooks as objects in Finnish teacher-centered "foreign language" classrooms (Salo, 2006; Luukka et al., 2008), we analyse the ways in which agency is materially constructed (Fox & Alldred, 2019). We want to challenge the traditional boundary making between humans and non-humans and analyse

textbooks as parts of an assemblage (Fox & Alldred, 2015; Toohey, 2018) of the discursive and the material, the human and the non-human, the animate and the inanimate. The premise of this socio-material approach (Fenwick, 2015) is that there are "no clear, inherent distinctions between social phenomena and materiality" but everyday practises are constituted through "entangled social and material forces that continuously assemble and reassemble" (p. 83). In the "pedagogical ergonomics" (Guerrettaz, 2021) of the classroom, textbooks have agency in socio-materially construing ideal learner and learning both systematically and unpredictably. This agency emerges in the socio-material assemblages in the classroom. Following Miller (2016, p. 205, cited in Toohey, 2018, p. 32), agency is not located in people or other entities, but is "afforded through connections between the assembled beings", resembling Thorne's concept of *distributed agency* where artefacts and humans "create particular morphologies of action" (2016, p. 189).

Assuming agency versus analysing it as emerging in an assemblage of human and non-human means that the ontological and epistemological in our research is interwoven and entangled: We cannot distinguish the (ontological) "what is" from the (epistemological) "how we know it". Barad (2007, p. 135–136) uses the concept *intra-activity* to illustrate the coming together (rather than seeing as separate entities) of the "mutual constitution of entangled agencies" (Barad, 2007, p. 33), or more concretely the matters and constructs of, in this case, textbooks, learners, teachers, and assessment as a curricular concept. Instead of looking at the learner and teacher as subjects and the book as an object of study in their interaction, we attempt to see their intra-relationship. By observing textbook agency as emerging in intra-action (Barad, 2007) of textbook, curriculum, teacher, and learner, rather than assuming a human agency over non-human matter, we attempt to make the familiar unfamiliar or to "queer the familiar" (Barad, 2007; Kleinmann, 2012, p. 77) understanding of textbook agency. We thus aim at unpacking the rather arbitrary ways in which the distinction of humans and non-humans is construed in our field in general and in textbook research in particular. In this chapter, we focus on the properties of the textbook that enable participation in these assemblages and facilitate its agency.

Finnish Core Curriculum Reflecting Language and Learning Ideals

Textbooks are expected to follow the National Core Curriculum. This may, however, prove to be challenging. Salo (2006, p. 250), studying Finnish textbooks, criticises them for often leaving the pedagogical or communicative goal unclear, and for including exercises that remain decontextualised or unconnected on the sentence level. Further, Guerrettaz and Johnston (2013) state, citing Tsui (2003), that while more experienced teachers tend to use a variety of different materials, less experienced ones tend to rely more heavily on textbooks "as curricular guide" (p. 780).

The National Core Curriculum (NCC, 2014) for comprehensive education is a core curriculum that sees languages as having an all-encompassing presence.

Although multilingualism, including the appreciation of multiple languages and cultures to support all learners' identities and participation in the society, represents a core value in the curriculum, it has not been pedagogically clarified and explicated in the document (NCC, 2014; Ennser-Kananen et al., 2021). The same applies to assessment, as an operationalisation of curricular learning goals. Decisions about the format and timing of assessments, for example, are left to the teacher (see e.g., Luukka et al., 2008; Tarnanen & Huhta, 2011). Assessment has a specific role in the curriculum, discussed when the different subjects and their content and targets are described. However, the terminology used in the pre-2020 version of the chapter on assessment in the NCC (2014) was somewhat confusing regarding different purposes of assessment, which may have increased teachers' uncertainty about it. The starting point in the account on assessment in the core curriculum is the national legislation of education. Section 22 of the Basic Education Act states that "[t]he aim of pupil assessment is to guide and encourage learning and to develop the pupil's capability for self-assessment. The pupil's learning, work and behaviour shall be variously assessed." In other words, the learner is presented as developing agency during the learning process, particularly when it comes to self-assessment abilities. This reflects an understanding of the pupil as an active subject rather than a passive object of teaching activities.

The current National Core Curriculum (NCC, 2014) considers the development of learners' ability to evaluate their learning as one of the key goals of education, also in so-called foreign languages. More specifically, when elaborating the learning targets for English, the NCC places self-assessment ability among *Language learning skills* (p. 398). Other language learning skills defined in the curriculum include the ability to set targets for one's own learning and becoming prepared for lifelong learning. Clearly, self-assessment in the NCC (2014) is envisaged to contribute to students' ability to engage in lifelong learning. In general, lifelong learning is referred to as an important overall goal of education in a number of places in the core curriculum and for several different subjects, linking language education to the larger European language education policy frame (Beacco, 2007).

In its emphasis on lifelong learning, the Finnish National Core Curriculum (2014) echoes wider European and world-wide educational discourses. Internationally, the conceptualisations of lifelong learning appear to have moved from seeing it intertwined with humanistic ideals in the 1960 and 1970s to considering it mostly from (neoliberal) economic perspectives (Olssen, 2006) as a way to address issues like unemployment and slow economic development (Volles, 2016). Ideals of multilingualism, in a similar vein, include values of celebrated individual and societal knowledges, but also commodifiable skills required in the labour market and economy (Beacco, 2007; Pérez-Milans, 2015). As far as the curricula for "foreign" (*vieraat kielet,* as it is framed in the Curriculum) language education in Finland are concerned, they are clearly rooted in the work of the Council of Europe that has promoted language learning (and self-assessment as one aspect of it; see Oscarson, 2014) as a way to increase dialogue and understanding between European countries. Assessment and testing of students further operationalise these goals into desired activities.

Research Questions and Methodology

We explore the idea of agency discursively and materially enacted (Barad, 2007) in the assemblage, rather than between the book and the person holding it. This, to us, represents something of a hypothesis that taking another viewpoint to textbooks would enable a different understanding of the role that the textbook plays in the in the pedagogical ergonomics of the classroom, i.e. that a new agential cut would emerge (Barad, 2007; see Toohey, 2018 for a discussion). How we make our cuts in our research has a profound effect on how we study them. In the case of our chapter, assuming human (learner or teacher) agency over non-human (curriculum or text-book) would work to reinforce old agential cuts. Instead, we examine a perspective where the agential cut of a textbook could be found "inside" the assemblage (i.e. in the ways in which agency is construed in intra-action of humans and non-humans), rather than "outside" of a book or in the "interface" of book and teacher/student (i.e. book used by someone, in someone's hands, in a classroom). For us, this is an ana-lytical exercise in that we do not have empirical access to actual classroom data of teacher-learner-curriculum-book assemblage. Rather, we analyse the phenome-non from the perspective of different subject and object positions assigned to the human and non-human participants in this assemblage (see section on methods for a more detailed description below). We understand that our approach also implies assumptions of agency being "located" somewhere; in our case in the intra-action of textbook, curriculum, learner, and teacher. However, we aim to understand more deeply if and how this change of viewpoint may change the way in which we view the socio-material agency of textbooks in the pedagogical ergonomy of classrooms.

Research Questions

Based on previous research by the first author (Saarinen, 2005, 2015), we know that macro level political concepts and goals tend to be discursively operationalised into activities that are presented as doable, but consequently also as valuable and desired. This, however, is ultimately a very linear approach that, while acknowledging the dynamics of policy goals (such as those presented in the National Core Curriculum, 2014) also assumes that (education) policy is a top-down process.

In this chapter, we analyse the features of textbooks that enable and facilitate their role as material agents in the classroom. We are particularly interested in how assessment goals make ideals of learner and learning visible and what the implica-tions of this are for textbook agency. We understand our main question as consisting of the following sub questions:

– What kind of ideal learning and learner behavior do the national core curriculum, textbooks and teacher's guides promote?
– How is language learning understood as a consequence of the conceptualisations and operationalisations of self-assessment?
– What kind of agency do the curriculum, textbook and teacher's guide assessment sections facilitate?

Method

In order to be able to conduct the analysis, we employ a discursive agency approach (DAA) of the textbook, i.e. an analysis of the ways in which agency is being sought and legitimised by discursive means (Leipold & Winkel, 2017). We wish to demonstrate how and what kind of agency materialises in this particular case of a new lower secondary English textbook, providing an analytical heuristic to illustrate enactment of agency in our context.

Basing their discussion on Rabinow (1984), Leipold and Winkel (2017) discuss the process of agency enactment from the perspective of subject positions and the role of discourses offering subject positions; meaning that subjects (and their agency) are "effects of discourses" (Leipold & Winkel, 2017, p. 512). We use this approach to understand how textbook discourses offer "subject positions" that are derived from Michel Foucault's work (Leipold & Winkel, 2017, p. 513, discussing Keller 2012); i.e. how they offer a particular reading of what the desired activity of the learner and teacher is in relation to the curriculum goals. The subject positions may be realised as

1. an active subject (observing/ judging position; for instance presenting the teacher as observing or expecting a particular action);
2. an observed/passive subject (disciplined/subordinated; for instance learner presented as expected to behave in a particular disciplined way); or
3. as agent / performing self (for instance as learner presented as taking active role in own learning).

This framing will guide our critical discourse analysis of the curriculum, the assessment description and the two self-evaluation tasks. Our analysis will focus on the elements in the textbook that facilitate the agency of the book in constructing ideal learners and ideal learning.

Data

Our primary data is (1) the National Core Curriculum (NCC, 2014; FNAE, 2020) and (2) a new textbook series (including teachers' guides) for English as the first foreign language in lower secondary (grades 7–9) (Banfield et al., 2018).

The national core curriculum (NCC, 2014) was accepted in 2014 and took effect in 2016, and its assessment section was revised in 2020 (FNAE, 2020). The learning and learner behavior goals for assessment in the 2014 comprehensive school core curriculum and specifically the revised chapter on assessment (FNAE, 2020) will be analysed. The textbook and teacher's guide are available both as a print and digital version. The book series is a new one for grades 7–9, specifically designed based on the new curriculum. Specifically, we chose the teachers' guide one-page description of assessment; one pupil self-evaluation task (*How am I doing*) from

the textbook for the 7th grade, and one pupil self-evaluation form from the teacher's guide.

Analysis: Ideal Learner and Ideal Learning as Construed in Curriculum and Textbook

In this section, we present our analysis of the curriculum and textbook tasks, starting with our examination of the National Core Curriculum from the perspective of how ideal learner and learning are presented. From there, we move on to discussing the operationalisation of these goals into textbook assessment practises and their implications to learning.

Learner and Teacher Agency in the National Core Curriculum

According to the National Core Curriculum (NCC, 2014; FNAE, 2020), the main purpose of assessment across disciplines is to promote learning. The core curriculum further states that assessment and feedback based on assessment are the teachers' pedagogical means to support learners' development and learning. The main characteristics of the assessment culture that the schools should develop are (p. 46; our translation and emphasis):

- an *atmosphere* that encourages learners to try their best;
- *interactive assessment practices* that promote inclusion and discussion;
- *practices* that help learners to understand their learning process and make progress visible throughout the process;
- *fairness and ethicality;*
- *varied* nature of assessment;
- *use of assessment information* in the planning of teaching and other activities in the school.

The statement in the core curriculum that the main purpose of assessment is to promote learning is interesting in at least three respects. First, it implies that assessment can, and should, impact learners and their learning in a positive way. The core curriculum describes some features of assessment that are likely to help assessment achieve this impact by referring to the feedback that teachers give to specific features of assessment (e.g. variation and interaction; see the above points listed), and to certain overall characteristics such as positive atmosphere and fairness, stressing the role of the teacher as an active subject. The core curriculum does not elaborate the impact further, which leaves the practical implementation to the teachers. This is very much in the spirit of formal decentralisation of education policy making and image of teacher autonomy that characterise the Finnish

education policy (see Simola et al., 2017 for a critical discussion of the Finnish educational system). The impact of assessment on learning is still a rather poorly understood matter (see e.g. review by Cheng, 2014). What is known about it, however, suggests that it is difficult to predict and likely to depend on many factors such as the purpose and method of assessment, learners' age, proficiency and beliefs about learning and assessment, and the teacher (e.g. what feedback they give and how).

The second point worth noting in the national core curriculum's (NCC, 2014) description is that it does not distinguish between different purposes of assessment (see e.g. Nguyen's, 2021, classification). The explicit purpose of formative assessment is to provide both teachers and learners with information that helps them to teach and learn more and more effectively, and there is evidence that it can increase learning outcomes (Cheng, 2014). In contrast, the other common use of assessment information in the school, the summative purpose, may be less suitable for improving learning. Failure to do well on summative assessments may in fact demotivate and discourage some learners and, thus, have a negative impact on their learning (Cheng, 2014).

This brings us to the third point of interest in the core curriculum description, namely that assessment is assumed to have an impact not only on learning (i.e. increasing learners' language skills) but also on the learners' perception of themselves, on their motivation, and on their ability to understand how they learn. These goals of assessment obviously relate to learner agency.

The goals echo well-known views on what makes teaching and feedback effective such as the ones proposed by Hattie and Timperley (2007) who stress the importance of aligning learning goals, assessment, and feedback. Teachers should ensure that learners know the goals and criteria. Self-assessment and learning to do this are considered an important part of learning: self-assessment ability seems to be a goal of learning in itself but it is obviously a way to "help learners to understand their learning process" (see above data example). Peer-assessment and practising giving feedback are also encouraged and regarded as a way for the learners to become aware of and understand their own development and how they can have an impact on their own learning and success at school. Thus, both self-assessment and peer-assessment can be seen as means to increase learner agency, if implemented in ways that actually enable learners to have such agency during the self/peer-assessment tasks and assuming that such exercises increase their agency more generally in their studies and also in their life out of the school.

According to the NCC (2014), assessment covers learning, working practices / working skills (*työskentely / työskentelytaido*t), and behavior (*käyttäytyminen*). For the assessment of behavior, the core curriculum states that the student's personality, temperament, and other personal characteristics are not to be assessed.

The section on assessment in the NCC (2014) divided assessment into final assessment that takes place at the end of grade 9 and assessment that is carried out during the studies prior to the final assessment. The latter was further divided into

assessment that happens during the term or year, and assessment at the end of the term or year. These correspond to formative and summative assessment respectively, but were not named as such in the original 2014 curriculum. The recent revision of the section on assessment (FNAE, 2020) clarifies this and refers to formative and summative assessment explicitly as the two complementary purposes of assessment at school (FNAE, 2020, p. 2; our translation):

The purpose of assessment is to

– steer and support studying and develop the pupil's self-evaluation skills (formative assessment) and
– define to which extent the pupil has achieved the subject-specific goals (summative assessment).

The lack of clarity regarding the assessment purposes in the NCC (2014) may have contributed to confusion among the teachers about what kind of assessment (and consequently learning) the curriculum actually promotes. We lack systematic research on this but it may be that what assessment means for many teachers and students in the lower secondary school (years 7 to 9) relates more closely to summative rather than formative assessment. This interpretation is supported by the findings of the large-scale survey of pedagogical practices in that level of education in the 2000s (Luukka et al., 2008; Tarnanen & Huhta, 2011) which found that language teachers did most of their assessments at the end of courses or terms. Since summative assessment and grade-giving takes place at those points, the most visible types of assessments, at least, are likely to concern summative rather than formative assessment. Since grade-giving is the core element of summative assessment in Finnish school-system, it seems justified to say that teachers in Finland are very concerned about summative assessment, perhaps at the expense of formative assessment (see e.g. Tarnanen & Huhta, 2011).

The question of learner temperament and personality (not to be evaluated) versus learning styles and behavior (to be assessed) seems to be a fine line in the curriculum. In order to link the general curricular goals related to learner and teacher agency, we will next look at assessment in one seventh grade textbook.

Assessment and Self-Assessment in the Scene Textbook and Teacher's Guide

As seen above, the curriculum presents an ideal of learner and teacher agency, but does not operationalise that agency in any particular way. How does the ideal learner agency emerge in a language textbook? We will first analyse the definitions and characteristics of assessment in the textbook teacher's guide and then move on to analyse two learner self-assessment tasks in the book.

Assessment Description in Scene Textbook

The teacher's guide of the Scene textbook series contains a two-page description of the assessment instruments included in the series and of how the materials themselves (e.g., activities, exercises) can be used for assessment purposes (see the English translation in Table 9.1). The description is divided into an introductory sentence and three sections.

The introduction of the assessment instructions (Table 9.1) states that the assessment materials in Scene *cover the language skills in a comprehensive way* (our translation) and that they take the need to individualise assessments into account as well as the goals related to communication and knowledge of the target language countries and cultures. In this sense, the book introduction refers to the cognitive aspects of learning particular skills.

The first section, *Digital tests and modifiable Word tests*, describes how the teacher can compile their digital and printable tests from the tests included in the digital

Table 9.1 Scene 1 Digital material for the teacher on assessment (our translation). The description is based on the National Board of Education language portfolio site and the NCC (2014)

Assessment
The Scene assessment material covers different areas of language skills in a comprehensive way, and the materials take into account individual needs, communicativeness, country knowledge and cultural knowledge.
Digital tests and modifiable Word tests
The Scene product family has two assessment material options: digital test and modifiable Word tests. The options are content wise identical. The only difference is the oral tests in the modifiable Word tests.
Assessment materials are divided by sets, and each set includes
- vocabulary tests
- text-specific vocabulary tasks
- grammar tasks
- thematic vocabulary tasks
- essay topics and short communicative essays
- reading comprehension tasks
- listening comprehension tasks
- oral tests (modifiable tests)
With the help of digital tests, making exams and their evaluation is easy on the Otava electronic platform. The teacher puts together the test, and the pupil takes it online. Tasks include multiple choices, drag-and-drop, embedded tasks, and open-ended tasks. The system automatically checks all other tasks except the open-ended ones, for which a model answer has been provided to ease assessment.
Of the modifiable Word tests, the teacher can put together their preferred test. The modifiable tests include an mp3 format test recording. The usability is facilitated by a contents list and track list of all content.
Self-assessment and peer-assessment
Scene encourages the teacher to make use of self-assessment and peer-assessment as a part of total assessment. Self-assessment and peer-assessment have been integrated in the textbook tasks and have been made as smooth and easy for the student as possible. Also, the digital material includes readymade materials for self-assessment and peer-assessment.

Table 9.1 (continued)

Language portfolio

According to the new curriculum, assessment should focus on formative assessment and the language portfolio supports this. It also makes versatile assessment methods possible. According to the curriculum, the teacher must compile "information about the students' progress in different areas and in different situations", and the language portfolio is a good tool for this. It also enables the use of ICT and oral tests. Developing prerequisites for self-assessment, as mentioned in the curriculum, happens naturally in portfolio work, because own work and working methods are reflected on, and learning, its progress and the factors affecting it can with be observed with self-evaluation. Also, peer-evaluation skills develop, and students may become more aware of how they can affect their own learning.

The portfolio can be implemented in many ways. It can be a student's notebook, where all work is recorded, or a portfolio where the students themselves gather a certain number of English tasks. Also, the students' recordings and videos can be a part of the portfolio. As works are chosen, the student has to consider which tasks on the course are particularly successful and why. This helps the development of self-evaluation but also helps the student to understand how the grade is formed.

Scene 1 has a lot of material that can be used in language portfolio work as such. The digital material includes a list of tasks for each set, applicable for language portfolio work. Most of the Action and Go Online tasks are also applicable as language portfolio tasks. Also Show And Tell tasks can be conducted as written or oral portfolio tasks. The teacher's material includes, in addition, essay topics for each set, that can be applied in language portfolio work. Also, the cultural knowledge projects can be included in the portfolio. Everyone can conduct the tasks at their own level, for the advanced the tasks offer a challenge, and the weaker ones can do with basic language skills. The tasks encourage using one's imagination and challenge the pupils to test the limits of their language skills. The teacher's material also includes assessment forms that can be used to support self-evaluation and group evaluation. Also, the textbook includes several small self-evaluation and pair evaluation tasks that make it possible for the students to monitor their development as language users and learn to recognize areas where they are good or need more exercise. The electronic materials can also be utilised in the portfolio.

version of the textbook. The digital tests can be created and administered through the online platform provided by the publisher of the textbook, whereas the tests submitted to teacher as Word files can first be compiled in the digital platform and then printed out to be handed to the pupils. The areas covered by the tests are referred to by using the traditional categories of vocabulary, grammar, writing, reading, listening and speaking (speaking test is only available in modifiable test version). The test formats are also listed and include the multiple choice, drag-and-drop, short-answer, and open-ended text production formats. The digital version is explained to be able to score the closed task formats automatically (e.g., multiple choice) and provide the short-answer questions with model answers for the human scorer.

What is striking about these template assessments is that they leave out possibilities for more personal and often quite material aspects of knowledge construction in the pedagogical ergonomics such as classroom interaction (see Jakonen & Jauni, Chap. 2, this volume; Muhonen & Vaarala, Chap. 4, this volume), knowledge construction, interests, or personal repertoires (see Dufva, Chap. 5, this volume). The ideal learner is one who picks the correct answers in a way that is easy to evaluate, which also limits the learner's degree of agency when it comes to assessment.

Two points are worth noting in the description of the tests in the Scene teacher's guide. First, the guide is ambiguous as to the purpose for which the tests are intended to be used. Since the scope and length of each test probably varies, it is likely that the tests can be used both formatively and summatively. However, it is more likely that they are used mainly summatively given that test-like assessment approaches are the most common approach when teachers give their final summative grades in language subjects in year nine (Luukka et al., 2008). This implies a summative assessment agency for the textbook.

The second point of note is that the focus in this section is on the teacher; the teacher's guide does not clarify if the pupils have any role in scoring the tests, particularly the responses to short-answer questions that the system cannot mark automatically. At least for formative uses of these tests, this could be a viable alternative to the teacher-based scoring. In sum, combined with the textbook centered tradition and the role of summative testing in the 9th grade (Luukka et al., 2008), the textbook has a particular kind of agency that seems to promote summative testing, with the teacher rather than the learner having an active role.

The second section on assessment in the teacher's guide is titled *Self-assessment and peer-assessment*. It is a very brief section but claims that the Scene series encourages the teacher to use both self- and peer-assessment in their assessments. It further describes that self- and peer-assessment are integrated into many exercises found in the materials to make them easier for the pupils and that the digital materials include a number of forms for these types of assessment.

The third and final part of the guide on assessment is called the *Language portfolio* and is much more detailed than the other parts covering about half of the space. This is in many ways the most interesting part of these suggestions to teachers on assessment. The text makes explicit reference to the emphasis in the National Curriculum on assessment that supports learning and presents the argument that the language portfolio is a very appropriate approach in this regard (the FNAE's language portfolio website is also mentioned as a source of this information; https://www.oph.fi/fi/koulutus-ja-tutkinnot/eurooppalainen-kielisalkku). Furthermore, the text stresses how useful the portfolio is for training self-assessment, a key target of language education as we noted above. The portfolio is also said to help in peer-assessment. The description then goes on to offer more detailed information about the types of portfolio and the materials in the Scene series that can be used in the portfolio, including several self and peer-assessment forms. While the language portfolio in itself offers a lot of possibilities for learner agency, its practical application is left open.

Analysis of Two Self-Assessment Tasks in the Scene Materials

In this section, we discuss two self-assessment tasks from the Scene 7th grade textbook. The first one is located in the text section and invites pupils to self-assess their learning in the chapter; the second one stems from the teachers' guide and provides the pupils with tools for self-assessment. Analysing the learner – teacher –

textbook – curriculum assemblage, we examine the ways in which the different material actors (equipment, tasks, pupils, teachers, peers, language, home) come together with curriculum and teacher's guide assessment goals in this section of the book.

The first self-assessment task is an example from the textbook section on families and relatives. The left side of Fig. 9.1 consists of listening to the designated lesson text (1), drawing a family tree (2), and engaging in a *Show and Tell* activity (3). The right hand side shows a self-assessment task titled *How am I doing?* This section includes two statements, where the pupil is instructed to "choose the most appropriate option" from a drop down menu (*Valitse sinulle sopivin vaihtoehto)* on a four step scale between "I Can do very well" (*Osaan erittäin hyvin*) to "I still need to practise" (*Tarvitsen vielä harjoitusta*). The statements are "I can talk in English about my family and other relatives" (*Osaan kertoa englanniksi perheestäni ja muista sukulaisistani)* and "I can ask my friend how s/he is doing" *(Osaan kysellä englanniksi ystäväni vointia).*

The *How am I doing* tasks seem to represent a communicative view of language, emphasizing the goals of telling about family and asking about how friends are doing. The choices for replies seem to echo the CEFR (Common European Framework of Reference; Council of Europe, 2020) *Can do* statements both in their formulation ("*I can* talk about my family…") and the choices for replies (*I can do this well / I still need practise).* The self-assessment tasks echo the curriculum goals related to language learning skills, particularly those that concern learning to set goals for one's language learning and learning to evaluate how one studies language. On the other hand, *Can do* is also not just about what the learner knows but also a subtext of what they still do not know. It reflects on the curricular concepts of self-assessment of language learning goals and study practices; development of self-assessment skills are part of a formative assessment scheme that is not intended to have an effect on the final grade.

In essence, the test extract presents the pupil as active in reflecting on their learning, and fades out the teacher. The exercise is digital, i.e. it can be done on the computer by clicking on the appropriate choice. The view of language is mainly communicative; the view of learning constructivist, and the teacher is mostly absent from the assemblage of book – pupil – curriculum.

Fig. 9.1 "How am I doing"? Self-evaluation of the textbook chapter on family and relatives

The second self-assessment task (Fig. 9.2) is found at the assessment section of the Scene Teacher's guide that also includes description of assessment principles in the book (see Table 9.1). It is a simple printable pdf format grid that lists about a dozen activities, divided into two groups, and requests the pupil to evaluate their behavior on a three-point scale where the scale steps are defined by using three kinds of smileys (a glad, neutral and sad one). The two kinds of activities can be characterised as working skills and behavior on the one hand, and as language learning related activities on the other. The first set is somewhat longer with eight statements, such as *I do my homework every time*, *I raise my hand in the lessons*, and *I listen to my peers*. The second set comprises five statements focusing on the homework, i.e. *I study the text at home*, *I study the words given to us as homework*, and *I study irregular verbs at home*.

While, grammatically, the activity is presented as pupil-centered (first person singular *I do, I have, I participate* etc.), the pupil is still described as one who follows orders and is subject to behavior control, presented mainly in / by the book (*I have my study equipment with me*) or as if the instructions were given by the teacher (*I listen to the teacher's instructions*). Rather than an active subject, this presents the learner as an observed or passive agent (see Leipold & Winkel, 2017), whose behavior is controlled, and implicitly disciplined and subordinated.

The need for the student to be disciplined is exemplified by self-assessment tasks that link the test to curricular goals of behavior in a way that emphasises the need to follow rules and control behavior. The message that the textbook sends to pupils in this passage can be summarised as *check that you have your equipment, check that you have done your homework, do not speak without permission*. Interestingly, the pupil doing self-assessment is presented as needing to listen to the teacher (*I listen to the teacher's instructions*) and to fellow pupils (*I listen to my partner*), but not to

Fig. 9.2 Self-assessment grid (original on the left, with our translation on the right)

actively speak, which is restricted rather than encouraged. *I put my hand up in class* can refer either to being active in class (preparing to speak), or being obedient (asking for permission before participating). Either way, it is a way of passivising the pupil and regulating behavior physically.

Learning in the self-evaluation grid is represented as behaviourist repetition that takes place in a continuum of doing one's homework (presumably before class), participating in an orderly manner and speaking with permission (in class), and learning particular kinds of tasks at home (after class).

The view of language is that of language as separate individual categories that are practised apparently separately and drilled before and after class as homework (*I revise grammar, I study irregular verbs*). The role of teacher is that of a supervisor (*I listen to the teacher's instructions*) or controller by implication (*I put my hand up in class,* implying asking the teacher for permission to speak).

We would like to emphasise here, though, that this is not an analysis of the textbook itself or the tasks in it, but rather what is offered for the teacher as aid in pupils' self-evaluation. In other words, the analysis of how language is viewed is based on how it appears in self-evaluation. This implies that whatever the pupils are taught to do with the self-evaluation exercises is what they are assumed to be able to evaluate themselves on.

In addition to the verbal options, the self-assessment includes a set of smileys and frownies that depict the scale of the pupil's self-assessment. While the one on the left is clearly a happy one, and the middle one somewhat neutral, the one on the right appears more ambiguous. It is obviously the "wrong" choice in this structural-behaviorist grid, representing possibly just general dissatisfaction, but possibly also unhappiness or even disgust. In any case, it seems that the curriculum goal of self-assessment becoming more analytical in the upper grades (see above) may result in a dissecting of learning, language and behavior in structural and behavioral goals that are easily identifiable (and possibly also easily internalised) by the student in smiley face self-assessment.

Discussion

Bringing together the analyses of the curricular goals, the textbook assessment descriptors and the two examples of textbook tests, we find different and somewhat contradicting understandings of textbook agency and its implications to learner activities emerging in this assemblage. While the book facilitates internalizing a particular kind of appropriate behavior and learning, the curriculum goals appear abstract and somewhat unclear, and the pupil and teacher are being represented as passive. This contradicts the curricular goals of learner subjectivity. While learning is presented in the textbook both as constructive (*Can do* statements) and structuralist (grammar revisions and other independent drilling), the desired behavior and activity of the pupil is presented as following rules, being disciplined and obedient, and doing independent work on the text and other tasks. Cognitively, the tasks

promote constructivist learning, while socially and materially, the textbook facilitates repetitive and passive behavioral tasks.

The view of language in the Teacher's guide section is that of language consisting of individual categories of "text", "words", "grammar". From the agency viewpoint, the agency of the book-pupil-classroom assemblage results in a passive traditional building blocks view of language as separate skills that are easily testable. Doing all this in the first person singular format emphasises the idealised student as having internalised all this as a voluntary activity. In other words, the pupil's agency is that of a passive, disciplined subject who is active when following the rules, making the textbook a technology for directing behavior (for a discussion of Foucault's complex notion of *governmentality* as techniques directing human behavior, see Hutchinson & O'Malley, 2018). From the point of view of teacher agency, the "easily testable" structure of the tests may imply less work for the teacher in a way that does not assign agency either to teacher or to the pupil.

From our analysis of the curriculum, the teacher's guide assessment descriptions, and the two self-assessment exercises, two phenomena emerge that cut across the more traditionally observed (see literature review above) pupil – book interface.

First, the book offers and enables an agency of an active learner, in charge of their learning, within a socio-constructivist paradigm of learning and language and in line with the curricular goals and teacher's guide principles. However, the self-evaluation exercise in the teacher's guide emphasises agency that emerges around discipline, repetition, and language divided into blocks rehearsed separately, demonstrating a structuralist-behaviorist paradigm of language and learning. The latter fits poorly with the ways in which language and learning are presented in the curriculum, and represents the role of the teacher in vague and abstract terms.

Our analysis reflects the layered nature of language education policy, where different language and learning paradigms materialise simultaneously rather than historically following each other, creating different and potentially conflicting (language and learning) ideological constellations and tensions (Saarinen et al., 2019). From the point of view of learner agency, the intra-action of book, curriculum and human actors creates contradictory and conflicting subject positions particularly for pupils that also have very material implications to the ideal behavior of the pupils.

The conflicting views of language and learning are matched by a conflicting view of subject and object positions, thus creating the dynamic possibility for different kinds of agencies to emerge. The textbook *How am I doing* task (Fig. 9.1) enacts agency mainly from the curricular goals, explicated particularly in the Language Portfolio section of the teacher guide. The second self-evaluation task, in turn, reflects a different kind of agency where the pupil performs to the teacher a particular kind of passive learner, reflected in the more teacher centered parts of the teacher's guide assessment section.

From the point of view of an active learner ideal, this is concerning. The lifelong learning ideal is thus condensed either into someone who "can do"; i.e. someone who has internalised and can fulfil the requirements of an active citizen; or into someone who needs to internalise a (learner and language user) position of being observed and controlled, behaving in a subordinated way, and conceptualising language as separate skills to be learned.

We experimented with the idea of new agential cuts (Barad, 2007) by not analysing the book purely discursively, or purely as used in classroom, but by analysing the discursive features of the book that enable a socio-material analysis of the potential agency of the book in construing an ideal learner. This also implied considering the intertwined curricular and learning ideologies. The arbitrariness of the traditional Cartesian (human – non-human) cut and how we analyse "objects" and "subjects" started to materialise in the different and sometimes conflicting dynamics that emerged in our analysis: the textbook agency is not one but many.

The way in which we make these cuts indeed has a profound effect on how we can become aware of them in the first place, and how we consequently study them. While our research setting did not allow for an analysis of what physically takes place in classrooms and homework situations, our analysis showed the potential for learner positionings that go against the curriculum and textbook idealisations of constructivist learning. As the existing cuts and ensuing understandings of agency are deeply entrenched in our research culture, imagining new cuts also required a lot of effort. While it seems that the role of textbook as agent could be studied with other material methods, such as the actual ways in which the pupil – textbook interaction takes place (see for instance chapter by Jakonen & Jauni, Chap. 2, this volume) as well, the concept of new agential cuts was helpful in challenging the human centered epistemologies we are adapted to.

To what extent political arguments and perspectives supporting the importance of self-assessment and its role in lifelong learning have entered the educational discourses, curricula and textbooks for foreign languages would be a topic worth investigating in the future. The ideals of self-assessment as politically commodified and simultaneously empowering *Can do* statements on one hand, and as constraining behavioral control on the other, certainly meet in textbooks. However, this also implies an entanglement of the students' bodies and the knowledge that they are expected to embody as a result of learning. This gives us a perspective to understanding the ideological role of textbooks as not only describing, but materially construing a learner agency. Consequently, the textbooks not only facilitate and promote different views of learning (as constructivist and behaviorist), but also a particular kind of disciplined social and material behavior to the extent that learner behavior and learning are inseparably intertwined.

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Part V
Epilogue

Chapter 10
A Diffractive Reading

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Abstract Towards the end of the editing process, we started to see the book as something more than a collection of chapters around a theme: as an assemblage, which included, of course, the community of authors. When we put out the first call for contributions in May 2018, most authors volunteered a contribution rather quickly, others joined a bit later, and some dropped out for different reasons, underlining the dynamic nature of our assemblage. In pre-pandemic times, we met on and off campus, introduced some of our ideas at conferences, and had a workshop day to brainstorm, plan chapters, and reflect on the process and the purpose of the book. We were connected by common meals, jokes, writing, thinking, and by annoying and challenging each other as colleagues and collaborators. Sometimes, we managed to give space to the other lives we lead: our families, homes, and hobbies. We are thankful that these were invited into our work and being-together. This chapter provides a concluding diffraction, not only as a metaphor of a prism that collects and reconfigures our varied ideas, but as a socio-material view into the book process itself.

Keywords Diffraction · Ontological variation · Relationality · Agential realism · Entangled ethics

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Diffractions

As we were finalizing the book that this chapter concludes, a special issue on *Materials Use Across Diverse Contexts of Language Learning and Teaching,* edited by Guerrettaz et al. (2021), came out in the Modern Language Journal. Mel's joining us for this chapter changed it (and us). She brought a fresh pair of eyes to this volume, her experience of writing and reviewing work on socio-materiality and new materialism, and, maybe most importantly, a sense of possibility – the idea that within our limitations, doing the work with sincerity and (self-)criticality matters. Mel listened to us talk about the process of editing this volume, our original ideas, and the latest developments, and suggested that we use *diffractions* as a lens. This immediately made sense to us, first as a metaphor for the book as a thing that collects and reconfigures our varied ideas, much like rays of light meeting an obstacle and fanning out, and then as a socio-material view into the book process itself.

Diffraction offered us a theory (Barad, 2007, 2014; Haraway, 1997) for thinking together about what is visible (and recognizable) and under what conditions. It also became an invitation to consider what has perhaps stayed out of sight and the relationships these in/visible phenomena hold with us, as human editors and authors, and with the book, as an entanglement of social and material elements. Barad (2007) explains:

> One important aspect that I discuss is that diffraction does not fix what is the object and what is the subject in advance, and so, unlike methods of reading one text or set of ideas against another where one set serves as a fixed frame of reference, diffraction involves reading insights through one another in ways that help illuminate differences as they emerge: how different differences get made, what gets excluded, and how those exclusions matter. (p. 30)

Rather than co-authoring a re-iteration of the chapters, displaced into a chapter of its own, we rely on diffraction here to help us understand both the phenomenon being diffracted (i.e., language education research) and the instrument or intervention that does the actual diffracting (i.e., book focused on new materialist approaches to research). Diffraction draws us in. Our experiences, learnings, studies, theories, and also our networks, group belongings and collegial and personal relationships are all entangled with this book and its making. The idea of diffraction invites us to read ourselves, with our worlds, into this book: We are not outside observers ("reflectors") of this product and its production, but bound up in it and always changing with it. In this sense, the book is not an outcome of us and our work, but we are just as much an outcome of the book.

Conducting research and especially writing a collection of chapters like this is often discussed as a linear process, as if we decided to have an idea and fulfil it following particular steps and procedures of proposing, writing, editing and resubmitting with a purposeful plan. What happens however, as anyone who has been involved in this kind of an effort knows, is much more arbitrary. This reflects a larger contrast between Enlightenment-linear thinking and distributed agency (Barad, 2007). The process, rather than the end product, is the material outcome.

Here, we embrace diffraction and contingency, we see this book as the prism that diffused our work and work process and made different parts of it visible: expectations, doubts, and identities, things we did and didn't do, our relations and connections. As we allow this book to be a diffraction, we are inspired by Haraway (1997), who explains:

> [D]iffraction can be a metaphor for another kind of critical consciousness … one committed to making a difference and not to repeating the Sacred Image of the Same … diffraction is a narrative, graphic, psychological, spiritual, and political technology for making consequential meanings. (Haraway, 1997: 16, cited by Jenkins et al., 2021)

In Haraway's sense, diffraction refuses reproduction of the same, refuses to be our mirror (Murris & Bozalek, 2019, p. 1056) and instead helps us understand the narrative of ourselves in this book as well the device doing the diffracting – an edited volume on new materialism and its making. What is it then, that became visible to us in the diffraction? How do we account for the difference in what was visible during the production of the book compared to what is now visible through this attempt at diffractive thinking?

Some Things Come Easy, Others Are Hard

> (T)heories are not accepted because they are true. They are accepted because they are accepted by the authority figures in each field. (Deloria, 2012, p. 6)

Trying to grasp some of what theories subsumed under "new materialism" has challenged our thinking in more than intellectual ways. Having your ontologies and epistemologies questioned was uncomfortable and exhausting. Even when co-writing our own chapters, we kept being pulled back into familiar territories of social constructionism, humanism, and traditional distributions of agency. Our wrestling with new ideas also surfaced in a public debate, a community event (Ennser-Kananen, 2019), during which we put many questions on the (bar) table: How do we know what we think we know? What are our own concepts based on? Trying to deeply understand a new ontology was difficult work and forced ourselves to question a lot of internalized education and socialization that had become part of our identity. Breaking, or even putting cracks into these ways of being and thinking (Lather & St Pierre, 2013), was something Taina described in very physical terms as "gearing my brain into another direction".

Other things came easy to us, for instance, how we editors, Johanna and Taina, first came to understand materiality, and the intersections of the material and the social, in the way we did. Almost effortlessly, we (were) steered towards particular books, ideas, and names, but not others. So, while the process of engaging with new ontologies and epistemologies of new materialism at times felt like a great, sometimes impossible, effort, a still ongoing process, at the same time we were – without much effort or awareness of it – drawn to the literature and knowledge that seemed available, accessible and trustworthy to us. We followed the path that "Western"

scholars are trained to take when they first happen upon ideas that are unfamiliar and, perhaps, full of potential. We read seemingly foundational texts (e.g., Barad, 2007) and we read the texts that attempted to apply these ideas to queries about the nature of the world in general or language education in particular (e.g., Toohey, 2018). The book represents this path quite well, with similar citational genealogies across the chapters. Yet, a diffractive view of the book also reveals important epistemological and ontological gaps, omissions, and erasures.

While the *labor* of "learning new materialism," was challenging, stretching our thinking at the expense of family time and rest; the work of identifying and recognizing what that labor should look like came easy. The path we followed appeared to cross disciplinary boundaries (i.e., quantum physics, feminism, critical language studies), and in so doing we failed to recognize another longstanding path of scholarly thought that is concerned with similar relational ontologies: Indigenous work on materiality. In this sense, Rosiek et al.'s (2020) description of new materialist scholarship applies also to us (p. 2):

> As a consequence, new materialist scholars' enthusiasm for agential realism could, by failing to acknowledge and seriously engage the Indigenous scholars already working with parallel concepts, end up reinforcing ongoing practices of erasure of Indigenous cultures and thought (Ahmed, 2017; Deloria, 1999; Todd, 2016; Tuck, 2014; Weheliye, 2014)

This was not an oversight. Wrestling with posthumanist and new materialist ideas, at the time and in the place where we first became receptive to them, oftentimes meant going against our inner (Enlightenment-inspired) critic that insisted that these ideas were unscientific, irrational, and a little immature. Mel directed our gaze to Indigenous thought to help us bridge that, to understand that theories do not have to follow the binaries and divides of Cartesian logic and Enlightenment ideologies – something we were doing intuitively but without the theoretical apparatus. This reading of theory that centers the material as immature highlights important conceptual contrasts – differences between the onto-epistemologies of the traditional academy (i.e., Enlightenment thinking) and the ones that this book's contributors attempt to take up. Agential realism, for instance, flies in the face of anthropocentrism and, apparently, requires the disciplinary vocabulary of quantum physics to legitimate its use as a theoretical framework in 'serious' social science scholarship. Yet, the idea of non-human agency is not unique to new materialism nor is it novel, even within the socioconstructivist paradigm (see Ahmed, 2008 on the misguided criticism of feminism as "anti-material" or "anti-biological"). The importance of agent ontologies to the relational nature of the universe has long been fundamental to many Indigenous thought traditions (Rosiek et al., 2020) and is well developed in Indigenous studies literature (e.g., Coulthard, 2014; Deloria, 1999; Marker, 2018; Vizenor, 2008). Is it really more comfortable for non-Indigenous scholars to sit in *discomfort* with NM scholarship than it is to engage with Indigenous takes on similar principles of distributed agency and space-time-matter relationality? The perceived challenges associated with explorations of agential socio-material relations are rooted in an ontological difference that shapes how we recognize and investigate phenomena. Related to this, the conceptual tools we recognize as legitimate for

these explorations are determined by difference as well – difference that is ideological and political.

Our writing about the challenges associated with taking up new materialism (as an approach that is new to us) identifies the work as 'hard', yet our view of the book as a diffraction pattern of sorts also shows how 'easy' it is for white, Western/Northern/European scholarship to misrecognize ways of knowing. We turn to Ahmed (2006) for help in considering issues related to recognition and orientation, with her description of how the European philosopher Husserl might understand his own writing table. "What he sees is shaped by a direction he has already taken, a direction that shapes what is available to him, in the sense of what he faces and what he can reach" (Ahmed, 2006, p. 550). Ahmed goes on to describe how our orientations to the world are shaped by various straightening devices, making some phenomena more visible than others. Academia is undoubtedly a powerful straightening device and, in thinking diffractively about this book, the recognizable scholarly path for understanding new materialism was, at least for us, clearly oriented toward a colonial version of "interdisciplinary" scholarship.

We are products of power relations (Foucault, 1980), and many of the recognizable 'things' in this world (i.e., objects, ideas, discourses) are as well. For instance, we all know what English is. It is recognizable to us when we hear it, read it, or use it, yet this idea of English as a single 'thing' is preposterous (Makoni & Pennycook, 2007); and any user of a non-prestige variety of English will tell you that its recognizability is negotiable. Our ability to recognize English *as English* is shaped by our relations to its users and its uses – our 'orientations' (Ahmed, 2006) to language – in the social and material world. Similarly, our recognition of academic 'things' like theory, data, and findings are constituted by relations of power in institutions of higher education –the archival wing of empire (Richards, 1993).

It is important to note that the academy *can* serve as a point of entry into Indigenous and decolonizing knowledges. As la paperson (2017) points out, in the all-encompassing accumulating work of the imperial archive "the decolonial is always already amid the colonial" (p. xvi). The absence of decolonizing theory and method in the book-as-a-diffraction-pattern tells us something about the dominant orientations of new materialism in the academy (i.e., they are not inherently anti-imperialist). Importantly, these orientations

> ...also point us toward the future. The hope of changing directions is always that we do not know where some paths may take us: risking departure from the straight and narrow, makes new futures possible, which might involve going astray, getting lost, or even becoming queer. (Ahmed, 2006, p. 554)

In this final chapter, we highlight theoretical and ontological pathways that were not recognized, not taken or followed, so that we might push for a change of direction. For instance, Deloria (1999) describes an understanding of the universe in terms of particular relations among particular phenomena rather than generalizing theories or laws. This emphasis on relations in the immediate environment, on *place* (Marker, 2018), provides a path for examining distributed agency in a specific, localized way that can construct new, nuanced understandings of socio-material relations. Marker's

characterisation of place grows from an Indigenous ontology and refers to the livingness or "ensouled" nature of land as far more than a static component of the physical, natural environment. In essence "(a)ll inquiry, in this cosmology, must begin with an awareness of the interconnectedness of plants, animals, and humans, geologic forms along with the stories that tune and shape cognition of a landscape that is also conscious of human beings" (p. 454). We note that *place* is a potential commonality across this book's contributors (a bit of an oddity for academic publishing); and though researcher relations in and with this place were not explored in the book, diffraction helps us recognise the need for more attention to how our relations with place are entangled with other relations holding us. This is a potential strength of our RECLAS initiative as a local attempt at community sense-making, and the kind that rarely gets recognized in academic incentive initiatives.

We originally took up the challenge of the research profiling initiative RECLAS to "develop the field" in two ways. First, we felt the need to look in, i.e. to shift our perspective to look at our work in new material ways that extend beyond anthropocentric, Eurocentric, or otherwise dominant perspectives. Second, we wanted to look out, or (re)ground our work in societal needs and issues that understand society in not just more inclusive, but also ethically material ways, acknowledging the complex relations between the animate and the inanimate. While we began our journey in the RECLAS community by looking at the empirical, methodological and theoretical role of language in what we assumed to be a changing society, we are now moving on to unsettling our earlier understandings of our work. Thus, we are reinterpreting the name of our profiling initiative ("research collegium for language in changing society") to mean "change for applied language studies in society" and even "social change through applied language studies", referring to an attempt and an invitation to rethink our work and reposition ourselves as researchers in ways that lure us out of our intellectual and academic comfort zones and at the same time respond to calls for research that is socially relevant and scientifically sound.

Towards an Entangled Ethics

Diffraction is a useful lens for this final chapter because it provides a dynamic alternative to reflection, but it also has ethical implications for our work. As Thiele (2014) reminds us, "(d)iffraction is an ethico-onto-epistemological matter" (p. 206). If our nature is fundamentally one that is made *in relation*, then we are accountable to this relationality and its intra-actions. This "urge of ethical accountability" (De Line, 2016, n.p.) echoes longstanding Indigenous thought traditions that take relationality as fundamental to understanding the universe (e.g., Coulthard, 2014; Deloria, 1999; Simpson, 2014; Wildcat, 2005). In this sense, we aim for diffraction rather than reflection to chart the 'how' of the relations instantiated by and with this project.

Although efforts exist to ground our field more deeply in approaches that highlight ethics and social change (see for instance Pennycook, 2001 and Critical applied

linguistics; Bigelow & Ennser-Kananen, 2014 and the advocacy turn in educational/ applied linguistics), they tend to be morally anchored in the field rather than onto- logically anchored in the research. A view of ethics as foundational ontological premise, which precedes research and extends beyond it, and in which the research process is embedded, makes it impossible to separate ethics from the research pro- cess or the researcher. This aligns with Bennett's (2010, p. 37) call on humans to take responsibility for their choices, particularly when making decisions about whether and how to participate in activities that have the potential to cause harm. In this sense, new materialism could be an approach that understands ethics as onto- logically and epistemologically rooted in research.

We read Bennett's (2010) call as an invitation to understanding ethics and research as intertwined practice. This implies a departure from an approach to ethics as a technical fix, legal obligation, or afterthought; an approach prevalent in profes- sional and academic fields (see for instance BERA, 2018). This *agential realism* or *ethico-onto-epistemology* (Barad, 2007, p. 381; Barad in Kleinman, 2012, p. 77) means that rather than be situated in the world, we are entangled in the ongoing articulation of it. As such, ethics encompasses not merely socially negotiated con- structs, but is materially and inseparably entangled in our research (see Coole & Frost, 2010 for a discussion of ethics) and us as researchers. Our research cannot be conceptualised in terms of the researcher, participants and context as separate enti- ties, where the researcher is the subject, but rather we as researchers are part of the intra-action of enacting the phenomena we study. In Barad's paradigm, a researcher, then, would not minimize or mitigate their presence in the research process, but acknowledge their participation in it as unavoidable: "I am part of (but not central to) the assemblage of the classroom, and we push each other into existence, me and all the material and immaterial parts of this assemblage. We do not exist outside of each other but only in intra-action." Thus, rather than understanding researcher agency in terms of *"observer's paradox"* (originating with Labov, 1972; i.e. the investigator unwittingly influencing the phenomenon), agential realism understands the researcher as part of the assemblage where the phenomenon under investigation emerges in the first place. This challenges us to question our usual framings of how we know what we know. The ethical challenge for us as researchers is, then, to acknowledge our entanglement, and take on the responsibility it entails. A humility and empathy that derives from this understanding can be a motor for newly (re) gained attention to social justice and equity issues.

We believe that this kind of entangled ethics can help us carve out new spaces for understanding humans in an ethical relationship with the material environment (rather than as removed from or superior to it). This goes hand in hand with a pro- cess of increasing equity among humans. Defining society as an ethical interrela- tionship between humans and material, and thus understanding ourselves as deeply embedded in our environment, fosters an understanding of our own contingency, dependence, and responsibility for this environment that includes our fellow humans as well as the non-human reality.

Critical posthumanist realism can be seen as an anti-oppressive frame in that it both encourages and enables researchers to commit to ethically grounded relations

in their research. When we challenge humanist approaches to research, we challenge a particular image of the human. As Pennycook says, humanism "was never a category that included everyone" (p. 3), but rather one where particular humans have dominated ways of thinking and knowing, i.e. the white, male, heterosexual, able-bodied, cisgender, industrialized, neurotypical, socioeconomically advantaged, European ways of being researchers and doing research. Opening up academic and scientific spaces by decentering this particular type of humans has been at the heart of many applied linguists' scholarship for a while (Kubota & Lin, 2006; Canagarajah, 2012; Yosso, 2013; Flores & Rosa, 2015; McCarty & Lee, 2014; Motha, 2014; Anya, 2016; Piller, 2016; García et al., 2017, 2021; Rosa & Flores, 2017; Phipps, 2019; Rosa, 2019) and can be supported and receive new momentum from a theoretical basis that challenges a humanism of the privileged and replaces it with an understanding of the ethical relationality of humans and matter.

We can see this book as holding generations of migration, settlement, dispossession (past and future), and the spaces occupied and traversed along the way(s). It holds our relations with humans, non-humans, and place. As Deloria (1986) says, "the universe is personal and, therefore, must be approached in a personal manner" (n.p.). We lean into these relationships, and into Indigenous conceptions of relationality that imply an inherent morality.

We Are Supposed to Be Here

We have affectionately referred to this book as a 'snapshot' of one community of critical language scholars during a specific period of time, noting how it reveals the objects of each scholar's attention at the time along with the questions they investigated with shared conceptual tools (i.e., new materialism, agential realism). In this sense, the book is an assemblage of bodies, curiosities, anxieties, tensions, and labors caught and compiled for the purpose of generating knowledge or, at least, for some increased collective understanding. This metaphor of the snapshot is convenient for reflecting *a posteriori* because it is reductive – it condenses and simplifies all of the book's elements to a flat image that can be taken in all at once. However, it is also possible that our consideration of the book as a snapshot need not have such a minimizing effect. Barad (2016) tells us "there's this sense in which time and being have this thickness to it – the thick now – this particular moment has all times in it."

Our membership in this community, which got thrown together by our involvement with the academy and then again by our investment in this book, has shaped what we do and how we do it. It has enabled us to see further, think deeper, and step outside of our trodden paths. The notion of this book as a snapshot, as a "thick moment" that has all of the times, all our spaces and all our relations in it, offers a new way of understanding academic publishing. In addition to thinking of this compilation as either a finished product (and thus failing to see the process nature of it) or permanently incomplete (and thus faulty), we see it as one that has "all of it", and, in this sense, is very much complete.

Diffractions of this book helped us see the role of different academic conventions and genres for our work. A lot of things influence what we do – whether or not they align with some academic quality standards cannot always be our main concern. Having internalized "evaluating" and "reflecting" as major ways of being academics, we sometimes lose sight of what the process itself does to us while we engage in it. Diffractions can be helpful in seeing and naming what we did, which in turn can reveal what is not intended for an academic audience, and thus cause irritation, disbelief, relief, and a spark for new fires all at the same time. Diffractions helped us understand that we are not merely autonomous rational choice-makers but entangled in the academic and personal, a realization that may change not just us as academics, but the academic world around us.

We are seeing and naming pieces in this diffraction without trying to put them together into a neat picture, but instead being in the presence and engaged with the things we did and did not do, the things that happened and did not happen. This sparked a memory from Taina's vacation, as she and her wife got a piece of advice from fellow travellers: "Remember, if you get lost, tell yourselves that this is where you were supposed to be." We are not lost. This is the book we had to make, because this is the book we made and the book that made us.

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