

# **DIGITAL DISTRACTION**

**A qualitative exploration of media multitasking**

Jesper Aagaard



PhD Dissertation, Aarhus, January 2017  
Department of Psychology and Behavioral Sciences  
School of Business and Social Sciences, Aarhus University



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## English summary

Digital technology constitutes a substantial presence in many classrooms across the world today. In a recent report, however, the OECD finds that while moderate use of digital technology is related to improved PISA scores, students who use computers very frequently at school do a lot *worse* in most learning outcomes, even after accounting for social background and student demographics. The report speculates that this result may be due to the fact that digital technology affords classroom distraction. This interpretation raises an important question: “How do educational technologies affect student attention?”. Drawing inspiration from a school of thought called postphenomenology, this dissertation addresses this question by exploring the intricate relationship between using digital devices, paying attention, and becoming distracted as these phenomena coalesce and intertwine in the contemporary classroom.

After first discussing, dismantling, and dismissing the unbridled techno-optimism that characterizes most discourse on educational technology, the dissertation focuses on the field of media multitasking research, which is concerned with the limitations of the human mind and the fraught relationship between multitasking and paying attention. After analyzing how the concept of ‘multitasking’ is used in this literature, however, it is argued that this seemingly neutral term really means *off-tasking* and that we should replace a cognitive focus on the mind with a phenomenological focus on bodies and technologies to understand such distraction. In the following section, the positivist assumptions of existing media multitasking research are challenged, and it is argued that qualitative inquiry may be helpful when studying a normative phenomenon such as off-tasking. The dissertation proceeds to discuss the textualism of current qualitative research and argues for the value of also attending to the oft-neglected dimension of *material presence* when conducting qualitative inquiry. The dissertation then culminates in three empirical articles that emanate from a long-term, multi-method qualitative inquiry at a Danish business college:

In **Article 1**, the presence of technologies in the classroom is explored through participant observation. It is shown that such devices are involved in two complementary patterns of spatial relations, namely the twin movements of bringing educationally relevant information into the space of the classroom (*‘outside-in’*) and escaping educational activity in favor of off-task activity (*‘inside-out’*). In **Article 2**, students’ off-task use of educational technology is explored through postphenomenologically informed, qualitative interviews. Students report experiencing a *habitual distraction* in the form of a strong attraction towards certain frequently visited, but educationally irrelevant websites such as Facebook. Laptops are experienced as endowed with an attractive allure that ‘pulls you in’. In **Article 3**, digital distraction is situated in students’ everyday lives through qualitative interviews. Students describe how the use of mobile devices during face-to-face interactions leads to impaired microsocial dynamics and *unintentional misattunement* that disrupts conversational flow and signals indifference to the non-phone user. Digital distraction transcends the confines of the classroom.

Taken together, these three articles highlight the importance of studying, analyzing, and discussing our collective 21<sup>st</sup> century technological habits. Practical and theoretical implications are discussed.

## Dansk sammenfatning

Digital teknologi spiller en vigtig rolle i mange klasselokaler overalt i verden. En nylig rapport fra OECD konkluderer dog, at mens moderat brug af digitale teknologier er forbundet med forbedrede PISA resultater, så klarer elever, der meget ofte bruger computere i skolen, sig betydeligt *dårligere* i de fleste læringsmålinger, selv efter at der tages højde for social baggrund og demografiske karakteristika. Dette resultat kan ifølge rapporten skyldes, at digitale teknologier åbner muligheden for distraktion i klasselokalet. Denne fortolkning rejser et vigtigt spørgsmål: “Hvordan påvirker digitale læremidler elevers opmærksomhed?”. Med inspiration fra en filosofisk tankeretning kaldet postfænomenologi, adresserer denne afhandling dette spørgsmål ved at belyse det komplekse samspil mellem brugen af digitale teknologier, opmærksomhed og distraktion sådan som disse tre fænomener sammensmeltes og indfiltres i det moderne klasselokale.

Efter at have diskuteret, dekonstrueret og afvist den ukuelige tekno-optimisme, der kendetegner diskursen omkring digitale læremidler, fokuserer afhandlingen på forskningsfeltet indenfor medie multitasking, der beskæftiger sig med det menneskelige sinds begrænsninger og det anspændte forhold mellem multitasking og opmærksomhed. Efter at have analyseret hvordan begrebet ‘multitasking’ anvendes indenfor forskningslitteraturen, argumenteres der dog for, at dette tilsyneladende neutrale begreb faktisk betyder *off-tasking*, og at vi for at forstå en sådan distraktion bør erstatte et kognitivt fokus på sindet med et postfænomenologisk fokus på kroppe og teknologier. I det følgende afsnit udfordres de positivistiske antagelser i den eksisterende medie multitasking forskning, og der argumenteres for, at en kvalitativ tilgang kan være gavnlige, når man studerer et normativt fænomen som *off-tasking*. Afhandlingen diskuterer dernæst kvalitativ forsknings udprægede tekstualisme og fremhæver værdien i at fokusere på den ofte oversete dimension af *tingslig tilstedeværelse*, når man benytter en kvalitativ tilgang. Afhandlingen kulminerer slutteligt i tre empiriske artikler, som stammer fra en langvarig, multimetodisk kvalitativ undersøgelse i et dansk handelsgymnasium:

I **Artikel 1** udforskes tilstedeværelsen af teknologier i klasselokalet via deltagerobservation. Det påvises, hvordan sådanne teknologier er involveret i to uadskillelige mønstre af rumlige relationer, hvor relevant information på den ene side bringes ind i klasselokalet (*udefra-og-ind*), og eleverne på den anden side flygter fra undervisningen i klasselokalet til fordel for distraktion (*indefra-og-ud*). I **Artikel 2** udforskes elevernes distraherende brug af digitale læremidler via postfænomenologisk inspirerede, kvalitative interviews. Eleverne fortæller, at de oplever en *habituel distraktion* i form af en stærk tiltrækning til visse hyppigt besøgte, men fagligt irrelevante hjemmesider som Facebook. Bærbare computere opleves som udstyret med en magnetisk tiltrækningskraft, som ‘trækker i én’. I **Artikel 3** situeres digital distraktion i elevernes dagligdag via kvalitative interviews. Eleverne beskriver, hvordan brugen af mobiler under ‘ansigt-til-ansigt’ interaktioner fører til forringede mikrosociale dynamikker og *utilsigtet fejlafstemning*, som forstyrrer samtalens flow og signalerer ligegyldighed overfor ikke-telefonbrugende parter. Digital distraktion strækker udover klasselokalet.

Tilsammen understreger disse tre artikler vigtigheden af at studere, analysere, og diskutere vores kollektive teknologivaner i det 21. århundrede. Praktiske og teoretiske implikationer diskuteres.

# 1. Introduction

How often it happens, in a conversation among a group of people, that we are ‘not there’, how often we find that we were absent, albeit without having fallen asleep. This not-being-there, this being-away, has nothing at all to do with consciousness or unconsciousness in the usual sense. On the contrary, this not-being-there can be highly conscious. In such being absent we are precisely concerned with ourselves, or with something else. Yet this not-being-there is nonetheless a being-away.

(Martin Heidegger, *The Fundamental Concepts of Metaphysics*)

Being-there and being-away. Attention and distraction. Two fundamental aspects of our existence. That is, roughly, what this dissertation is about. Before embarking on this journey, however, allow me to describe how I became interested in the relationship between attention, distraction, and the use of digital devices. The story begins in 2010, when as a psychology student at Aarhus University I took a course on educational psychology. One day, professor Klaus Nielsen gave us a fascinating lecture on the phenomenology of learning, which is an approach that sticks close to human experience and uses everyday skills like driving, hammering, and playing chess to explore learning. Phenomenology argues that learning does not entail a movement from concrete situations to abstract knowledge, but actually moves the other way around. This is in stark contrast to conventional Western wisdom. Near the end of the lecture, professor Nielsen turned to a slide containing the following quote from famous phenomenological philosopher Hubert Dreyfus: “When I was in Frankfurt and presented the five-stage skill model, Habermas said, ‘You are talking about skills like hammering and playing chess, but what you really want to do is undermine Western Society’. I said, ‘You are right, that’s exactly what it comes to’” (Flyvbjerg, 1991). I was hooked. The following semester, I went on to write my bachelor’s thesis on the Dreyfus model of skill acquisition.

Reading Dreyfus quickly led me to Martin Heidegger and his 1927 magnum opus, *Being and Time*. In the first part of this book, Heidegger famously argues that human existence is best understood as *Dasein*, literally being-there, and that a constitutive part of this existence is *Mitsein*, being-with: We are always already in-the-world with-others. The book slowly and meticulously builds these arguments in a vocabulary appropriated from old Germanic terms, which makes it notoriously difficult to understand. Fortunately, the Danish language contains etymologically similar terms in which a prefix is attached to the word ‘being’ (*væren*): Not only being-there (*tilstedeværen*) and being-with (*samvær*), but also being-present (*nærvær*) and being-absent (*fravær*). These words provided some linguistic support in my attempt to understand our everyday existence in phenomenological terms. At about the same time, I developed a pet peeve that would lay the foundation for my later interest in digital distraction, namely when during everyday conversations people use their smartphones and become distracted, or ‘absent’ as we would say in Danish. While digital devices obviously did not spawn this phenomenon (the opening quote is from Heidegger’s 1929/1930 lecture course), it does seem like they have somehow made it proliferate. People have even coined a new term to address this issue: Phubbing, a portmanteau of ‘phone’ and ‘snubbing’, which refers to snubbing someone in favor of a mobile phone. The last big step towards studying digital distraction took place in 2011,

when I became student instructor for a class of first-year psychology students. Over time, I began to notice how these students would occasionally vanish into their laptops and how this absence influenced the atmosphere of the classroom. At the same time, however, I was still a student myself and occasionally engaged in similar off-task activities during my own lecture courses. Sometimes, this even happened despite my best intentions. All these crisscrossing and overlapping events lead to my PhD application, which took shape throughout 2012 and culminated in the question: “How do educational technologies affect student attention?”.

Addressing this question has meant studying the intricate relationship between using digital devices, paying attention, and becoming distracted as these phenomena coalesce and intertwine in the contemporary classroom. I have spent the last four years attempting to understand this subject. Pursuing this research interest has brought me into uncharted territory, since a concern with technologies is relatively recent in psychology. Psychologists have long studied mental processes like attention, memory, and perception (see chapter 2 on cognitive psychology). After a so-called linguistic turn in the 1970’s, many researchers renounced this individualist focus and moved on to study the social effects of language and discourse (see chapter 3 on qualitative inquiry). Only recently, however, have psychologists begun to take the importance of things seriously (see Costall & Dreier, 2006). In this burgeoning field of research, there is a lot of theoretical openness and pluralism. My approach to studying educational technology primarily springs from a school of thought called postphenomenology, which is concerned with concrete human-technology relations. In the end, this slightly idiosyncratic constellation of research topic and approach has resulted in a dissertation that straddles the disciplinary boundaries between psychology, philosophy, education, and media studies.

## Structural outline

The present dissertation is structured accordingly: After first discussing, dismantling, and dismissing the unbridled techno-optimism that characterizes most discourse on educational technology, it focuses on the field of media multitasking research, which is concerned with the limitations of the human mind and the fraught relationship between multitasking and paying attention. After analyzing how the concept of ‘multitasking’ is used in this literature, however, it is argued that this seemingly neutral term really means *off-tasking* and that we should replace a cognitive focus on the mind with a phenomenological focus on bodies and technologies to understand such distraction. In the following section, the positivist assumptions of existing media multitasking research are challenged, and it is argued that qualitative inquiry may be helpful when studying a normative phenomenon such as off-tasking. The dissertation proceeds to discuss the textualism of current qualitative research and argues for the value of also attending to the oft-neglected dimension of *material presence* when conducting qualitative inquiry. The dissertation then culminates in three empirical articles that emanate from a long-term, multi-method qualitative inquiry at a Danish business college:

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## **Content and style**

Before we proceed to the dissertation itself, I would like to interject a few comments about its contents and style. Regarding its contents, I begin with what I have come to recognize as the qualitative researcher's creed: The renunciation of all forms of linearity in the research process. Qualitative inquiry is basically a mess (Tanggaard, 2013). In accordance with this venerable tradition, I want to acknowledge that the more or less structured layout outlined above forces a coherent narrative onto what is essentially a hodgepodge of tangentially related points. The title of this dissertation does not refer to a unified subject matter, but to an overarching theme whose ramifications I have pursued in multiple ways. The sole common denominator in my work is a strong emphasis on bodies and technologies. Regarding its style, I should warn the reader that this dissertation will be interspersed with illustrations like comics and cartoons. From a traditional scholarly perspective, this may be viewed as an unorthodox and perhaps even frivolous style. For this reason, I would like to briefly defend it: First of all, I am what psychologists would derogatively call a 'concrete thinker' and personally find it helpful to have something tangible to latch onto when attempting to grasp complicated concepts: Heidegger's hammer, Merleau-Ponty's cane, Latour's speed bump. To me, these concrete examples work as mini-paradigms that capture, embody, and manifest the authors' complex thoughts on being, habit, and agency. I thus use pictures because such visualizations have been helpful in my own attempt to grapple with the abstract phenomena that appeared during my research. Secondly, I believe that comics and cartoons have the power to aid our understanding through a certain amount of exaggeration (like visual counterparts to Weber's ideal types). As Crawford (2015) argues: "Early cartoons present a rich phenomenology of what it is like to be an embodied agent in a world of artifacts. The tendency of these things to thwart the human will is exaggerated, and through exaggeration a certain truth gets brought forward" (p. 70). Thirdly, I am a staunch believer in the scholarly value of concreteness, exemplification, and specificity, and using pictures forces you to be specific: If a picture is worth a thousand words, the real challenge becomes to condense a thousand words into one picture. Finally, I believe my use of illustrations to be consistent with recent academic rehabilitations of cartoons and comics as valid and helpful ways of disseminating research findings and engaging with contemporary technological culture (Bartlett, 2012, Steinert, 2015). Hoping that these arguments suffice, we shall now proceed to the last of our preliminary tasks: Defining what this dissertation means by the elusive term 'educational technology'.

## Defining ‘educational technology’

My task here is to explain how the concept of educational technology will be used in this dissertation. According to Mitcham and Briggles (2012), the meaning of the word technology varies greatly across the natural, human, and social sciences. The authors list no less than 20 different attempts to characterize the principal feature of technology (e.g., applied science, organ projection, the pursuit of power) and note that none of these definitions are neutral. By selectively highlighting certain aspects of the phenomenon of technology, each definition implies a certain background understanding: “Definitions are, as it were, theories writ small” (p. 319). This is an important point. No definition is ever completely neutral and objective. In this dissertation, which is explicitly concerned with bodies and technologies, the word technology and its plural form will be used to refer to *material artifacts*, because the concreteness of such artifacts connects with the “equal concreteness of our bodily existence” (Ihde, 1990:26). What I am after, in other words, is neither techniques nor rationalities, but concrete and tangible tools. This provisional definition immediately raises another question: Which tools, specifically? According to a definition of technology as material artifacts, mundane artifacts like pencils, books, and blackboards should also count as educational technologies. This point is too often forgotten in the field of educational technology, which focuses almost exclusively on the use of digital technologies (Rushby & Surry, 2016).

Having said that, however, I too have been interested in digital technologies that can be used to access, retrieve, manipulate, transmit, communicate, and disseminate information. In Denmark, such devices often go under the umbrella term ‘information technology’ (IT), while the extended term ‘information and communication technology’ (ICT) is preferred internationally. Sometimes, however, the technologies in question simply go by the minimalist designation ‘media’ as in media multitasking, which will be a topic later. All these terms accentuate slightly different things, so perhaps the most useful way of delineating the relevant technologies is to apply a so-called ostensive definition, which simply points to the devices in question: Computers, laptops, tablets, and smartphones. Although these devices vary in many aspects (the most obvious of which is size), they share at least two important features: *Networking*, which is their ability to connect people, objects, organizations, and information across time and space and an ongoing *convergence*, which is their tendency to increasingly perform similar tasks, share resources, and interlink with each other (Selwyn, 2011a). I will use the term educational technology to refer to these digital devices, albeit with a major caveat: Putting the adjective ‘educational’ in front of the word ‘technology’ signifies that the technologies in question be used for educational purposes. As will soon become evident, however, this is not always the case, and I will be discussing the off-task use of websites like Facebook. By analyzing educational technology in terms of such sites, it may look like I am confusing material artifacts with the information they make available, analog *form* with digital *content*. A key point in this dissertation, however, is that we bodily interact with technological artifacts whenever accessing such content, so separating these entities is unhelpful for our analytical purposes.

## 2. Background

Digital technology constitutes a substantial presence in many classrooms across the world today. Practically every developed country has a detailed strategy that encourages and supports its schools' increasing use of digital technology: "From Ethiopia's ICT in Education Implementation Strategy to Estonia's Learning Tiger Programme, digital technology forms a central part of the improvement and modernization of education systems around the world" (Selwyn, 2011b:23). As a result of this global venture, educational technology constitutes a thriving market that is conservatively estimated to be worth more than \$5 trillion annually and rising (Selwyn, 2014b). In a recent report, however, the OECD (2015) finds that while moderate use of digital technology is related to improved PISA scores, students who use computers very frequently at school do a lot *worse* in most learning outcomes, even after accounting for social background and student demographics. The report speculates that this result may be due to the fact that digital technology affords classroom distraction. This interpretation raises an important question: "How do educational technologies affect student attention?". In this section, I situate my approach to this question through two successive movements: I first discuss the field of educational technology as a whole. After dismissing the *techno-optimism* that characterizes much of this field, I move onto one of its techno-skeptical subfields, namely the cognitive study of media multitasking, which is concerned with the fraught relationship between multitasking and paying attention. I then proceed to critique the concept of *multitasking*, and, finally, outline my own approach: A postphenomenological study of bodies and technologies.

### **Educational technology and techno-optimism**

The rapid international development and spread of digital technology in the educational system has spawned a burgeoning field of research on educational technology. Within this field, an optimistic consensus has arisen around the use of digital technology, whose benefits are often taken for granted (Selwyn, 2014b). Digital devices are seen as capable of improving current educational practices by technologically enhancing students' learning (Kirkwood & Price, 2013, Bayne, 2015). "For over twenty-five years IT has been touted as an invaluable, highly influential, pivotal resource capable of supporting, enhancing, and ultimately transforming any area of teaching and learning" (Munro, 2010:46). Friesen (2012a) calls this popular idea the myth of technology-driven educational change: "Technology (in this case, computer and Internet technology in general) is seen as being capable of acting on its own to produce significant social and educational transformation" (p. 82). Educational technology is viewed as a benevolent force whose powers we must learn to harness. Undergirding this narrative is a thinly veiled (and sometimes very explicit) imperative for educators to use digital technology to reform a struggling educational system. To understand how this techno-optimist narrative has become so prevalent in the field of educational technology, we shall explore its discursive construction, which consists of a two-step rhetorical device in which it is argued 1) that our educational system fails to meet the needs of a new generation of learners and 2) that the solution to this problem is an increased use of educational technology (see also Selwyn, 2015a).

### *An educational problem*

A major part of the techno-optimist narrative stems from popular-scientific writings on Digital Natives (Prensky, 2001) and the Net Generation (Tapscott, 2009). These concepts refer to people born after around 1980 who have grown up using digital technology as an ordinary part of their everyday lives. Since these people have been immersed in a world of digital devices when their brains were still maturing, some scholars suggest that there is something qualitatively different about the way they think. Hayles (2007), for instance, discusses a generational shift in cognitive styles in which deep attention, which means focusing on a single object for longer periods of time, is rapidly being replaced by a *hyper attention* characterized by “switching focus rapidly among different tasks, preferring multiple information streams, seeking a high level of stimulation, and having a low tolerance for boredom” (p. 187). As a result, contemporary students cannot be expected to focus on the same subject matter for an extended period of time and no longer have the patience that is required for traditional teaching. This chronological discrepancy is portrayed as a clash between 21<sup>st</sup> century students and a 20<sup>th</sup> century educational system - what is disparagingly called cookie-cutter industrial-era schooling or the Henry Ford model of education (Selwyn, 2011b). As Tapscott (2009) puts it: “The old educational model might have been suitable for the Industrial Age, but it makes no sense for [...] the new generation of learners” (p. 308). There is a fast-growing gap or ‘digital disconnect’ between students with brains that thirst for multitasking and an educational system that is stuck in its insistence on focus and concentration. This leads Prensky (2001) to ask the provocative question: “Is it that Digital Natives can’t pay attention, or that they choose not to?” (p. 4). Just to give a sense of the enormous impact of this techno-optimist narrative, Prensky’s five-page think piece on Digital Natives has currently been cited about 16,000 times. Even the aforementioned OECD (2015) report speculates that “we have not yet become good enough at the kind of pedagogies that make the most of technology; that adding 21st-century technologies to 20th-century teaching practices will just dilute the effectiveness of teaching” (p. 3).

### *A technological solution*

According to the techno-optimist narrative, technology has created a new generation of multitasking students. As claimed in the oft-cited anthology, *Educating the Net Generation* (2005): “Net Gen students are facile at multitasking and moving back and forth (sometimes rapidly) between real and virtual spaces” (Brown, 2005:176). If we do not take these changes seriously and accommodate our teaching practices to fit these contemporary students’ needs, we risk losing them: Without the rapid changes that multimedia-experiences with technology can provide, younger generations of students will quite simply be bored (Prensky, 2001). Fortunately, there is a simple, yet effective solution to this looming motivational crisis: The educational system (and, by extension, its teachers) must integrate digital technology and multitasking into the classroom to the greatest extent possible. In other words, we must use educational technology to implement pedagogical models that afford much greater stimulation than what is found in the traditional classroom. As Rosen, Carrier, and Cheever (2010) conclude: “The bottom line is that our students are multitasking and we cannot stop them without placing them in a boring, unmotivating environment. The trick is to develop educational models that allow for appropriate multitasking and that improve learning” (p. 95). Any problems

with distraction, in other words, lie not with technology, but with educational models that have not yet caught up with recent developments. Teachers who do not change their practices in accordance with these developments are called “dumb”, “lazy” and “ineffective” (Prensky, 2001:6). Change is not just an option, it is an *imperative* (Jones, 2011). Many people in the educational system, educational administrators included, have bought this techno-optimist narrative due to the commonsense nature of its basic claims (Bennett & Maton, 2011). It seems so obvious that young people are adept multitaskers. As Tapscott (2009) argues: “I can see from my own observations that the average Net Gener is quicker at switching tasks than I am, and quicker to find what they’re looking for on the Internet” (p. 98). Across academic and political arenas, educational technology is perceived as the savior of a stagnating educational system.

### **Taking stock of techno-optimism**

One problem with this techno-optimist narrative is that there is scant evidence of a generationally well-defined, homogenous cohort of tech-savvy young people. Based on a review of the literature, Bennett and colleagues (2008) dismiss claims about Digital Natives as an academic form of moral panic that lacks any substantial evidence. This is no innocent omission. In fact, labels like Digital Natives and the Net Generation actively neglect and obscure the diversity and complexity found both *between* and *within* real life generations (Selwyn, 2009, Bennett & Maton 2011, Jones, 2011). On one hand, the sharp and fundamental break between the Digital Natives and Digital Immigrants (i.e., people born before 1980) has been deconstructed: The extent to which people should be defined as Digital Natives depends not only on their date of birth, but on breadth of use, experience, gender, and educational levels (Helsper & Eynon, 2010). On the other hand, the internal cohesion of the Net Generation itself has been challenged by issues of social inequality: Higher levels of Internet knowhow are statistically associated with higher levels of parental education, being a male, and being white or Asian American (Hargittai, 2010). The societal ramifications of digital technologies are intimately connected with such socioeconomic factors, and popular-scientific labels that neglect this sociological fact are reductionist and unhelpful. But if no such thing as a uniform generation of tech-savvy, bored students exists, that is, if the whole basis of the educational problem suddenly disappears, then what do we make of the accompanying technological solution? Perhaps it is time to cast a critical glance on techno-optimism. Drawing on Harry Frankfurt’s famous essay on the topic, Selwyn (2015b) calls the rhetoric surrounding educational technology *bullshit*: It does not set out to lie or cover up the truth *per se*, but it blatantly disregards how things really are. “Certainly, the possibility of technology not leading to learning and/or other educational gains is rarely a matter for consideration” (p. 438f). The field of educational technology is replete with accounts that celebrate the potentials of educational technologies, but the fact that these technologies may also have unintended consequences, or second-level effects, is rarely acknowledged (Bigum, Bulfin & Johnson, 2015). When researching educational technology, it is therefore vital to approach the field with a healthy dose of skepticism - don’t believe the hype!

## **Cognitive psychology and media multitasking**

With the notion of Digital Natives sociologically debunked, what do we make of the accompanying psychological idea of a new generation of superb multitaskers? Scientific researchers are becoming increasingly concerned with this question. This interest has spawned a burgeoning field of research on *media multitasking*, which investigates the relationship between digital devices and human attention. This research field is built upon the principles of cognitive psychology, which argues that the human mind is analogous to a digital computer. As Neisser writes in *Cognitive Psychology* (1967): “The task of a psychologist trying to understand human cognition is analogous to that of a man trying to discover how a computer has been programmed” (p. 6). In cognitive psychology, attention refers to the limited information-processing power of the mind. At any given moment, we can only process a small amount of the information available in the environment (Marois & Ivanoff, 2005). This limitation is imposed by the fixed amount of energy available to the human brain and the high-energy cost of neuronal activity involved in processing information (Carrasco, 2011). Attention has evolved out of a necessity to selectively focus this limited capacity on the most vital environmental information: Once a target has been selected, the mental allocation of attention modulates how well this information is processed, how fast and accurate a response is executed, and whether an event will be remembered later (Chun, Golomb & Turk-Browne, 2011). Attention can be flexibly allocated from moment to moment: It can be focused on one particular activity or divided between multiple concurrent sources of information. The latter process is known as multitasking, the mind’s simultaneous performance of two or more tasks. Media multitasking is a subtype of multitasking that covers (1) using multiple media simultaneously and (2) using media while engaging in a non-media activity (van der Schuur et al., 2015). Researchers have explored how such media multitasking affects various domains of youths’ functioning such as cognitive control, academic performance, and socioemotional functioning (van der Schuur et al., 2015). In the domain of academic performance, media multitasking research consists of experimental and naturalistic research.

### *Experimental media multitasking research*

Experimental media multitasking research can be divided into roughly two categories according to the nature of the primary experimental task: Reading texts or watching lectures. In reading comprehension tests, researchers instruct participants to read a passage of text while engaging in media multitasking like instant messaging (IM). Fox, Rosen and Crawford (2009), for instance, asked two groups of students to read a hardcopy text passage: One group focused on the text, the other was instructed to also IM with a confederate. Results showed that multitaskers took significantly longer to complete the task, but did not score differently on a subsequent comprehension test as additional time use compensated for the IM interruptions. When introducing time limits to reflect students’ real life study conditions, however, reading comprehension tests have shown that media multitasking causes significant impairments in academic performance (Lee, Lin & Robertson, 2012, Srivastava, 2013). In the category of experimentally designed lectures, researchers instruct participants to attend a lecture while engaging in some form of media multitasking like answering messages or solving problems assigned by the researchers. Early studies in this domain focused mostly on the use of cellphones and showed that texting during lectures causes significant impairments in aca-

ademic performance (Ellis, Daniels & Jauregui, 2010, Rosen, Lim, Carrier & Cheever, 2011, Dietz & Henrich, 2014). Later studies have increasingly focused on laptop use and shown that students who engage in media multitasking achieve lower test scores than those who do not (Wood et al., 2012, Risko, Buchanan, Medimorec & Kingstone, 2013, Sana, Weston & Cepeda, 2013, Downs, Tran, McMenemy & Abegaze, 2015, Gupta & Irwin, 2016). Furthermore, multitaskers' laptop use poses a significant distraction to participants in their near vicinity (Sana et al., 2013).

### *Naturalistic media multitasking research*

Naturalistic media multitasking research is a type of correlational research in which researchers attempt to measure the magnitude and consequences of naturally occurring media multitasking (i.e., multitasking that occurs in the course of a 'normal' class). In an influential study with students free to use laptops as they pleased, students reported spending an average of 17 out of each 75-minute class period or about 23% of their time using laptops for activities other than taking notes for class (Fried, 2008). Some years later, Kraushaar and Novak (2010) used spyware to directly monitor laptop activity in class: During an average 75-minute class period, students spent about 42% of the time involved in educationally unrelated activities. A recent study using both survey and observational data showed that students were engaged in educationally unrelated activities for more than 60% of the time (Ragan, Jennings, Massey & Doolittle, 2014). While these numbers reveal the sheer magnitude of naturally occurring multitasking, naturalistic studies have also tried to gauge the academic consequences of such media multitasking. An array of correlational studies have demonstrated that media multitasking is associated with deficits in several measures of learning, including self-reported understanding of course material, overall course performance, and grade point average (Hembrooke & Gay, 2003, Fried, 2008, Kraushaar & Novak, 2010, Junco, 2012a, Junco & Cotten, 2012, Gaudreau, Miranda & Gareau 2014, Ravizza, Hambrick & Fenn, 2014, Bellur, Nowak & Hull, 2015). In conclusion, casting even a cursory glance on the scientific literature on media multitasking reveals the gross inadequacy of the techno-optimist narrative: Media multitasking is consistently and unanimously shown to have significant adverse effects on academic performance. But here is a question: What does 'media multitasking' actually mean?

### *Experimental methods and conceptual confusion*

Temporarily setting aside the question of what counts as *media* in media multitasking (a laptop ostensibly does, but what about books or blackboards?), we arrive at the concept of *multitasking*: One would be forgiven for thinking that the field of media multitasking, built as it is upon this concept, could provide a well-defined, unambiguous, and highly operationalizable definition of this word. It cannot. The majority of studies take the term for granted, while the few studies that do address it offer only vague definitions: Multitasking is defined as "doing more than one activity simultaneously" (Wood et al., 2012), "the performance of two or more tasks together" (Srivastava, 2013), or "simultaneous involvement in two or more tasks without disengagement or a temporary break from either task" (David et al., 2015). None of these definitions takes us beyond the literal meaning of multitasking, which is to perform several (multi-) tasks simultaneously, and it remains unclear what defines a 'task'. As the main semantic constituent of multitasking, this is problematic: How can we

say that media multitasking is bad if we don't really know what it means? Wittgenstein (2009) once remarked that the barrenness of scientific psychology lay in its combination of "experimental methods and conceptual confusion" (§371). His solution was not to provide stricter definitions, but to remind us of how we ordinarily use the concepts in our research programs. In scientific psychology, such conceptual analysis can be used to clarify the grammar and meaning of concepts, expose conceptual problems in models, reveal unacknowledged assumptions and steps in arguments, and evaluate the consistency of theoretical accounts (Machado & Silva, 2007). Racine (2015) offers a helpful guide for doing conceptual analysis: Compare uses of the concept in question to determine what researchers mean by it, determine whether unusual uses of the concept have important theoretical or practical consequences, and clarify what researchers appear to be saying. Or in short: Analyze, evaluate, and interpret. Conceptual analysis can thus be understood as a hermeneutic quest that lays out and makes explicit what is only tacitly understood. What follows next is a conceptual analysis of the term multitasking that situates the term in media multitasking research and analyzes how it is currently being used in this empirical research literature.

### **A conceptual analysis of 'multitasking'**

The word multitasking originally stems from computer science where it refers to the computer's central processing unit's (CPU's) ability to process several computer jobs or 'tasks' simultaneously. Eventually, cognitive psychologists took over the term and used it to describe situations in which the human mind divides attention between several tasks at once. As such, multitasking is one of the few psychological concepts that originated as a technical term before seeping into our everyday vocabulary, where it currently means something like juggling several tasks at once (although, paradoxically, few would consider the act of juggling to be an instance of multitasking). As the meaning of multitasking hinges on the meaning of 'task', we shall try to narrow down the scientific meaning of this word through a series of demarcations. An initial suggestion is that a task is anything denoted by a verb, so that multitasking is a constellation of verbs in the form of *X'ing while Y'ing* (e.g., texting while driving). This definition, however, runs into the issue of learning. Think about learning to drive. You may recall how hectic it was to make a turn: Slow down, step on the clutch, shift gears, use the turn signal, etc. Performing all these actions definitely required some degree of multitasking. Fortunately, this stressful situation changes as a driver gains experience: While an experienced driver obviously still brakes and shifts gears, this is no longer experienced as the performance of separate tasks, but as integrated parts of driving. What do we make of this experiential change? Certain strands of cognitive psychology would argue that the driver's task-performance has simply become 'automated' and should still count as multitasking. Kirschner and Karpinski (2010), for instance, argue that multitasking is only possible when performing automated tasks: "Actually, we can only multitask that which is automated (i.e., when schemas have been automated), and where thinking does not play a role" (p. 1238). If our concept of multitasking includes such automated tasks, however, we always multitask: Right now, you are reading, blinking, breathing, sitting, and perhaps even drinking coffee. Does this count as multitasking? No. Should it? Probably not. The inclusion of automated tasks would render the concept of multitasking redundant. It would also conflict with our everyday understanding of multitasking. As long as there is no objective demarcation of task, it seems more parsimonious to exclude automated tasks from multitasking (i.e., automated

tasks cannot be said to exist *as* tasks). To be fair, many cognitive psychologists would grant this point. In fact, Kirschner and Karpinski later came to argue that multitasking “does not include activities that are fully automated” (Karpinski et al., 2013:1183).

With automated tasks thus excluded, multitasking can be tentatively defined as *the performance of two or more tasks that require attention*. Now we just need to spell out what it means for a task to require attention. According to cognitive psychology, automated tasks do not require attention and therefore do not interfere with concurrent tasks, but tasks that *do* require attention burden our limited attentional capacity: “Automatic activations processes [...] are distinguished from operations that are performed by the conscious processing system since the latter system is of limited capacity and thus its commitments to any operation reduces its availability to perform any other operation” (Posner & Snyder, 2004:221). Therefore, if multitasking only includes tasks that require attention, it invariably comes at a cost: Each additional task detracts from the over-all level of attentional resources (i.e., 100%) that could otherwise be allocated to the primary task. According to this definition, we should predict deficits in primary task performance whenever students engage in multitasking. Skeptics might object that this argument disregards the empirical possibility that specific types of multitasking might *not* lead to statistically significant performance decreases and should thus be considered harmless. This objection, however, goes against the research literature in which multitasking is often identified through a decrease in primary task performance: “Within the extant literature, multi-tasking is typically indirectly defined via the interference it produces” (Wood et al., 2012:366). Or, as another article puts it: “In short, multitasking or task switching can be examined simply as cognitive overload that interferes with a primary task” (David et al., 2015:1664). The problem with this definition is that it commits the logical fallacy of begging the question: If something constitutes a secondary task only if it requires attention, and the only way to check whether it requires attention is if it impairs primary task performance, we end up presupposing that which has to be proved: Multitasking impairs primary task performance. When researchers explain that multitasking impairs task performance due to ‘cognitive overload’, we are thus not offered a real explanation, but a mere re-description of the findings that begs the question of *why* a particular constellation of tasks causes cognitive overload: Why can’t students just practice media multitasking so that it eventually transforms into benign unitasking like gear-shifting and turn-signaling in driving?

### **Media multitasking as off-tasking**

I will argue that what cognitive researchers call media multitasking consistently results in academic decrements due to the nature of tasks involved. These tasks cannot figure as parts of the same over-all activity like gear-shifting and turn-signaling do in driving, because they constitute incompatible activities that pull in different directions. In other words, as it is currently used in multitasking research, the concept of multitasking does not so much denote a quantitative enumeration of tasks as a qualitative distinction between on- and off-task activity: *Multitasking is functionally equivalent to off-tasking*. When we move from the Theory to the Method section of the literature, this becomes abundantly clear: Experimental set-ups consist of an educational task combined with a distractive task. Lee, Lin, and Robertson (2012), for instance, set out to examine the impact of multitasking on learning to answer the question: “Do we acquire more or less information in a multitasking learning

environment?”. In itself, this is an interesting question. The way the researchers set out to answer it, however, is remarkable. They conducted an experiment in which they divided 130 college participants into three groups that were assigned to two out of three conditions: 1) reading in silence, 2) reading with a background video playing that they could ignore, and 3) reading with a background video playing that contained testable information. The reading sets contained articles of scientific, historical, and political nature, while the two videos consisted of a sitcom and a documentary on drunk driving. Afterwards, participants were given multiple-choice tests about the materials. Participants could score up to 54 points on the reading sets and an additional 18 points if a video was shown. But here is the kicker: Scores for the video condition were excluded to “prevent score inflation for that group” (p. 100). In other words, groups were compared on the reading sets only. In this comparison, it remains unexplained how devoting attention to an *unrelated* sitcom or documentary should (even hypothetically) help participants obtain more information about the printed articles. The literature is full of similar examples. Sana and authors (2013), for instance, asked participants in the multitasking condition to watch a 45-min PowerPoint lecture on meteorology while answering questions like “What is on Channel 3 tonight at 10 pm?” (p. 26). Other questions posed by researchers include “What do you like to do in your spare time?” (Bowman et al., 2010), “What is your favorite place to eat and what is your favorite dish there?” (Downs et al., 2015), and “If you won \$100,000 in the lottery, what would you do with the money?” (Rosen et al., 2011). It goes without saying that none of these questions were even remotely related to the experimentally selected primary tasks. Ultimately, when cognitive researchers claim to be exploring media multitasking, they are actually investigating the off-task use of digital technologies: Multitasking is not an issue of attention divided, but of attention diverted.

### *Pseudoempirical research*

Any rigorous study requires clear definitions of its central concepts. Quantitative studies are only as good as their operationalizations of key variables. If these operationalizations are inexact, the resulting significance levels and effect sizes are irrelevant. “Garbage in, garbage out”, as they say. But it is important to acknowledge that even behind a good operationalization lies a certain understanding of the object of inquiry: Media multitasking researchers do not use the term multitasking as a neutral descriptor that signifies the brute amount of tasks undertaken, but as a normative term that signifies the distractive nature of these tasks. To be fair, some multitasking researchers are candid and open about this interest in ‘off-task multitasking’ (Wood et al., 2012), ‘computer mediated non-lecture related activities’ (Risko et al., 2013), and ‘non-academic Internet use’ (Ravizza, Hambrick & Fenn, 2014). Somewhat surprisingly, however, these researchers also proceed to investigate these concepts *as if* they were neutral descriptors rather than normative terms. Perhaps less surprisingly, they find that such off-tasking leads to significant drops in academic performance. We thereby learn that having ones attention drawn away from a primary task is distracting. But we already knew that: Being distracted literally means one’s having attention drawn-away (*dis-tracted*) from something. These numerous attempts to demonstrate empirical relationships between variables that are logically related make the field of media multitasking research dangerously *pseudoempirical* (Smedslund, 1998). A good way to test whether a study is pseudoempirical is to consider whether a negation of its hypotheses is possible. If such a negation is unacceptable (i.e., absurd or senseless), the hypothe-

sis is pseudoempirical since it expresses a logical necessity that could have been stated in advance of the study (Smedslund, 2016). Let us be very clear about what such a negation means in the case of multitasking: Is it possible that *multitasking* taken in a broad sense can be educationally helpful? Yes, this is presumably why students take notes during lectures. But is it conceivable that multitasking understood as *off-tasking* might improve academic performance? I simply cannot see how. Regrettably, such pseudoempirical research is epidemic within scientific psychology, which tends to value experimentation and quantification over conceptual analysis (Machado & Silva, 2007). The satirical newspaper The Onion (2011) thus hit uncannily close to home with the article “New Study Shows People With Panic Disorders Respond Poorly To Being Locked In Underwater Elevators”. As Valsiner and van der Veer (2000) argue: “A scientist can agree that a given project - involving a large number of subjects - is pseudoempirical. Yet he or she may do the study anyway, citing the need to communicate to his or her peers that the work done is ‘trustworthy’, rather than ‘mere speculation’” (p. 17). The idea of trustworthy knowledge, however, does offer us a second, more charitable reading of media multitasking research: Cognitive researchers have convincingly demonstrated that students’ frequent off-task use of educational technology is distracting. In a society steeped in techno-optimism, such empirical evidence constitutes a real answer to a real problem.

### *In conclusion*

This section outlined the conceptual problem of multitasking. Since there are no necessary and sufficient conditions for delimiting something as a ‘task’, it is impossible to define multitasking objectively. This saddles us with a conceptual dilemma: Either we use an empty definition of multitasking that poses no restrictions as to what counts as a task, or we use a substantial definition that inevitably entails performance impairments. In the first case, multitasking researchers owe us an exhaustive and non-question-begging account of what they mean by task, which tasks occur in their situation of inquiry, which of these tasks are explored, which are left unexplored, and, importantly, what separates these two kinds of task. In the second case, we do not need empirical studies to show that multitasking is harmful. Instead of attempting to *solve* this conceptual conundrum, however, we *dissolved* it by looking at the tasks currently included in media multitasking research: It turns out that such research examines a very specific use of educational technology, namely the distractive use these technologies. We therefore replaced the descriptive concept ‘multitasking’ with the normative concept ‘off-tasking’, which is equivalent to distraction. Our argument *against* the cognitive critique of multitasking is thus not an argument *for* young people’s ability to multitask (i.e., the techno-optimist narrative), but an argument that what is at stake is not brute cognitive overload, but attention directed towards educationally irrelevant activity. Obviously, this conceptual analysis also does not change the empirical fact that students *do* engage in frequent off-tasking or that such off-tasking *does* have negative effects (i.e., that distraction is distracting), but it does shift our focus: Having established that multitasking really means distraction, it is less interesting to ask whether it impairs learning as when, how, and why: When does it happen? How is it experienced? And why does it happen so often? In the next section, I will argue that cognitive psychology struggles to provide answers to these important questions, because it does not explore the role of embodied interaction with technological artifacts.

## Grasping the nature of off-tasking

Merleau-Ponty (1964) notes that when it comes to analyzing human existence, two classical views guide our understanding: “One treats man as the result of the physical, physiological, and sociological influences which shape him from outside and make him one thing among many; the other consists of recognizing an acosmic freedom in him, insofar as he is spirit and represents to himself the very causes which supposedly act upon him” (p. 71f). The first view is called empiricism, the latter intellectualism. I have summarized these two views in Table 1.

	<b>Empiricism</b>	<b>Intellectualism</b>
Subject	Objective body	Subjective mind
Perception	External stimulus	Internal representation
Action	Mechanical response	Deliberate action
Descriptor	Physical cause	Mental goal
Agency	Passive determinism	Active voluntarism

**Table 1: Two classical views of human existence**

Empiricism sees human behavior as the result of a physiological organism’s response to environmental stimuli that is entirely explainable in terms of mechanical, causal laws. The other view, intellectualism, regards human action as originating from the free will of a mental faculty that represents the world. At first glance, these views seem to map on to the psychological sciences of behaviorism and cognitive psychology. After all, behaviorism was concerned with experimental analysis of human behavior and expunged all mentalist terms from its vocabulary, whereas cognitive psychology arose partially as a countermovement to this approach and rehabilitated the notion of mind in psychology (Gardner, 1985). Cognitive psychology, however, is in fact a complex amalgamation of the two views, which primarily adheres to intellectualism, but adds that the active mind is lodged in a passive body that reacts in accordance with the empiricist model (Costall, 2007). This ontology has given rise to a bifurcated model in which attention is understood as both empiricist and intellectualist (the following is based on Aagaard, 2015). Cognitive psychology distinguishes between two distinct attentional systems: The exogenous, bottom-up, or stimulus-driven system, and the endogenous, top-down, or goal-directed system (Posner, 1980, Corbetta & Shulman, 2002). *Exogenous* means ‘originating externally’ and in this empiricist half of the framework, the body instantly responds to abrupt-onset environmental stimuli like loud noises or sudden movements. This primitive and evolutionarily hardwired system enables us to quickly and instinctively respond to environmental threats and opportunities like predators and prey (Pashler, Johnston & Ruthruff, 2001). *Endogenous*, on the other hand, means ‘originating internally’ and in this intellectualist half of the framework, the mind acts as a kind of cognitive manager that directs, controls, and governs the allocation

of mental attention in accordance with its goals. According to cognitive psychology, this deliberate control reflects the same sort of decision that we make to initiate any voluntary action: “Just as I can decide to reach out with my hand to grasp a coffee cup, I can decide to move my spatial attention to the location of the coffee cup” (Pashler, Johnston & Ruthruff, 2001:631). Ultimately, attention is either triggered exogenously, from without, or directed endogenously, from within.

In educational technology, this cognitive understanding of attention has given rise to an understanding of distraction as resulting from external interruptions or self-interruptions. Adler and Benbunan-Fich (2013) lay out these two concepts accordingly: “The former refers to external alerts, notifications or environmental cues, while the latter points to internal decisions to stop an ongoing task to attend to another, due to personal thought processes or choices” (p. 1441). Katidioti and colleagues (2016) add further flesh to this framework: “A phone ringing or a colleague walking into the office are external interruptions. Deciding to check social media or getting up to go for a walk are self-interruptions” (p. 907). We see a clear distinction between interruptions that originate externally (alerts, phone ringing, environmental cues) and internally (thoughts, choices, decisions). Further evidence of this framework can be found in the following selection of quotes from the literature:

- Distraction is affected by “voluntary allocation of cognitive effort”, but also by “distracter stimulus properties” such as novelty and abruptness of onset (Bowman et al., 2010:928).
- Attention is often “controlled voluntarily”, but visual stimulation like pop-ups, instant messages, and movement of text prompt “involuntary shifts of attention” (Fried, 2008:908).
- Distraction results from “conscious and intentional mechanisms inherent to the individual” or from “attributes intrinsic to the information or message” (Hembrooke & Gay, 2003:50).
- Disrupting one’s learning is said to be an “individual choice”, while stimuli “cause involuntary shifts of attention” in students in close proximity to laptop users (Sana et al., 2013:25).

In summary, when the bifurcated cognitive model of attention is transferred to educational technology, we are left with two types of distraction: *Deliberate opting-out* and *attentional reflexes*. In the first case, a student actively chooses to direct his attention towards checking social media, reading emails, or performing other types of off-task activities. However distracting these activities may be, they are initiated by voluntary decisions that originate inside his mind. In the second case, physical stimuli like incoming emails, alerts, and other notifications impinge on the student’s sensory apparatus and mechanically trigger his attentional reflexes. This, he cannot help (see Fig. 1).

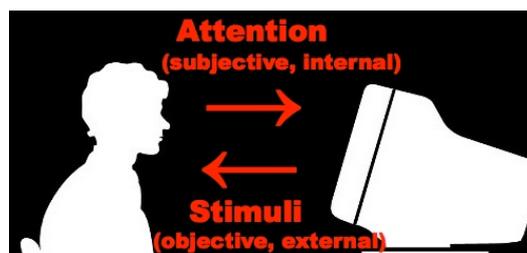


Fig. 1: The cognitive picture of attention (from Aagaard, 2015)

Although both of the above scenarios certainly can occur, this cognitive picture glosses over a crucial aspect of media use: We do not just *look* at our devices (unless there is something wrong with them); we actively *handle* them. Using a digital technology like a computer not only means being ‘face-to-face’ with a screen, but also includes being ‘hands-on’ with some sort of keyboard (Friesen, 2011). We type, drag, point, click, tap, slide, scroll, and swipe on our digital devices. Not considering such movements of the fingers will hinder an understanding of the manual nature of media use (Moores, 2014). This insight is vital in the field of educational technology. We need to take human bodies into consideration when studying technology use, like scholars in the field of human-computer interaction (HCI) have argued (Svanæs 2000, Dourish, 2001, Jensen 2016). This means replacing the cognitive picture with embodied interaction with technological artifacts (see Fig. 2).

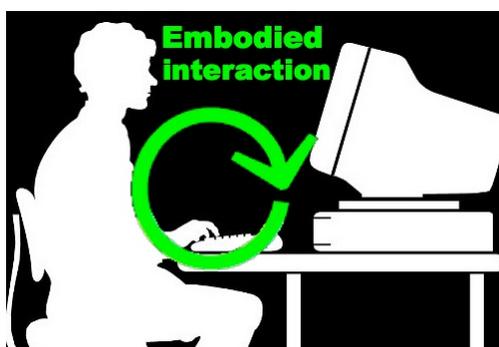


Fig. 2: Embodied interaction with technological artifacts (from Aagaard, 2015)

### *To the things themselves!*

My own take has been to shift focus from information-processing minds to bodies and technologies (Aagaard, 2015). Specifically, I have turned to the branch of philosophy known as phenomenology. Phenomenology derives from the Greek word *phainomenon*, which in its most basic sense means “that which shows itself from itself” (Heidegger 2008, 51). Traditionally, many branches of science have sought truth by going beyond the subjective veil of human experience to an objectively true reality. Phenomenologists question this enterprise and are instead concerned with human experience before it is abstracted, reduced, and explained. When it comes to tool use, Heidegger (2008) insisted that human experience does not consist of a bare apprehension of objects, but a concerned engagement, which manipulates things and “puts them to use” (p. 95). The things we deal with are first and foremost available or ‘handy’ (*zuhanden*). We manually manipulate our handy devices, to hammer home this Heideggerian point. By explicit referencing human handedness, Heidegger offers us an important alternative to the ocularcentric epistemology of cognitive psychology. Despite these bodily references, however, Heidegger ultimately remarked that the bodily nature of human existence “hides a whole problematic of its own, though we shall not treat it here” (p. 143). To fully describe the significance of this insight, we instead turn to Merleau-Ponty’s phenomenology, which in many ways fleshes out Heidegger’s account of everyday coping by analyzing human embodiment. Afterwards, we shall look at postphenomenology, a contemporary philosophy of technology that helps us understand the power of things.

## Phenomenology and embodiment

Maurice Merleau-Ponty covered a wide range of topics related to the body including sexuality, politics, and art, and a comprehensive account of his work is clearly outside the scope of this dissertation. My modest exposition departs from Merleau-Ponty's *Phenomenology of Perception*, first published in 1945. By outlining a few key concepts from this seminal work, I hope to create a conceptual clearing for studying educational technology that takes human embodiment into account. Traditional efforts to navigate the philosophical binary of empiricism and intellectualism have assumed that one must choose between empiricism, intellectualism, or some combination of the two. When saddled with a false dichotomy, however, merely replacing an 'either/or' with a 'both/and' results in a rather poor compromise. Merleau-Ponty instead steers clear of both the Scylla of empiricism and the Charybdis of intellectualism by establishing phenomenological third terms that drive wedges between these two pre-established views and dissolve their dualist logics (Wrathall, 2004). Based on a phenomenology of experience, he unearths analytical concepts such as *lived body*, *phenomenal field*, *habit*, *solicitation*, and *motor intentionality* (see Table 2). These terms dispense with the inner realm of subjectivity while replacing the brute, causal universe with a meaningful world.

	<b>Empiricism</b>	<b>Phenomenology</b>	<b>Intellectualism</b>
Subject	Objective body	Lived body	Subjective mind
Perception	External stimulus	Phenomenal field	Internal representation
Action	Mechanical response	Habit	Deliberate action
Descriptor	Physical cause	Solicitation	Mental goal
Agency	Passive determinism	Motor intentionality	Active voluntarism

**Table 2: Incorporating Merleau-Ponty's phenomenology**

### *Lived body*

Merleau-Ponty's (2002) phenomenology accentuates the bodily nature of perception by focusing on the *lived body*, which collapses the conception of mind and body as metaphysically distinct entities. The lived or 'phenomenal' body is not the passive receiver of sensory stimuli nor is it the locus of mechanical reflexes. It is a living breathing entity that pulsates with life. It is agentic, affective, motile, and sensuous. From a first-person perspective, we *are* that body, and it is through that body we are part of the world. The point is not to deny the existence of the objective body, but to point out that this scientifically apprehended body is the anaesthetized physiological vessel that we find on the surgeon's operating table. "It is never our objective body that we move, but our phenomenal body, and there is no mystery in that, since our body, as the potentiality of this or that part of the world, surges towards objects to be grasped and perceives them" (p. 121). Merleau-Ponty also does not deny the existence of the human mind, but vehemently opposes the longstanding dualism that separates this 'smart' faculty from the 'dumb' body. His phenomenology shows that basic forms of intelligent human behavior can be explained without recourse to notions of mind, thought, or mental representation (Dreyfus, 2002). As such, Merleau-Ponty (2002) downplays the importance of cognition that is otherwise so prominent in the intellectualist tradition and instead considers bodily motility to be the basic form of intentionality: "Consciousness is in the first place not a matter of 'I think that' but of 'I can'" (p. 159). Our primary relation to the world is not mediated by thought, but active, practical, and prereflective. According to phenomenology, then, attention is not to be understood as some mental processing power, but as a forward-directed motion that surges towards the world itself. For that reason, phenomenologists sometimes substitute the word attention with *intentionality*, which denotes a bodily directedness towards the world (Carman, 2008). One way to visualize such intentionality is illustrated in *Donnie Darko* (2001), where the protagonist begins to perceive the dimension of time as a tentacle that stretches from his body towards the world (see Fig. 3).



**Fig. 3: Lived body**

### *Phenomenal field*

Merleau-Ponty (2002) has a name for our direct, bodily being-towards-the-world: Perception. “The word perception indicates a direction rather than a primitive function” (p. 13). By describing perception itself as a form of intentional activity, Merleau-Ponty breaks down the traditional distinction between perception and action. Our active and intentional direction towards the world gives shape to our perception. Before the arrival of any ‘stimulus’, in other words, something is already there: A person with certain current concerns engaged in some practical activity that shapes his perception (Rietveld, 2008). Inspired by Gestalt psychology, Merleau-Ponty describes the contents of such perception with the notion of a *phenomenal field*, which consists of neither raw stimuli nor mental representations, but of meaningful structures (Carman, 2004). Specifically, Merleau-Ponty argues that our first-person phenomenal field is structured as a series of *figure/ground* constellations: Whatever is prominent in my perception and takes up my focal awareness (the figure) only appears against a more or less indeterminate background (the ground). According to Merleau-Ponty (2002), this type of holistic constellation constitutes the primitive element of our perception: “When Gestalt theory informs us that a figure on a background is the simplest sense-given available to us, we reply that this is not a contingent characteristic of factual perception [...] It is the very definition of the phenomenon of perception, that without which a phenomenon cannot be said to be perception at all” (p. 4). Where empiricism and intellectualism both understand perception as ultimately composed by atomistic bits of data, Merleau-Ponty’s phenomenology emphasizes that we do not process information bit by bit, but perceive a holistic phenomenal field that determines the meaning of each individual part. The meaning of a sentence, for instance, determines the meaning of each individual word, and the notes in a melody get their values by being perceived as part of the same melody (Dreyfus, 1992). A helpful way to visualize the figure/ground structure of the phenomenal field is through the so-called ‘conspicuously light patch’ in older cartoons like Disney’s *Snow White and the Seven Dwarfs* (1937) in which an object stands out as a figure against a slightly darker background when it is about to become narratively relevant (see Fig. 4).



**Fig. 4: Phenomenal field**

## *Habit*

Through repetition, the body can become so familiar with performing certain activities that this performance eventually operates below the threshold of awareness (e.g., when a driver shifts gears). Merleau-Ponty (2002) describes such activities in terms of *habits*, which can be explained neither as rational decisions nor as involuntary reflexes: “If habit is neither a form of knowledge nor an involuntary action, what then is it? It is knowledge in the hands, which is forthcoming only when bodily effort is made, and cannot be formulated in detachment from that effort” (p. 166). A habit is an immediate and prereflective inclination to act in certain ways due to familiarity with that type of situation. Merleau-Ponty uses the geological concept of *sedimentation* to describe how, over time, our actions take on the force of habit: The more we perform habits, the more entrenched they get. They become part of what we ‘just do’. The point is neither to deny that we sometimes make conscious deliberations about what to do nor that we occasionally react rather instinctively, but to emphasize that most of our waking moments are spent in the prereflective mode of habit. We are creatures of habit. As Dreyfus (1991a) reminds us: “We should try to impress on ourselves what a huge amount of our lives - dressing, working, getting around, talking, eating, etc. - is spent in this state, and what a small part is spent in the deliberate, effortful, subject/object mode” (p. 67). Whenever we acquire a new habit, it ‘unlocks’ new affordances for us by disposing us to perceive and act in certain ways. Merleau-Ponty (2002) gave various examples of this phenomenon such as a woman automatically dodging doorframes when wearing a feathered hat, a blind man skillfully using his stick to navigate, and a driver effortlessly parking his car. Such habits blur the classical distinction between subject and object, between body and world: “Habit expresses our power of dilating our being-in-the-world, or changing our existence by appropriating fresh instruments” (p. 166). The body is not an ontologically fixed entity, but a fleshy network that incorporates and extends over material artifacts like hats, canes, and cars (see Fig. 5).



**Fig. 5: Habit**

## *Solicitation*

Merleau-Ponty (2002) criticizes traditional attempts to ground habitual comportment in brute causality or mental rationality. In order to disrupt the vestigial Cartesianism of empiricism and intellectualism, he thus introduces the term *motive* (Wrathall, 2004). When engaged in everyday activity, our actions are neither causally determined by the environment nor completely guided by explicit reasoning, but motivated by how a situation appears to us. In other words, our world is not motivationally neutral but has practical significances or ‘valences’ (from the Latin word *valentia*, strength) that pull us in certain directions: We move towards things that attract or repulse us (for an analysis of Merleau-Ponty’s field-theoretical terminology, see Tiemersma, 1987). This motivation does not follow the usual distinction between internal and external that is so prevalent in psychology, so perhaps the word motivation is better replaced by another term that conveys the pull of things. Dreyfus (2002) uses the term *solicitation* to convey how our surroundings are immediately presented in perception as ‘requiring’ or ‘suggesting’ certain responses that draw us in or push us away (with related verbs including elicit, summon, and call). When a person acquires habits it is in the form of dispositions to respond to solicitations. “The light of a candle changes its appearance for a child when, after a burn, it stops attracting the child’s hand and becomes literally repulsive” (Merleau-Ponty, 2002:60). The child learns that the candle is hot by burning her finger and this understanding is henceforth present in her embodied comportment towards candles. This particular example implies a rather reflex-like notion of learning, but Merleau-Ponty’s theoretical apparatus extends all the way to complex skills such as those involved in everyday conversations (Carman, 2013). Any meaningfully configured situation solicits some responses and repels others, and our activity is finely attuned to such solicitations. It is not explicit thoughts or intentions that drive our habits, but solicitations in the sense of relevant affordances or invitations to act (Rietveld, 2008). This is the “silent language whereby perception communicates with us” (Merleau-Ponty, 2002:56). The world of everyday activity, then, is not the disenchanting world of modernity, but a vibrant web of attractions and repulsions (see Fig. 6).



**Fig. 6: Solicitation**

### *Motor intentionality*

Skillfully responding to situational solicitations by shifting gears cannot be explained with reference to passive reflexes, but it is also not a matter of active choices. We are thus forced to abandon the dualism of determinism and voluntarism. As Merleau-Ponty (2002) puts it: “We are brought to the recognition of something between movement as a third person process and thought as a representation of movement” (p. 126f). Our habits are governed by a *motor intentionality* that consists of movements performed to establish the optimal grip on a situation (Dreyfus, 2002). The optimal grip is governed by a felt rightness that follows the Goldilocks principle: Not too much, not too little, but just right. Such situated normativity is revealed when we distinguish better from worse in the context of a specific situation (Rietveld, 2008). Merleau-Ponty (2002) gives the example of viewing a picture in an art gallery: “For each object, as for each picture in an art gallery, there is an optimum distance from which it requires to be seen, a direction viewed from which it vouchsafes most of itself: at a shorter or greater distance we have merely a perception blurred through excess or deficiency” (p. 352). Our bodies prereflectively strive for an optimal grip through constant readjustments that happen implicitly, without a person noticing that they are occurring. Although attributable to me as an agent, motor intentionality thus differs from voluntary action (mind-to-world causation) in that I experience the situation as drawing movements out of me (world-to-mind causation) (Dreyfus, 2002). With a phrase borrowed from Dreyfus (2001), we can characterize this phenomenon as *egoless agency*. Despite movements being elicited in this immediate, prereflective way, motor intentionality is not like the blind triggering of a primitive reflex: I am still in control of my comportment in the sense that I can intervene or refrain from what I am doing if I will to do so (Dreyfus, 2002). According to this conceptualization, the human agent is not in constant conscious control of its actions, but can in fact be drawn to act by situational solicitations. The classic pie-in-the-windowsill in Disney’s *The Little Whirlwind* (1941) is a nice illustration of this process (see Fig. 7).



**Fig. 7: Motor intentionality**

## Postphenomenology and technologies

Phenomenology shows us the importance of attending to embodiment when addressing human existence. When analyzing embodied interaction with technological artifacts, however, we must also theorize how these artifacts contribute to the interaction. When theorizing technology, scholars have long warned us against the pitfall of technological instrumentalism (e.g., Borgmann, 1984, Latour, 2002). Technological instrumentalism is the idea that humans have full control of their actions, while technologies function merely as neutral carriers of our will. The famous National Rifle Association (NRA) slogan “Guns don’t kill people, people kill people” epitomizes this widely held belief: Guns act as passive vehicles of human agency and volition. Such instrumentalism can be dangerously alluring to researchers coming from a psychological tradition that tends to rely on *agentive internalism*, which is an understanding of agency as originating from internal mental capacities like metacognition, executive function, or self-regulation (Sugarman & Sokol, 2012). Merleau-Ponty’s phenomenology has already brought us some of the way beyond such agentive internalism, but to more fully acquire sensitivity to *how* technologies affect our being-in-the-world, we now turn to a philosophy of technology called postphenomenology. In some ways, the transition from phenomenology to postphenomenology involves asking the question of what happens when the body is coupled with technological artifacts. By reading our concepts through this lens, we end up with notions like *human-technology relation*, *field composition*, *relational strategy*, *mediation*, and *technohabitual agency* (see Table 3). The intention with explicating these concepts is not to develop a full-fledged and all-encompassing conceptual apparatus, but to nudge our thinking into a posthumanist trajectory that opens up new perspectives on educational technology.

	Phenomenology	Postphenomenology
Subject	Lived body	Human-technology relation
Perception	Phenomenal field	Field composition
Action	Habit	Relational strategy
Descriptor	Solicitation	Mediation
Agency	Motor intentionality	Technohabitual agency

Table 3: Coupling the body with technological artifacts

### *Human-technology relation*

Postphenomenology is concerned with the relations between human beings and technologies. Its approach to understanding such relations departs from embodied experience with material artifacts and is grounded in a relational ontology, which means that the smallest unit of analysis is the *human-technology relation* (Ihde, 1990). This human-technology relation, however, is not a monolithic entity, and we have different relations to different kinds of artifacts. Ihde (1990) has famously established a non-exhaustive typology of such intentional relationships: Some artifacts become partially transparent bodily extensions (embodiment relations), others are encountered as displays of signs that we interpret (hermeneutic relations), and yet others are confronted as quasi-living beings with whom we interact (alterity relations). In an *embodiment relation*, the technology itself takes on a high degree of transparency as our intentionality is channeled through it, so to speak. The classic example is glasses in which we literally see through the lenses, but the point also applies to the keyboard in which we skillfully embody its configuration of keys as we channel intentionality through the keyboard towards our technologically mediated projects (like writing a dissertation). In a *hermeneutic relation*, the technology does not withdraw, but works by making an aspect of the world available to us in a way that is otherwise impossible for naked perception. We interpret or ‘read’ the world. An example is the thermometer, which provides a scaled measurement of what is otherwise some degree of hot or cold. Other examples include compasses, watches, and maps. Finally, in *alterity relations* we engage with a technology as if it were an agent to which we must address ourselves. In this relation, the technology exhibits a quasi-otherness, which is more than the thingness of a thing, but less than the vitality of a living being. The go-to example is ATMs, but other examples include Apple’s intelligent personal assistant Siri and the robotic seal Paro (Hasse, 2013). Many more relationships have since been developed, but the basic point is twofold: Our relations to technologies vary in accordance with the characteristics of those artifacts and all human-technology relations are combinations of bodies (i.e., not disembodied minds) and material artifacts (see Fig. 8).



**Fig. 8: Human-technology relation**

### *Field composition*

How does using a technology affect our experience? According to postphenomenology, being intentionally directed towards the world through a given technology *transforms* perception in accordance with the characteristics of that artifact. Ihde (1979), for instance, describes how a dentist's use of a sickle probe allows her to encounter the tooth in another way than were she simply to touch it: Surface features like texture and hardness are amplified, whereas features like moisture and temperature are reduced. The use of technology thus 'guides' our perception in specific ways. Rosenberger (2014b) refers to this technological reorganization of our phenomenal field as *field composition* and gives the example of watching a movie in a cinema: When the movie starts, the smell of popcorn and the cushy theatre seats recede from our awareness as we become immersed in the movie. Rosenberger uses the concept to analyze the distraction caused by talking on a cellphone while driving: During a phone conversation, the phone itself withdraws from our awareness as the conversation 'pops out'. This conversational immersion also means that our immediate circumstances fade into the background of our awareness. The conversation becomes the figure, everything else the ground. This perceptual gestalt is obviously incompatible with the field composition that is required for safe driving. Rosenberger further argues that the phone-using driver must actively resist the habitual pull towards this perceptual gestalt. "That is, despite what may be a driver's commitment to remain primarily aware of the task of driving, due to the pull of the habits of phone usage, that driver will at times drift into a primary awareness of the phone conversation. Or to put it plainly, the driver's mind at times will be on the conversation, and not on the road" (p. 34). As is evident in this example, postphenomenology is concerned with how technologies affect our perception: When using a technology, what do we attend to, what do we ignore, what stands out as significant, and what recedes into the background? According to this perspective, the distractive nature of off-tasking can be said to stem from a field composition that demotes concurrent activity (in the classroom, in traffic, etc.) to the background of ones phenomenal field (see Fig. 9).



**Fig. 9: Field composition**

### *Relational strategy*

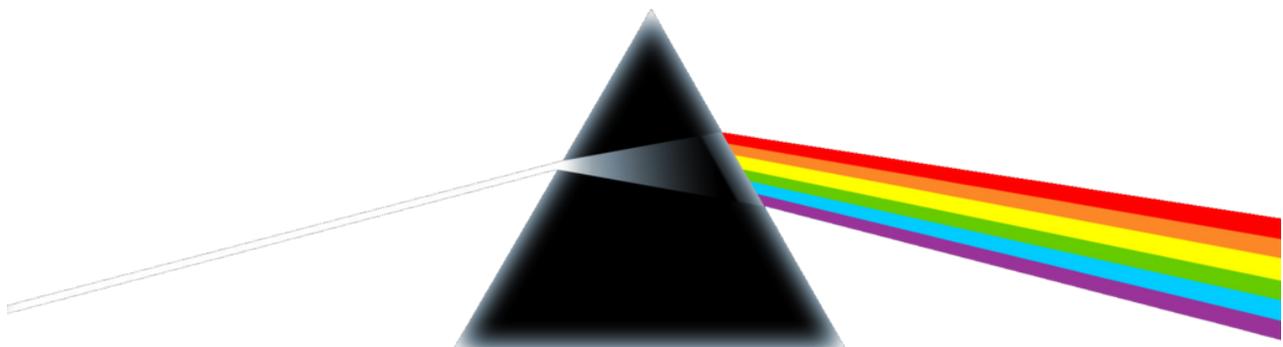
The ‘post-’ of postphenomenology does not signify a clean break, but it does imply a critical stance towards certain aspects of phenomenology: One aspect is the essentialism of older strands of phenomenology, which postphenomenology replaces with a pragmatic commitment to antiessentialism (Rosenberger, 2016). Postphenomenologists employ the notion of *multistability* to signify that even the simplest technology has no singular, stable essence, but can be taken up for different purposes (or ‘stabilities’) in different contexts (Ihde, 2009). Paraphrasing Wittgenstein, we could say that the meaning of a technology is its use in practice. Hence, postphenomenology replaces the vertical movement of extracting essences with a horizontal focus on particular, contingent stabilities. Digital technologies like laptops and smartphones are even designed to incorporate such multistability and contain multiple functions. Each of these functions requires a particular bodily comportment: The way we handle a smartphone when writing texts, for instance, differs from how we handle it when taking pictures. To capture this aspect, Rosenberger (2009) introduces the term *relational strategy*, which refers to the particular configuration of habits that makes it possible to take up a technology in terms of a specific stability (e.g., the smartphone-as-camera). He uses the concept to explain the use of computers in which a novice concentrates on each individual keystroke, while a user with a trained relational strategy barely notice the computer itself, but focus on whatever it is being used to do. Rosenberger further argues that if one routinely relates to a given technology in terms of a specific strategy, deeply habitual relations eventually develop: “Armed with a highly-developed relational strategy, she or he approaches many aspects of the computer through deeply-sedimented habits and expectations” (p. 178). Past experiences have sedimented into technological habits that now inform the current experience of the computer. Hence, relational strategies fixate the multistability of technologies and affect our immediate approach to such artifacts. A helpful image of this dynamic is domino tiles which many of us perceive as ‘building blocks’ to be lined up and toppled over (strategy #1), while others have learnt to perceive the same tiles as ‘game pieces’ that can be used in actual games of dominoes (strategy #2) (see Fig. 10).



**Fig. 10: Relational strategy**

## Mediation

A main tenet of postphenomenology is that technologies mediate our being-in-the-world. Not only do they transform perceptions, they also *translate* our actions: They subtly invite (Verbeek, 2005) and facilitate (Rosenberger, 2014a) certain actions, while inhibiting and foreclosing others. A speed bump, for instance, materially says “slow down when you approach me”, while a Styrofoam cup says “throw me away after use” (Verbeek, 2011). Such invitations are not arbitrarily projected onto artifacts, but reside in our bodily-perceptual relation to them. As Verbeek (2011) puts it: “Artifacts are able to exert influence as material things, not only as signs or carriers of meaning” (p. 10). Technologies have certain directionalities or trajectories that promote distinct ways of being used. Let me give an example (from Aagaard, 2015): A study showed that laptop note takers tend to take notes that overlap verbatim with the contents of a lecture, whereas longhand note takers do not. This held true even after laptop note takers were explicitly instructed not to simply write down what the speaker was saying, but to take notes in their own words. According to a postphenomenological account, this result occurs because the compositional speed of laptops invites students to transcribe the lesson word for word (provided that they are sufficiently skilled typists), whereas the slowness of longhand note taking forces students to make their own sense of a topic. The two technologies mediate the student-lecture relation differently. The concept of *mediation* thus designates how technologies influence the relation between subject and world, so that both entities emerge only in their connectedness with each other. In this mutual constitution, mediation becomes the origin of entities rather than a middle position between them (Verbeek, 2005). What this means is that technologies do not afford action possibilities to preexisting subjects with fixed goals, but subtly guide, nudge, or steer our intentionality. Being armed with a gun, to take another example, may translate an intention to “express my anger” into “kill that person” (Verbeek, 2011). Pink Floyd’s famous cover for *The Dark Side of the Moon* (1973) in which a beam of light passes through a prism is a nice visualization of this subtle diffraction of intentionality (see Fig. 11).



**Fig. 11: Mediation**

### *Technohabitual agency*

Motor intentionality is found in instances where the body prereflectively responds to situational solicitations. Influential phenomenologist Hubert Dreyfus discusses such activities in terms of *skillful coping* to avoid the empiricist connotations of the word habit (see Dreyfus, 2004). Inspired by Dreyfus, phenomenologists have since proceeded to discuss the egoless agency of well-honed skills like those involved in sports, music, and dancing. Phenomenology is now ripe with knowing bodies and thinking hands. At first glance, this notion may also help postphenomenologists describe how our relational strategies incline us to perceive and act in certain ways: To the skilled skater a railing ‘solicits’ grinding, and to the skilled photographer an extraordinary event ‘calls for’ pictures. Sometimes, however, our skillful use of technologies inclines us do things that *we do not intend to do*. Discussing distracted driving, for instance, Rosenberger (2014b) notes that “Like the way those who habitually bite their nails will be on occasion surprised to look down and find they are once again biting their nails, drivers may slide inadvertently and unconsciously into the distracting habits of the phone” (p. 43). Skillful coping has connotations of training and mastery that makes it unfit to analyze these peculiar situations. Another great philosopher of habit, John Dewey (2007) specifically warned us against discussing habits solely in terms of skills like playing instruments, because by doing so we risk envisioning habits as mere technical abilities that we can call into action at will. Dewey instead preferred to discuss bad habits, because a bad habit, he argued, “suggests an inherent tendency to action and also a hold, command over us” (p. 24). While phenomenologists tend to celebrate the loss of self-consciousness and flow that is found in skillful coping, uncritically replacing the word habit with skillful coping covers over something important: We do not have our habits, our habits have us (for better or worse). Accordingly, we may want to replace skillful coping with the phenomenologically broader concept of *technohabitual agency*. This admittedly clumsy concept does not yet exist in postphenomenology, but its main function here is to remind us that our deeply sedimented relational strategies may come to have a powerful hold over us (see Fig. 12).



**Fig. 12: Technohabitual agency**

## Two conceptual expansion packs

Postphenomenology helps us loosen the humanist grip on our conventional ways of thinking: Human beings are not in constant conscious control of their actions, and technologies do not work as passive vehicles of agency and volition. They mediate how the world is present to us and how we are present in the world. With this framework, we are now equipped to understand technology use from the perspective of the user. Nevertheless, I was also interested in exploring how digital technologies mediate certain *social* processes: Specifically, I was eager to explore how they affect wider classroom dynamics and face-to-face conversations. These focal points, however, are hard to cover with a postphenomenological framework, which is chiefly concerned with how singular bodies are orientated by and towards technologies. “In a postphenomenological perspective, technology is often seen from the position of the individual rather than the collective body” (Hasse, 2015:281). As a consequence, I have relied on theoretical and conceptual insights from two other approaches: Estrid Sørensen’s sociomaterial methodology, and Daniel Stern’s dynamic approach to social interaction. This is not an instance of willy-nilly eclecticism. Using Merleau-Ponty as a yardstick, I briefly hope to show that, although these scholars’ theoretical backgrounds do diverge from postphenomenology, their concepts are (or can at least be *read as*) congruent with this approach, because they also rely on surface-level or ‘flat’ descriptions of dynamic forces interacting here-and-now rather than invoking metaphysically ‘deeper’ factors to account for such situated psychological processes.

### *Estrid Sørensen’s sociomaterial configurations*

As described earlier, my entrance into the field of educational technology sprang from a combined interest in digital devices and the phenomenological nomenclature of absence and presence. Somewhere along the lines, however, I stumbled upon Estrid Sørensen’s actor-network theory (ANT) inspired works on the materiality of learning (2009) and on human presence (2013), which have had an enormous impact on my research approach. Sørensen’s empirical sensitivity is nothing short of exemplary, and it is this posthumanist methodology, which I have been impudent enough to divorce from its theoretical grounding in ANT. Sørensen (2009) applies a decentered, spatial approach that studies interactions between humans and material artifacts as patterns of relations in the classroom. Inspired by this methodology, I have attempted to decenter postphenomenology’s traditional focus on individual human-technology relations and look at the way that educational technologies affect wider classroom dynamics (see **Article 1**). But how can we claim to be doing phenomenology if we do not start from a first-person perspective on experience? The answer to this question hinges on how we understand the concept of experience. Sørensen (2013) distinguishes experience from other conscious sense-making practices and, with a definition that practically echoes phenomenology, conceptualizes such experience as “the basic feeling of ‘being-there’, of being present, a feeling that may be conscious or not, and which is necessarily partial and distributed” (p. 115). From this point of departure, she argues, the empirical question becomes how human presence is *sociomaterially configured* in specific unfolding situations, how it is shaped by and through spatially and temporally co-present artifacts. This posthumanist approach to experience replaces the sense-making question of “how something is understood” with a process-oriented focus on “what is going on” here-and-now. As an example, Sørensen describes how the layout of desks in a classroom helps direct the children’s gazes towards the blackboard. In other words, the material layout of the classroom af-

fects the children's lines of attention. Approaching experience in terms of such concrete human-technology relations seems to resonate well with the basic tenets of postphenomenology.

### *Daniel Stern's forms of vitality*

Summarizing some of the previous arguments, we can say that media use sometimes shifts attention away from our immediate circumstances and towards our technologically mediated projects whether they be watching a movie or talking on the phone. Previously, this experience was limited to specific places (e.g., in the cinema, in front of the television, or as far as the telephone cord extended). Because of the growing ubiquity of mobile devices, however, the contexts of digital immersion are rapidly proliferating. Sometimes, co-present conversational partners can even be physically present, yet absorbed in a technologically mediated world of elsewhere. Although the theoretical apparatus of postphenomenology is excellently equipped to explore this absorption from the perspective of the user (with its concept of field composition), it cannot help us address how it affects *other people*. And although Merleau-Ponty's (2002) phenomenological account of directly shared intentionality provides an original description of how our bodies are prereflectively attuned to each other, it still remains 'magical' as to *how* such situated responsiveness unfolds (Dreyfus, 2012). To analyze the microsocial dynamics at stake in such distracted face-to-face conversations, I therefore turned to developmental psychologist Daniel Stern (see **Article 3**). When it comes to analyzing social interaction, Stern (2010) offers us the sophisticated vocabulary of *forms of vitality*. These dynamic units arise from a gestalt of movement and its "four daughters" of force, time, space, and intentionality (p. 4). A sense of vitality is what procures the experience of interacting with a living being, and Stern offers us the telling counterexample of a corpse: "Seeing a dead person is immediately shocking because they do not move, nothing moves, and even the almost subliminal vibrations of tonicity stop" (p. 9). Movement is our most primitive and fundamental experience, and death is the antithesis to vitality. As Pascal (1995) said: "Our nature consists in movement; absolute rest is death" (p. 641). Because of this emphasis on dynamic movement, Stern's account of vitality can favorably be read through the prism of Merleau-Ponty's embodied motility.

## **An empirical vignette: Attention in the classroom**

The time has now come to put our posthumanist framework to the test. In this section, I will give a brief example of what this understanding means for empirical research by looking at an empirical vignette. Let us start *in medias res* (literally, in the middle of things) with an excerpt from my time in the field. This particular situation unfolded during a history lesson.

Rhonda, the teacher, wants to show us a clip from *Hvidsten gruppen* (2012), a Danish movie based on a true story about a family of Danish innkeepers who formed a resistance group during the German occupation of Denmark in World War II. She explains that the point of watching this clip is to discuss how the Danish resistance movement is portrayed in today's media. I notice that it is already dim and cinema-like in here, because the students have drawn the curtains to avoid sunlight reflecting on their laptop screens. Before starting the clip, Rhonda hands out a set of questions printed on paper. "Close your computers and find a

pencil”, she says. She then inserts the DVD into a desktop computer that is connected to the smartboard and a set of speakers, fast-forwards to the climatic finale in which the resistance movement is put on trial by the Nazis, and presses start. But when the clip starts, the sound level is very low. Rhonda tries to turn up the volume both in the computer’s operating system and on the physical speakers, but to no avail [it will later turn out that the problem is the third and final option: The volume level in the media player software itself]. Despite these technical difficulties, she proceeds to show the clip. The movie is not subtitled, so the students have to listen carefully to make out the dialogue and the usual murmur of the classroom quickly subsides. Most of the students sit upright with their elbows on the desk and their hands under their chin. After a short while, they start shifting in their seats. I recall that Steve Jobs once described the difference between watching television and browsing the Web as the difference between ‘lean-back’ and ‘sit-forward’ media. What I am currently witnessing, however, is an uncomfortable-looking hybrid. The clip progresses. During a particularly emotional scene near the very end of the movie, a guy in the back row utters a sad, sobbing sound and looks emotionally affected. I am impressed with how the norms for male showing of emotion seem to have developed since I attended college. “Good for you”, I think. The guy then lets out a defiant laugh, showing everyone who turned to look at him that he was, in fact, just faking it. Two guys next to him start laughing. A girl a few seats in front of us give all three guys a condescending look. Apparently things haven’t changed that much.

Although very mundane, certain analytical points can be drawn from this short vignette. If we begin the analysis at the subjective level, we see a number of individual students allocating attention to an audio-visual object in their near environment, namely the film clip as projected by the smartboard and speakers. If we switch to an intersubjective focus, we notice that the male student’s use of irony clearly shows that students are aware of being attentionally co-oriented towards the same film clip. What we have here, in other words, is an emphatically social situation. This situation contains some interesting gender dynamics that seem ripe for interactionist analysis. Now what about the idea that attention is not just subjective or intersubjective, but stretches all over our material circumstances? Hopefully, we can all agree that this situation, like all situations, plays out in a material context (i.e., in a classroom). When analyzing attention from a posthumanist perspective, however, we must be careful with such descriptors: Words like context, structure, or environment tend to make us think of inert backdrops rather than spirited actants (Bennett, 2005). But the context is not some neutral container. The things of our contexts affect us. If we look closely at this empirical vignette, we notice that material agents affect the students’ intentionality in a myriad of ways: Sunbeams hitting their screens compel them to draw the curtains, the odd constellation of chairs, tables, and screen makes them sit uncomfortably, and the low volume forces them to listen attentively. Additionally, the mere existence of a computer-free phase indicates that Rhonda is keenly aware of at least one more way in which things affect her students: Laptops tempt them to go off-task.

### 3. Methodology

So how can we study the relationship between using digital devices, paying attention, and becoming distracted as these phenomena coalesce and intertwine in the contemporary classroom? In this section, I situate my approach to this question through two successive movements: I first discuss quantitative media multitasking research and argue that the *causal mindset* that undergirds this field is limited. “Why critique media multitasking research yet again instead of just moving on to your own research?”, the skeptic asks. Because the field of educational technology is currently embedded in a positivist paradigm of so-called scientifically based research (Romeo & Russell, 2010). In this scientific atmosphere, qualitative inquiry risks looking like an impoverished version of quantitative research in which objective procedures have been replaced by interesting, yet subjective and ‘pre-scientific’ measures that lack the rigor of truly scientifically based research (St. Pierre, 2006). I do not think this is a fair assessment, and the aim of this section is to provide epistemological arguments for the legitimacy of using qualitative inquiry, which, roughly speaking, takes an interpretive rather than causal approach to studying psychological processes. After making this argument, however, I proceed to discuss the *textualism* of conventional qualitative inquiry and, finally, outline my own approach: A postphenomenological study of bodies and technologies.

#### Quantitative multitasking research

##### *Experimental media multitasking research*

Experimental media multitasking research is an empiricist venture that proceeds through the randomized controlled trial (RCT), also known as the gold standard in scientifically based research. An RCT is a comparative study in which participants are randomly assigned to one of two groups: The experimental group receives some input (or  $X$ ), the control group does not. The two groups are then compared in terms of an outcome variable of interest (or  $Y$ ). The idea is that because participants are randomly assigned, the average difference in outcome between the groups will be an effect of the input. In other words, if there is a difference in  $Y$ , it is fair to say that  $X$  has caused it. [ $X \rightarrow Y$ ]. Although I have argued that cognitive researchers do not (and cannot) measure the effects of media multitasking *per se*, they can legitimately explore the effect of *specific types* of media multitasking by keeping the baseline activity constant across both groups while assigning an additional media task (or  $X$ ) to the multitasking group. In this scenario, whether the baseline activity itself constitutes a form of multitasking may be theoretically important, but empirically it is less so. The two groups can then be compared in terms of some relevant outcome (or  $Y$ ) like academic performance, which is often measured through test scores. Based on the limited capacity model of attention, cognitive researchers invariably hypothesize that media multitasking leads to impaired performance: [Multitasking  $\rightarrow$  Impairment]. Multitasking is the cause, impairment the effect. Here is how they test this hypothesis: Participants are divided into two groups that are exposed to the same baseline activity such as reading a text or watching a lecture. The control group focuses exclusively on this activity, whereas the multitasking group is instructed to solve additional tasks like answering unrelated questions. The groups then take some sort of performance test and researchers use statistical analyses to compare test scores (i.e., whether multitaskers perform significantly worse than non-multitaskers).

If we look closely at this experimental set-up, however, we notice a puzzling issue. Recall that cognitive psychology views attention as either triggered exogenously, from without, or directed endogenously, from within. Cognitive researchers can easily induce multitasking exogenously by assigning distracting tasks or by asking unrelated questions, but this experimental set-up cannot get at endogenous attention: The moment researchers *instruct* participants to pay attention in predefined ways (e.g., towards tasks assigned to them), attention ceases to be voluntarily controlled. Participants will politely respond to the researchers' questions and solve their tasks, but few will be rude enough to deliberately opt-out and start browsing social media during scientific experiments (a vast majority of research participants are students that receive course credit for their participation). What this polite obedience means, as Latour (2000) argues with characteristic rhetorical bravura, is that the research participant ends up playing the role of an idiotic object. Costall (2013) makes a similar argument: "Stimulus-response theory is embodied in the standard experimental paradigms where 'conditions' are imposed upon 'subjects'. The task of the subjects in such experiments is to react to the conditions imposed upon them and emphatically not to choose their own conditions or transform them" (p. 317). Participants are effectively reduced to reactive billiard balls that passively respond to researchers' experimental stimuli. Researchers could of course *ask* research participants to opt-out, but this instruction would defeat the purpose. Even when viewed from within a cognitive perspective, experimental set-ups eliminate the voluntarist half of the attentional framework and prevent deliberate opting-out as it is envisioned by cognitive psychology. This raises serious concerns about the ecological validity, or real-life applicability, of experimental multitasking research: Such research seems inherently unable to explore distraction as it occurs in the wild. Latour's proposal is to abandon experimental set-ups and seek out situations in which participants are allowed to be active and disobedient. He urges the empirical researcher to "devise your inquiries so that they maximize the recalcitrance of those you interrogate" (Latour, 2004:217). It may therefore be feasible to switch to naturalistic research, because such research leaves room for deliberate opting-out.

#### *Naturalistic media multitasking research*

Naturalistic media multitasking research occurs when researchers attempt to measure the educational effects of naturally occurring multitasking. Such correlational research alleviates the issue of free will, but still faces the epistemological challenge of objectively operationalizing its variables. Allow me to outline this problem in some detail, because it is quite prevalent in multitasking research. In naturalistic media multitasking research, performance measurements are often broadened to include grade point average (GPA) and course grades. Multitasking, however, can no longer be experimentally induced, so this variable now has to be operationalized in ways that capture its natural occurrence. For the sake of argument, we shall narrow down such naturally occurring multitasking to one paradigmatic website: Facebook. So far, we have hypothesized that: [Multitasking = Facebook] and [Facebook → Impairment]. This hypothesis is popular and uncontroversial in media multitasking research (e.g., Junco, 2012b, Bellur, Nowak & Hull, 2015), but I will argue that it is difficult to test it scientifically, because it is unclear how to assess the relationship between its variables. The whole unraveling process begins with an off-hand remark made by a student who told me that Facebook is constantly running as a tab in his browser. This seemingly innocuous statement subverts two of the most obvious variables for measuring Facebook use: We cannot measure the *frequency* with which

Facebook is accessed, because if this is just ‘once’ at the start of the day and then running as a tab in the browser and accessed sporadically, we underestimate actual Facebook use. Neither can we measure the *duration of time* that Facebook is open as a tab, however, because if this is ‘constantly’, even when it is not being used, we overestimate actual Facebook use.

What about measuring the duration of time that Facebook is *actively used*? The problem with this measurement is that it neglects the issue of content: Facebook can be actively used for both on- and off-task purposes, and I often saw students using Facebook to exchange educationally relevant material during class (“it’s faster than by mail”, they told me). In fact, Junco (2012b) found that while some Facebook activities like posting status updates and chatting were negative predictors of GPA, other activities such as collecting and sharing information were positive predictors of GPA. As such, the issue of content is vital. Let me add a final twist to illustrate the complexity of this story: Even if we acknowledge the issue of content and use advanced technologies such as spyware (Kraushaar & Novak, 2010), proxy servers (Hembrooke & Gay, 2003), or head-mounted cameras and eye trackers (Calderwood, Ackerman & Conklin, 2014) to measure the duration of time that Facebook is *actively used for non-academic purposes* (i.e., off-tasking) by having independent raters perform case-by-case judgments of logged content (thus acknowledging the interpretive nature of social scientific research), we still do not get the objective relation between off-tasking and academic impairment, because this measurement does not consider the issue of timing: Sometimes, students are tacitly allowed to use Facebook for non-academic purposes once they have finished their tasks. When retroactively analyzing logged content, such activity will look like off-tasking, because the log simply shows Facebook being used for private purposes. In the context of an ongoing lesson, however, ask yourself whether off-tasking is even possible if one is *done* with all tasks? Or whether an activity still counts as off-tasking if the teacher *allows* it? Before we try to refine our variables even further, it is worth taking a sober look at quantitative multitasking research: Might there be something about the nature of such research that prohibits us from objectively quantifying our variables?

### **A hermeneutic challenge to quantitative research**

Based on hermeneutic philosophy, Dreyfus (1991b) argues that all science relies on interpretation, but distinguishes a weak claim about natural science from a strong claim about social science: Natural scientists use interpretive skills to pick out the objects of their inquiry, yet once this access has been granted, natural scientists can proceed to decontextualize or ‘deworld’ the entities in question (e.g., water), isolate their properties (water is H<sub>2</sub>O), and discover natural laws that are *independent* of everyday practices (H<sub>2</sub>O’s boiling point, its freezing point, etc.). Social scientists, however, not only use interpretive skills to pick out the objects of their inquiry, but what constitutes such entities is in fact *determined* by everyday practices. If psychologists uproot entities from this interpretive background in order to objectify and quantify them, they end up distorting the entities in question. Dreyfus provides two striking examples: Talkativeness and gift-giving. We sometimes call people talkative or taciturn, but a quantitative psychologist once measured the amount of words uttered by people labeled under both categories and found no significant difference between them. Does this mean that the two categories are mere illusions? No, Dreyfus argues, because what is decisive is not

necessarily the brute *quantity* of words spoken, but the *content* and *timing* of what is said. If people say inane things during lectures or movies, we tend to regard them as talkative no matter how many words they utter. Likewise, there cannot be objective laws for what it means to give someone a gift (e.g., “person A gives object X to person B”), because for something to constitute a gift depends on the content and timing of that gift: If you give your friend a gift and he immediately returns it to you, you have not *also* received a gift, your friend has simply refused to accept your gift. Dreyfus argues that the social skills that make it possible to determine when something constitutes a given entity can at best be formulated as *ceteris paribus* (“all things being equal”) rules and not as the strict rules required for prediction, so if social scientists try to formulate predictive laws, these laws will fail every time a real-life situation deviates even slightly from theory. Prediction in social sciences, in other words, is reliable only as long as the decontextualized entities picked out by theory *happen* to coincide with elements picked out in the real world.

This idea of psychology as a hermeneutic science leads to a series of radical conclusions. Taken to its logical conclusion, there can never be a 1:1 correspondence between decontextualized psychological variables and everyday practice, which means that psychology cannot be an exact science. If psychology is *not* an exact science, we should be suspicious of findings presented as objective laws of cause and effect. This does not simply mean that causal claims (e.g., “Increased Facebook use leads to academic impairment”) should be replaced by modest correlations (“... *or* academic impairment leads to increased Facebook use, *or* they are both caused by a third variable”), but that we should be skeptical about the underlying goal of establishing causal relations between fixed and decontextualized variables. There is no clear-cut, unidirectional relation between the brute quantity of Facebook use and academic impairment, and using Facebook for educational purposes, for instance, positively influences academic performance (Lambić, 2016). Of course, this epistemological argument does not change the fact that students can be and indeed are distracted by Facebook use, but, like in the talkativeness example, what is decisive in this process is not the sheer quantity of Facebook use, but its content and timing: ‘Facebook use for *irrelevant* purposes at *inappropriate* times leads to academic impairment’. What constitutes irrelevant purposes and inappropriate times, however, is determined in educational practice and cannot be decontextualized, as Dreyfus reminds us. Remember that Facebook is being used as a placeholder in this example and that the same conclusion applies to other instances of media multitasking. It may be true that students who frequently engage in media multitasking receive lower grades, but this fact cannot be separated from the content and the timing of such activities. We once again return to the normative concept of off-tasking: What we have called off-tasking is not a neutral stimulus whose causal effects we can measure and explain, but a meaningful phenomenon that we must try to understand.

## Moving towards qualitative inquiry

The problem with quantitative media multitasking research is that human beings are not like billiard balls that passively respond to causal influences. We are distinct from such inanimate objects in that we *care* and things matter to us (Heidegger, 2008). “We give a damn”, as Haugeland (1998) puts it. Hence, the causal mindset that undergirds the idea of psychology as a natural science is limited: Only few human behaviors can be considered as brute reactions to stimuli, and sneezes, yawns, and other primitive reflexes seem to exhaust this category (Packer, 1985). The rest of our everyday existence consists of activity that cannot be explained in terms of stimuli and responses. There is thus a basic difference between a causal account of physical objects and an interpretive understanding of human beings (Dreyfus, 1991b). As an illustration of this distinction, consider the difference between crying when cutting an onion and when watching a sad movie: When cutting an onion, chemical processes produce syn-propanethial S-oxide or  $C_3H_6OS$ , a volatile sulphur compound that diffuses through the air, reacts with the sensory fibers of the eyes, and causes the lachrymal glands to release tears to wash away the irritant. This just happens. There is a stimulus and a response. It is “the action of a defined physical or chemical agent on a locally defined receptor which evokes a defined response by means of a defined pathway” (Merleau-Ponty, 1984:9). When watching a sad movie, however, our tears are not triggered by the movie in the same mechanical way. A movie may compel a person to shed tears, but only if it is perceived as sad, only if it somehow touches the viewer. This point echoes the Heideggerian argument that, strictly speaking, only a human being or Dasein can be touched: “Objects can touch in the sense of physical contact (a metaphorical sense), but they cannot touch each other in the sense of mattering to each other (a literal sense). Dasein alone can be touched, that is, moved, by objects and other Daseins” (Dreyfus, 1991a:44). This fundamental insight has given rise to an epistemological split between quantitative and qualitative inquiry. Geertz (1973), for instance, contrasts “experimental science in search of laws” with what he calls “interpretive science in search of meaning” (p. 5).

The way that qualitative research in psychology has developed, however, it is not immediately helpful to my research, because I am interested in *bodies* and *technologies*, whereas qualitative psychology tends to rely on postmodern and social constructionist approaches that focus on *language*. Taken as a definitive statement, this is obviously an oversimplification, because qualitative inquiry is an umbrella-term that covers a broad, rich, and heterogeneous field, which cannot be described as an internally coherent unity. Taken as a broad-brush characterization, however, I think it is fair to say that qualitative psychology has historically been quite preoccupied with language: After a linguistic turn in the social sciences, qualitative psychologists turned their attention towards language in the form of discourses, dialogues, and narratives (Nielsen, 2007). This linguistic turn was based on the insight that language does not represent (or ‘mirror’) the world in an immediate, undistorted way: Language is not a transparent tool that we can use to pinpoint truths about the world, because rather than gaining meaning by referencing an objective and extra-linguistic reality, a word gets its meaning from its relationship to other words. “The meaning of a sign resides not intrinsically in that sign itself, but in its relationship to other signs” (Burr, 2003:52). Specifically, the meaning of a word arises from a chain of linguistic differentiations: A word obtains its fixity and integrity through a differentiation of what-it-is (presence) from what-it-is-not (absence). “That is, the distinctiveness of

words depends on a simple split between ‘the word’ and ‘not the word’” (Gergen, 1999:27). Western thought is structured in terms of a series of these binary differentiations: Man/woman, subject/object, mind/body, rational/emotional, etc. These binaries are always hierarchical with one term privileged over the other. “Very schematically: an opposition of metaphysical concepts (for example, speech/writing, presence/absence, etc.) is never the face-to-face of two terms, but a hierarchy and an order of subordination” (Derrida, 1982:329). Postmodernists do not settle for neutralizing this skewed privilege, but aim to deconstruct the binaries themselves. Ultimately, the rise of postmodernism and social constructionism challenged the idea that we can have access to reality as it is in itself: Since all we can say about the world is constructed in language, what we call ‘real’ only exists in language. There is nothing outside the text.

### **Incorporating material presence**

Feminist scholars Alaimo and Hekman (2008) have argued that thanks to postmodernism and its complex analyses of language, power, and subjectivity, we no longer take binaries like man/woman for granted, yet one binary remains stronger than ever: Language/materiality. Postmodern studies tend to focus on the linguistic realm, while the materiality of the world eludes their attention: “In their zeal to reject the modernist grounding in the material, postmoderns have turned to the discursive pole as the exclusive source of the constitution of nature, society, and reality” (p. 2). This approach moves the focus from the phenomenon itself to the processes by which it is discursively produced. When feminists write about the body, for instance, they tend to confine their analyses to discourses *about* the body. While such discursive critiques have advanced feminism in many significant ways, “the discursive realm is nearly always constituted so as to foreclose attention to lived, material bodies and evolving corporeal practices” (p. 3). When the world is dissolved into a web of text, human bodies are reduced to signs, symbols, and projection screens. Protesting this pervasive textualism, Alaimo and Hekman aim to reclaim the materiality and agency of human bodies without losing the insights of postmodernism. They seek to *build on* rather than *abandon* the lessons learned in the linguistic turn, which includes antiessentialism and a relational ontology. As Hekman (2008) argues: “What we need now is not a return to a modernist conception of reality as an objective given, but rather an understanding of reality informed by all we have learned in the linguistic turn” (p. 88). Latour’s critique of social scientists’ separation of humans and technologies dovetails nicely with this argument. Latour (1996) provocatively argues that social scientists’ exclusive preoccupation with the ‘social’ is gravely mistaken, because purely social interactions occur only among primates, whereas technologies literally shape the frames of our human interactions. As social scientists, we must pay attention to what Latour calls non-humans, because human comportment is inextricably entangled with such material artifacts. The speed bump is Latour’s (1992) iconic example: While a traffic sign, for instance, encourages a driver to slow down because of the meaning it represents (i.e., the law), the speed bump invites drivers to slow down because it is made of concrete and can potentially damage a car’s suspension. In other words, the speed bump does not work by symbolizing some social construction, but by materially mediating the relationship between driver, car, suspension, and road. “Thus, we remain in meaning but no longer in discourse; yet we do not reside among mere objects” (Latour, 1994:39).

These critiques are targeted at research that collapses the world into text or language. As such, they mark a shift away from much conventional qualitative inquiry. As implied by Latour, however, this shift does not signify a movement back to the brute causality of quantitative research: The speed bump may invite us to slow down, but it does not mechanically cause us to do so (as evidenced by the existence of speed bump-induced spinal column injuries). And although it does not act through its symbolic meaning, the speed bump certainly isn't unintelligible. The speed bump make perfect sense to drivers, it has plenty of perceptual significance. To explore such significance, Matthiesen and I (2016) have argued that qualitative inquiry must pay attention to bodily interactions with material things. This means supplementing language-oriented analyses with analyses of *material presence*. The word presence stems from the Latin word *prae-esse*, to be in front of, and conveys a physical closeness, tangibility, and contact with things of the world (Gumbrecht, 2004). With the notion of material presence, we are thus trying to identify and claim a 'third space' between the mechanical, law-governed nature of Galilean science on the one hand, and the textual realm of language on the other. To be clear, we are not trying to throw out the qualitative baby with the bathwater and this third space is decidedly not some sort of demilitarized zone between interpretive and causal approaches: We explicitly situate material presence *within* the realm of qualitative inquiry. The notion of material presence does not challenge the use of qualitative inquiry, but simply helps us demand that things be taken seriously. I will return to the challenges I faced as result of this hybrid epistemological endeavor. First, however, I want to present the practicalities of my research project.

## **Entering the classroom**

My research project was conducted as a long-term, multi-method qualitative inquiry at a large business college in Denmark. A business college is an institution that provides general upper secondary education in commerce covering lines of study that range from global marketing and communication to innovation and event management. Students are young men and women aged approximately 16 to 20 years. This particular college and its institutes are located at three different addresses in a Danish city and employs the technological strategy of letting students bring their privately owned devices to school in a model known as Bring Your Own Device (BYOD), which means that there is a distribution of at least one digital device per student. These devices are all wirelessly connected to the Internet, and although laptops still constituted the vast majority of educational technology in the college when I began collecting data in August 2013, tablets seemed to be gaining traction. I initially met with the principal of one of the locations to outline my project. After discussing the topic of Facebook use, which at that time was (and maybe still is) paradigmatic of distraction, the principal recognized the relevance of my project and gave it his official stamp of approval. I was then put in touch with six teachers selected on the assumption that these specific teachers would subsequently be willing to let me observe their lessons. I contacted these teachers, introduced myself, arranged dates, and conducted exploratory interviews with them about their use of educational technologies ("What kinds of technologies do you use?", "Which (dis)advantages do these technologies have?", "Do you have any rules for student use of technology?", etc.). The teachers were indeed kind enough to subsequently let me follow their teaching through participant observation. They sent me their schedules and we subsequently set up our meetings via emails.

## Participant observation

My participant observation began in August 2013 and lasted till November 2014. When I entered a classroom and introduced myself, I explained to the students that I was interested in their use of technology. This often provoked witty responses like “oh, we use Facebook a lot”. I was always open about being interested in such off-tasking, but I explicitly and consistently made it clear to the students that I was not a ‘snitch’ and that I did not report back to their teachers. After introducing myself, I would sit down next to the students in the back row of the classroom, which allowed me to observe what happened on most screens at any given time. Obviously, my age, role, and purpose of attending prohibited any ‘natural’ participation in classroom activities (what would that even mean? Participating as a student or as a teacher?), but this unobtrusive style of observation should not be mistaken for a quest for objectivity, because my embodied presence certainly affected what I got to see. I here follow Haraway (1988) in accentuating the embodied nature of vision and the situatedness of scientific knowledge. As Højholt and Kousholt (2014) argue: “A position by the blackboard gives a different angle and perspective on what is happening in the classroom than a position beside the children” (p. 326). I would argue that my sociomaterial position in the classroom (sitting among the students, looking towards the blackboard, listening quietly, etc.) aligned me with the students in ways that simply vanished during group work, where my position as an outsider became much more apparent (see **Article 1**). Situated in the back of various classrooms, I participated in a total of 50 lessons in courses like marketing, business economics, and English. This participation enabled me to gather first-hand impressions of educational technology use, which I documented through handwritten field notes. In the beginning of my participant observation, I jotted down brute occurrences of distraction (“Student A is now engaged in off-task activity X”). While this strategy helped me verify that, yes, distraction is in fact a commonly occurring phenomenon, I eventually came to realize that such note-taking basically amounts to an unscientific version of quantitative research that does not yield analytically interesting data. Inspired by Sørensen (2013), I therefore switched focus so that the smallest unit of analysis in my notes became the temporally unfolding situation, which somehow involved interactions between bodies and technologies (like in the empirical vignette described earlier). My field notes were not only textual, but included rough sketches of such unfolding situations (see Fig. 13).

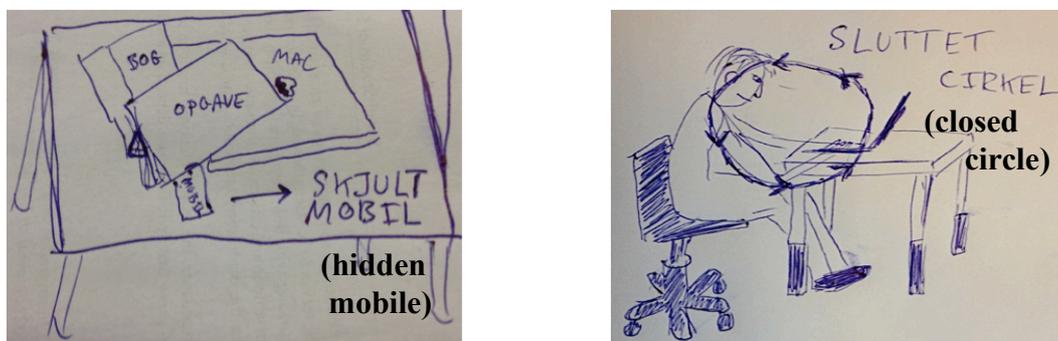


Fig. 13: Sketches of unfolding situations

## Qualitative interviews

After six months of observation, I started formally interviewing individual students about their use of technology. At this point, I hoped to have built a mutual understanding with the students as they had been given a chance to adapt to my presence. In order to avoid pinpointing individual students, which could potentially give my observations an inimical aura of surveillance, the sole selection criterion for my interviews was volunteering. Of course, this selection strategy prevented me from interviewing specific students about interesting episodes I had witnessed during my observations, but I was more concerned not to awkwardly ‘rat out’ any students, either directly or implicitly (and tapping specific students for interviews would itself have been a very telling gesture). From a quantitative perspective, this strategy may raise questions about self-selection bias and skewed samples: What if only top students were brave enough to volunteer for interviews? Since such students are not statistically representative, this would make it impossible to generalize my findings to the wider population. The aim of my interviews, however, was never to construct a statistically generalizable pattern about *average* off-task use of educational technology (after all, I only interviewed 25 students), but to explore *specific dynamics* related to such technology use: Some students reported off-tasking when things became too easy during class, others when things became too hard. Nevertheless, they all reported off-tasking to some extent. Some students gave me a funny look for even asking whether they had ever done so (“because of course they had”, as they said). Practically, the interview sessions transpired accordingly: When a student volunteered, we went into the hallway, sat down at a quiet table, and I began recording our conversation with my phone. I told the student that the interview would be anonymized and reiterated that I did not report back to their teachers. The interviews were semi-structured, which means that they took departure in an interview guide, yet remained flexible enough to explore spontaneously occurring ‘red lights’ such as unusual terms or intonations in students’ answers (Kvale & Brinkmann, 2009).

### *Interview guide*

The interview guide consisted of questions about students’ experiences with technology (“how do you use technology in class”, “have you ever used it for off-task activity”, “when do you do this”, “how is it experienced”, etc.). I wanted to understand students’ technologically mediated experiences. As previously mentioned, however, I was less interested in their conscious sense-making than in their prereflective experiences, which means that when students described going on Facebook during class, for instance, I was less interested in what this activity *generally means* to them (e.g., identity-wise) than in prodding their situated experiences of using Facebook right *there-and-then*. I therefore passed over the undeniably meaningful activity that takes place on these social media sites in order to focus on what happens in those particular, transient moments when students actually log on to those sites during class (or whatever else their off-task activities might consist of). Based on my reading of phenomenology, I was curious to learn to what extent such experiences would be habitual. Before conducting my interviews, I was slightly worried about this focus. Would it even be possible to interview people about habits? Or is habit, per definition, a tacit knowing that is difficult to verbalize (Moore, 2014)? Fortunately, students were quite adept at describing their technology use, including its habitual aspects. A few selected quotes:

Jacob: You're looking out of the window and going "oh, it's raining", and then you look back, and now you're on Facebook. If you stop listening for *one* second, you're already on Facebook.

Karen: I don't often use Facebook during class, because I know I'll lose focus. Facebook catches you, so it's not just two minutes you're in there checking out stuff. It's easily half an hour that's suddenly gone by. So I have to have that limit where I close my laptop. Otherwise I'll stay in there.

Michael: In classes where we're allowed to have our computers open, it happens slowly. You go in and look at the computer, and suddenly you end up on different sites. It doesn't happen consciously, it's more of a subconscious thing.

Jesper: Okay. Do you do anything to avoid it happening?

Michael: Yeah, I close the computer.

Jesper: When would you do that?

Michael: If I realize that I'm browsing some website I'm not supposed to be on. I realize it, and then I shut it down. Otherwise, I can't keep up.

Jesper: But it takes a while for you to realize it?

Michael: It easily takes fifteen minutes before I realize that "oh, I'm on some website, I'm not supposed to be on".

In an attempt to gauge whether (and if so, how) this distractive use of educational technology intertwined with students' broader everyday lives, I also wanted to address the use of digital devices in settings that they choose more freely. Hence, another line of interview questions targeted students' use of digital devices outside of school ("how do you use technology outside of school", "do you use social media when you are with your friends", etc.).

### *Interviewing style*

Phenomenological researchers often rely on a receptive and somewhat passive style of interviewing that elicits participants' experiential descriptions with as little prompting and interruption as possible (Brinkmann, 2013). This style springs from phenomenological research methods' traditional reliance on the so-called epoché in which the researcher brackets his own subjectivity and understanding of a topic in order to remain receptive and open to participants' experiences (see Aagaard, 2016). When I interviewed students, however, I did not sit back and let their rich and detailed narratives flood me. Instead, I actively prompted, encouraged, questioned, and responded to each of their remarks. In these interactions, I neither removed nor bracketed my own subjectivity, personal experiences, or theoretical understandings, but actively used these things to interpret students' answers and explore 'red lights' as indicated above. Let me give an example from when I talked to Carol about the everyday norms governing attention and distraction.

Carol: It's mostly when I'm together with my family that they'll say something like "put the phone away".

Jesper: They'll say something like that?

Carol: Sure. But when I'm with my friends, they just take it for granted. They use it all the time, too, you know?

Jesper: Is there any time when it may not be appropriate to use it?

Carol: Hmmmm, I don't know. I can't think of any.

Jesper: You say your family might say something like "put the phone away". When do they do that?

Carol: For instance, if we're sitting in the living room talking, they think it's pretty distracting and annoying that I have to have my head in the phone all the time, because it's kind of impossible to get in touch with me. Then I might as well go sit in my room.

Jesper: What do you think about that?

Carol: It's true. I feel the same way when my mom or dad is on the phone, you know? I get annoyed about that, too. So it's kind of hypocritical.

Jesper: But you still say that you don't have that attitude in your group of friends?

Carol: I think it's because we all just use our phones constantly. It's just different, I think. They're not old. They're young, so they're like me.

Jesper: Even though you say that you "feel the same way"?

Carol: Yeah, when I'm with my family, I do. And that's a little bit hypocritical. But when I'm with my friends, then it's not... Unless I'm explaining something to them that I want them to respond to, or how you'd put it, because then I think it's extremely annoying and rude if they're using their phone at the same time.

Jesper: Why?

Carol: Because I just don't feel that they're focusing on what I'm trying to tell them. I feel like they're focused on something else. There's a lot of hypocrisy involved in this, as you can see [laughs].

As evident throughout this exchange, I persistently probe, ask follow-up questions, and repeat back some of Carol's significant expressions ("put the phone away", "feel the same way"). Based on her spontaneous answers to these follow-up questions, Carol eventually tells me that her attitude towards her friends' use of their phones may not be as relaxed as she initially reports (it contains an element of hypocrisy, as she puts it). The upside of this active and interpretive style of interviewing is thus that it allowed me to follow up and clarify the meaning of relevant aspects of the students' answers, which is an important quality criterion when conducting interviews (Kvale & Brinkmann, 2009). The inseparable downside, however, is that students were rarely compelled to deliver the long, detailed, and in-depth descriptions of their experiences that often prevail in other phenomenological studies. Looking back at my transcriptions, I wish I had been able to tolerate longer periods of silence before moving on to the next question (this is, I guess, a quintessentially psychological reflection). Interviewing is a craft, however, and I still have a lot to learn.

### *Transcription*

In total, I interviewed 25 students for approximately 15 minutes each (some interviews a bit shorter, some a lot longer). I subsequently transcribed these sound recordings to text. Transcription means

transforming data from one linguistic modality to another: From oral to written form, from sound to text. This process is sometimes viewed as a matter of simply typing out what is said during the interview, but it is actually the second of two technological mediations: We first use devices to transform live conversations into fixed sound recordings, we then use word processors to transform these sound recordings into text. In this process, certain features of live conversations such as hesitations, pauses, nonlexical expressions (“um”, “uh”), and paralinguistic features like pitch, intonation, gestures, and facial expressions are often omitted (Packer, 2011). Inspired by Gumbrecht’s (2006) emphasis on the physicality of language use, however, I tried to remain sensitive to such *presence effects* when transcribing my interviews including gestures and facial expressions, which I had jotted down in my notebook after each interview. This does not mean granting equal significance to each smile, overlap, or millisecond of delay, but using my own personal judgment to determine which of these presence effects seemed significant somehow. This approach obviously does not capture or even approximate a 1:1 version of the interview (the map is *never* the territory), but I do believe that it opens up new and interesting vistas of inquiry. It was, for instance, something of an eye-opener when a student mimicked the specific movements needed to log onto Facebook during an interview about off-tasking (see **Article 2**). I also found it fruitful to analyze the verbal and bodily dynamics that students would mimic when describing distracted conversational partners (see **Article 3**). All quotations have been translated from Danish into English and all names have been anonymized. In some instances, I have added punctuation and removed the redundancies of spoken language to enhance readability.

## Data analysis

How does a postphenomenological researcher interpret qualitative data? One criterion of good qualitative inquiry is meaningful coherence between ontology, epistemology, and methodology (Tracy, 2010). In my project, I tried to secure such coherence by using phenomenology all the way through. This, however, was no easy feat. When used as a branch of empirical research methods, phenomenology has historically been influenced by Amedeo Giorgi’s descriptive phenomenology, a version of which is currently being extrapolated to the study of educational technology (Cilesiz, 2011). This method purports to arrive at the invariant structure of a given psychological phenomenon by “putting aside” or rendering “non-influential” any knowledge associated with this phenomenon, interviewing people about their experiences of it, and then slowly chipping away at interview data until we are left with its essence (Giorgi, 1997). Postphenomenology, however, leaves no room for such modernist commitments, and I have analyzed my data in accordance with a revised methodology that replaces theory-free receptivism with *reflexivity* and epistemological essentialism with *multi-stability* (Aagaard, 2016).

### *Reflexive analysis*

Being reflexive means acknowledging the co-constructive role of theory: Empirical research is never a view from nowhere and data always appears within a specific ontological, epistemological, and methodological framework (St. Pierre, 2013). This means that data is never simply *given*, because it is always produced, constructed, or *taken* in accordance with a theoretical approach (Brinkmann,

2014). As such, we must not view phenomenology as a theory-free attitude to empirical research. As Eagleton (2008) quips: “Hostility to theory usually means an opposition to other people’s theories and an oblivion of one’s own” (p. xii). Phenomenology is just one of many theory-laden ways of making sense of the world, and it influences what we see, which questions we ask, and what ultimately stands forth as significant. In a non-trivial sense, my analytical process thus began long before I first visited the college. The rest of my analysis played out accordingly: After my time in the field, I transcribed my interviews and field notes. I printed out, read, and reread these documents multiple times in order to gain a good impression of the data and to identify recurring experiential patterns and themes that seemed to stand out. Using a slightly old-fashioned mix of paper, pen, and highlighter, I marked significant words and scribbled notes in the margins of my printouts. This process involved a ‘theoretical reading’ of the data in which I looked for situations, conversational exchanges, statements, and phrases that somehow regarded attention and distraction (Kvale & Brinkmann, 2009). This type of analysis is, of course, limited, partial, and perspectival: I specifically looked for passages that involved bodies, habits, and agency, along with episodes in which digital devices played active or unusual roles. Performing such a theoretical reading made me stumble upon passages in my transcripts called for new theoretical understandings (see **Article 3**). Nevertheless, as my primary intellectual technology, my approach to phenomenology both helped determine what I looked for and what popped up and seemed significant in my data. What this ‘lack of objectivity’ means for the validity of my findings will be discussed later.

### *Multistable findings*

The postphenomenological notion of multistability shows us the limitations of making overly grandiose scientific claims about educational technology (or, indeed, about any type of technology). What this means is that the findings included in this dissertation sadly do not coalesce into some deep, essential insight about the world. I have not discovered the essence of *educational technology*, because, as we shall see, educational technologies are multistable and can be used in a variety of ways. Neither have I found the essence of *distraction*, not even if we confine this phenomenon to the space of the classroom, because classroom distraction predates the use of digital devices, and removing these devices from the classroom most certainly does not eliminate distraction, as teachers have often reminded me. I have not even managed to reveal the essence of *digital distraction*, the very title of this dissertation, because certain aspects of this phenomenon remain completely untouched by my research. There is, for example, a major research field on distracted driving that analyzes how a person’s driving abilities are impaired by talking on a cellphone (Rosenberger, 2014b). Talking on a cellphone is not an activity I analyze once. As such, not a single essence was found in the making of this dissertation. What I have found, however, are certain dynamics that pertain to our contingent bodily relations to digital technologies. At first glance, this self-conscious and explicit adherence to antiessentialism seems to place postphenomenology in the corner of the postmodernists: In the clash between modern and postmodern epistemologies, postphenomenology sides wholeheartedly with the postmodern antiessentialists. Lest I be accused of simply cherry-picking postmodernist insights, however, I now want to address the issue of language.

## The question concerning language

When it comes to interviewing, we can distinguish between an experience-focused and a language-focused approach (Brinkmann, 2013). *Experience-focused interviewing* uses the interview as a research instrument to collect data about people's experiences. Phenomenologists, for instance, typically assume that what is said during an interview expresses a person's reality outside that interview and proceed to explore experiences by analyzing the content of peoples' descriptions (the 'what'). *Language-focused interviewing*, on the other hand, builds on the linguistic turn and sees the interview as a social practice in which interviewer and interviewee jointly construct discursive versions of the world. Supporters of this approach focus on the function of language in the creation and negotiation of truth effects within the interview (the 'how'). According to these discursive researchers, it is wrong to view language as a transparent medium through which we may glimpse participants' experiences outside the interview: Experience does not precede or exist independently of the words used to describe it, language does not work as a window to the mind of the participant, and the interview cannot deliver authentic reports about events experienced in the past. This radical critique of experience-focused interviewing subverts the idea of obtaining accounts that reflect reality outside the conversational situation. "Indeed, some of the critics seem to imply that interview data can only tell us what goes on in the interviews, or perhaps even just what went on in a particular interview" (Hammersley & Gomm, 2008:89). Like a miniature synecdoche of language, the interview is perceived as a self-referent system of signs that cannot reach beyond itself. Viewed from this perspective, students' accounts of distraction can be seen as situated responses given to me, an outside observer, to justify educationally debatable activity and absolve them from guilt and responsibility, but they cannot say anything about their actual experiences outside the interview. As a phenomenological researcher, this critique puts me in a tough spot: By insisting that my interviews somehow reach beyond themselves, am I smuggling in philosophically outdated assumptions about language?

So far, I have played off postphenomenology's antiessentialist epistemology as a strength, but the radical critique of experience-focused interviewing seems to place it between a modernist rock and a postmodernist hard place: We either fall victim to a linguistic instrumentalism that sees the interview as a neutral intermediary leading us directly to experience, or we are forced to abandon experience and 'give up phenomenology' altogether (Lather & St. Pierre, 2013). Let me preface my answer to this conundrum by saying that I genuinely think the question of language is a tricky issue for postphenomenology (Aagaard, 2016). Nevertheless, I hesitate to treat interview accounts as surface level manifestations of discursive processes and see at least three responses to the radical critique of experience-focused interviewing: Rejection, correction, and reflection. The first response is to simply *reject* the critique by repudiating its misguided conceptions about experience: It is true that experience-focused interviewing cannot provide access to inner, private, or subjective experiences, but that is because human experience is none of these things. As Merleau-Ponty (2002) puts it: "Truth does not 'inhabit' only 'the inner man', or more accurately, there is no inner man, man is in the world, and only in the world does he know himself" (p. xii). If we accept a non-dualist phenomenological ontology that dispenses with the inner realm of subjectivity, the most egregious critiques of experience-focused interviewing seem to evaporate. While this response limits and focuses

the radical critique, it still owes an account of the relationship that *can* be said to exist between language and this ‘ontologically sophisticated’ version of experience. A second response would therefore be to *correct* the scope of the radical critique: Our conversations are not self-enclosed systems. We routinely rely on other people’s accounts of their experiences (“how was your weekend?”), and the fact that such retrospective accounts can be shaped by concerns about self-presentation does not mean that they cannot be accurate or reliable. “If it did, the same conclusion would have to be drawn about research reports themselves” (Hammersley, 2003:123). This pragmatic defense of experience-focused interviewing insists that there remains some sort of referential quality to language and that we can in fact describe delimited segments of peoples’ lives outside the interview situation (Miller & Glassner, 2004). Finally, a third response is to acknowledge that in spite of this referential quality, language is not a neutral tool, how people describe their experiences is not trivial, and we must *reflect* upon what this means for phenomenological research. This response acknowledges that we must be attentive to the nuances invoked by participants’ choice of words and phrases, repetitions, and other rhetorical devices. In accordance with this strategy, I have tried to pay attention to interviewees’ use of metaphors. In fact, one of the most revelatory experiences of my data collection occurred during an interview when the teacher Heidi compared a computer to a candy bowl.

Heidi: I see it as a bowl of candy, because you can’t help but take a piece when it’s standing right in front of you. And computers do that all the time. It’s so easy to switch over and see if anybody’s written to you, whether anybody’s seen the last thing I posted, or whatever. Or if it’s Instagram on the phone, it’s like a candy bowl that you can’t help but take something from. If I have something in front of me that I really like, I also find it hard not to take a piece.

With this simple metaphor, Heidi displays both understanding and sympathy for her students’ off-task use of digital technologies (“I also find it hard not to take a piece”) and provides a nice image of what is going on when students log on to Facebook or Instagram. Such metaphors should interest anyone concerned with technology use: As I will get to later, it makes a big difference whether we conceive of digital distraction in terms of ‘neutral tools and choices’, ‘candy bowls and temptations’ or ‘digital drugs and addictions’ (with the latter metaphor currently being the popular way to depict Facebook use, see Fig. 14). With these reflections in mind, it is time to move onto my findings.

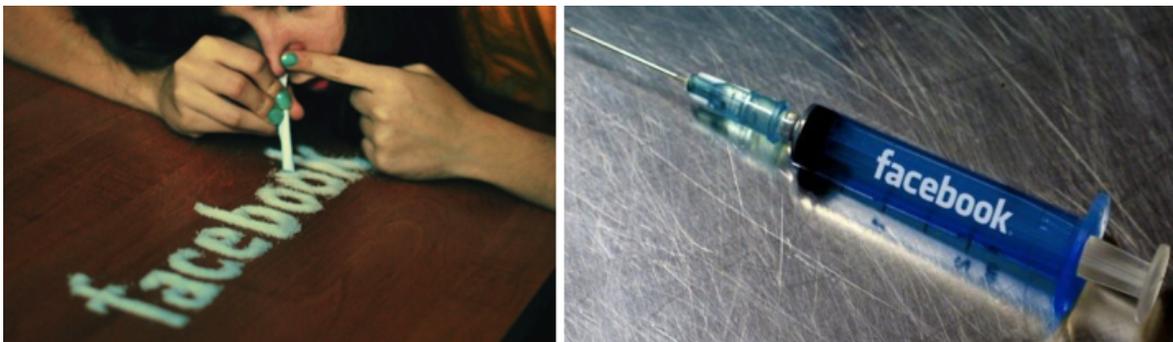


Fig. 14: Facebook metaphors

## 4. Findings

### The three empirical articles

Networked technologies signal the end of the classroom as a bounded and discrete space. This development has given rise to visions of boundary-less schools and ‘anywhere, anytime’ learning. As previously argued, however, we must beware of such utopian rhetoric. The first article explicitly aims to show the limits, gaps, fractures, and fissures of the techno-optimist narrative by describing what actually goes on in classrooms with permeable boundaries. The article uses participant observation to explore the presence of technologies in the classroom. Building on a notion of spatial imaginaries, it is shown that digital devices are involved in two complementary patterns of spatial relations in the classroom, namely the twin movements of bringing educationally relevant information into the space of the classroom (*‘outside-in’*) and escaping educational activity in favor of off-task activity (*‘inside-out’*). In the first instance, the article describes a teacher using technology to conjure Marilyn Monroe into the classroom like a magician pulling a rabbit out of a hat. In the second instance, it describes how students quietly abscond to the Internet through their laptops.

After establishing the multistability of educational technology, the second article zooms in on the movement ‘inside-out’ and takes a closer look at digital distraction. Specifically, the article uses postphenomenologically informed, qualitative interviews to explore students’ off-task use of educational technologies. Traditionally, such activity has been understood as a matter of students deliberately opting-out. The findings in this article suggest that this is not always the case. Because of deeply sedimented relational strategies, students often experience *habitual distraction* in the form of a prereflective attraction towards certain frequently visited, but educationally irrelevant websites like Facebook. According to students, succumbing to this temptation is almost too easy: It’s just F, A, and Enter. Laptops are experienced as endowed with an attractive allure that ‘pulls you in’. Students sometimes go as far as closing the lids of their laptops to avoid this habitual distraction. The article suggests that we should be careful to reduce this issue to pre-existing humanist problems of academic motivation and engagement, but calls for further research on digital distraction.

The experience of being ‘pulled in’ by digital devices is not confined to today’s educational system, but has become a pervasive part of our everyday lives. The third article uses qualitative interviews to situate this phenomenon in students’ broader everyday lives. The article investigates a phenomenon known as absent presence in which a person’s conversational partner is physically present, yet absorbed in a technologically mediated world of elsewhere. Despite the growing ubiquity of this phenomenon, few studies have addressed the processes involved in these impaired conversations. The findings in this article suggest that the microsocial dynamics at stake in such social interactions include delayed responses, mechanical intonation, a motionless body, and a lack of eye contact. These dynamics signal apathy and discourage further conversation. Appropriating Daniel Stern’s terminology, it is suggested that the mismatch between the vitality of a person and his or her absently present conversational partner leads to an *unintentional misattunement*, which disrupts the smooth flow of ordinary conversations and signals indifference to the non-phone user.

## **1. Breaking down barriers**

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# Breaking down barriers: The ambivalent nature of technologies in the classroom

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## Abstract

This article provides a critical study of the ambivalent nature of educational technology. Departing from the fact that the contemporary classroom is no longer a bounded and discrete space, the article uses ethnographic participant observation to provide thick descriptions of technologies-in-use at a Danish business college. These observations suggest that educational technologies play much more nuanced roles than hitherto imagined. Building on the notion of *spatial imaginaries*, the article explores two complementary patterns of spatial relations in the classroom: Educational technologies open a gateway to the world that can be used both to bring relevant information into the space of the classroom (“outside-in”) and to escape educational activities in favor of off-task activity (“inside-out”). By exploring these twin movements, this article hopes not only to provide a glimpse into the 21st-century digitized classroom but also to showcase the uneasy position of educational technology between burden and blessing.

## Keywords

Attention, classroom, connectivity, distraction, education, spatial imaginaries, technology

## Introduction: the paradox of educational technology

The last few decades have seen an increasing imbrication of bodies, space, and digital media. Communication theorists have long argued that new media trouble previous conceptions of time and space, and digital media amplify and extend these spatial fluctuations.

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As the editors of a recent anthology on the mediation of public space have argued, the traditional idea of space as a bounded “enclosure” has become increasingly problematized by digital media distributing data flows that transverse these boundaries (Berry et al., 2013). Space, in other words, is an imminent field of relations in constant flux. This condition also applies to our contemporary educational system in which sophisticated technologies have become ubiquitous and unremarkable parts of the classrooms. The exact nature of this imbrication, however, is still up for debate. The research presented in this article is motivated by a concern with the way in which educational technologies are represented in academic literature. As Friesen (2011) has argued, educational technology is a peculiar field of study in which mutually exclusive discourses on technology manage to coexist. As of today, the field is characterized by an uneasy armistice between technological determinism and instrumentalism.

*Technological determinism* is the idea that “technology causes or determines the structure of the rest of society and culture” (Dusek, 2006: 84). Technology is here cast as an independent agent of development. In close connection with this “resistance is futile” mentality, determinists often make grandiose, but unsubstantiated claims about technological developments (Sacacas, 2013). When it comes to educational technology, such claims often concern the connectivity it makes possible: Lock (2015), for instance, celebrates how the microcosm of the traditional face-to-face classroom has been eclipsed by the contemporary *global classroom*:<sup>1</sup> “This new technology-enhanced learning environment provides opportunities for educators to design learning that empowers students to reach beyond local resources and people and to engage in learning *with* and *from* others from anywhere and anytime in the world” (p. 140). Educational technology facilitates learning outside the walls of the classroom (Veira et al., 2014), thereby making classroom walls come tumbling down (Weaver, 2005). By dissolving the boundaries that seclude the classroom from the outside world, educational technology “enhances” learning. The contemporary classroom is open (as opposed to closed), global (as opposed to local), and connected (as opposed to isolated). The origin of this change is located in the benevolent force of technology, while students and teachers are its passive beneficiaries. Schematically, the line of causality goes accordingly: Technology → Humans. At the same time, however, technologies are present in the classroom, and on this situated microlevel, technological instrumentalism reigns.

*Technological instrumentalism* is the idea that human beings have full control over their actions, while technologies function merely as means to privately chosen ends: “A hammer can be used to construct a bookshelf or to bash in someone’s head” (Mitcham and Briggie, 2012: 43). According to this view, a hammer is a tool that can be used for either good or evil, depending upon the intentions of the person employing it. Extrapolating from this simple example, instrumentalists believe that all technologies are neutral tools under human control that can be used for either positive or negative purposes. This is a classical psychological account in which agency is thought to reside entirely within human beings, while technologies are seen as innocent bystanders, neutral intermediaries. “Humans perform *through* the technologies, as it were, to accomplish a deliberate and premeditated change in their social and physical surroundings” (Kiran and Verbeek, 2010: 414). Responsibility for misuse therefore belongs solely to the users of a technology. In the case of educational technology, unintended consequences such as

distraction in the classroom are ascribed to internal psychological shortcomings such as deficient self-regulation (David et al., 2015), low abstract reasoning (Chen and Ji, 2015), or lack of academic engagement (Risko et al., 2013) on behalf of the students. Distraction originates *within* students and educational technologies are viewed as mechanisms through which this pre-existing psychological tension is alleviated. Here, the line of causality goes: Humans → Technology.

Succinctly put, the idea of technology as a “benevolent force” currently exists side by side with an understanding of concrete technologies as “neutral tools.” Combined, these discourses lead us to *the paradox of educational technology*: When something good happens, we praise technology, but when something bad happens, we blame the students (occasionally, this blame also extends to their teachers). Already in 1977, Langdon Winner pinpointed and excoriated this paradoxical, split view: “The irony is that both points of view are entertained simultaneously with little awareness of the contradiction such beliefs contain. There is even a certain pride taken in embracing both positions within a single ideology of technological change” (p. 46). Unfortunately, the idea is still prevalent today, as encapsulated in Kevin Kelly’s (2011) recent assertion that “At a macroscale, the technium is following its inevitable progression. Yet at the microscale, volition rules” (p. 187). In light of the ubiquitous character of technology in today’s educational system, however, such a dual definition is inadequate and unhelpful on both empirical and theoretical grounds (Friesen, 2011). It is just as wrong to “technologize” the benefits associated with the use of educational technologies as it is to “psychologize” the problems. As such, this article is motivated by the modest goal of turning a *paradox* into a mere *ambiguity*.

### *A critical study of educational technology*

In this article, I seek to highlight the complementarity and interdependence of educationally “good” and “bad” processes through a critical study of educational technologies-in-use. I here follow Neil Selwyn, who has long argued for the value of critical and even *pessimist* studies of educational technology. What immediately strikes a person venturing into the academic subfield of educational technology, Selwyn (2011) argues, is the unbridled optimism of many of its claims. Scholars tend to start from the assumption that using educational technology is exclusively beneficial and that the sole challenge facing us is how to best harness its powers. According to Selwyn (2015), much of this discourse is hyperbole or even “bullshit” in the sense of philosopher Harry Frankfurt, which means that it does not set out to lie per se, but that it disregards how things really are.

Selwyn (2011) urges us to challenge these prevailing assumptions by taking a pessimist stance. The purpose of a pessimist stance is neither to regard educational technology as a defeatist endeavor nor an a priori dismissal of any positive developments, but an increasing acknowledgement of the unintended consequences of using educational technologies. Hence, a pessimist stance rejects both optimistic determinism (“benevolent force”) and instrumentalism (“neutral tools”). Specifically, Selwyn’s (2009) critical study of educational technology entails a movement away from so-called state-of-the-art research that addresses what *could* and *should* happen in an indeterminate future toward “state-of-the-actual” research that explicates what is *actually* going on here-and-now in

the messy realities of our educational system. In this endeavor, researchers should focus on developing nuanced and thick descriptions of current use of educational technology, including compromised and problematic uses. The upshot of such an analysis is to highlight the complex and often ambiguous nature of educational technology. This is what I aspire to do in what follows.

Departing from the fact that the contemporary classroom is no longer a bounded and discrete space, the article uses ethnographic participant observation to provide thick descriptions of technologies-in-use at a Danish business college. These observations suggest that educational technologies play much more nuanced roles than hitherto imagined. Building on the notion of *spatial imaginaries*, the article explores two complementary patterns of spatial relations in the classroom: Educational technologies open a gateway to the world that can be used both to bring relevant information into the space of the classroom (“outside-in”) and to escape educational activities in favor of off-task activity (“inside-out”). By exploring these twin movements, this article hopes not only to provide a glimpse into the 21st-century digitized classroom but also to showcase the uneasy position of educational technology between burden and blessing.

Without going into theoretical excursions, I should note that my research is indebted to Estrid Sørensen’s (2009) work on the materiality of learning and to posthumanist mediation theories (e.g. Latour, 1994, Verbeek, 2005). These writings all strive to overcome the dichotomy between human beings and technologies by recognizing, describing, and analyzing their mutual intertwinement. A basic assumption in mediation theories is that technologies do not just carry human intentions from A to B, but influence, shape, and translate whichever intentions they are supposed to carry. As Bruno Latour (2002) puts it, “If you want to keep your intentions straight, your plans inflexible, your programmes of action rigid, then do not pass through any form of technological life. The detour will translate, will betray, your most imperious desires” (p. 252). When technologies are viewed from this meditational perspective, they can no longer be taken as either benevolent forces or neutral tools, but must instead be regarded as active mediators of human perception and action (Verbeek, 2005). I should also interject a note about the terminology of this article: I discuss the use of “educational technologies.” Employing this phrase upfront, however, tends to signify something particular, namely that the *technologies* in question (e.g. laptops) be used solely for *educational* purposes. As will become evident throughout the article, this is not always the case. It should thus be noted that I use “educational technologies” as a floating signifier whose semiotic purpose is to enroll the article in a particular field of research.

## Method and site

The empirical material presented here is part of a broader study on technological mediation in the classroom. The study is conducted as a long-term, multi-method qualitative inquiry at a large business college in Denmark. A business college is an institution that provides general upper secondary education in commerce covering lines of study that range from global marketing and communication to innovation and event management. Students are young men and women aged approximately 16–20 years. This particular college and its institutes are located at three different addresses in a Danish city and

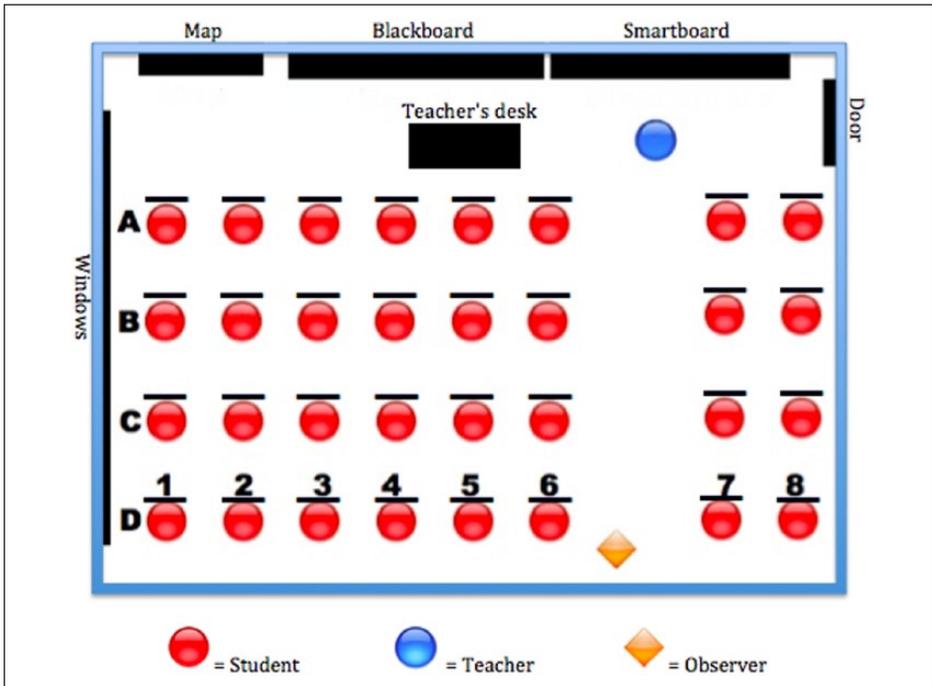
employs the technological strategy of letting students bring their privately owned devices to school in a model known as *BYOD*, *Bring Your Own Device*. These devices are all wirelessly connected to the Internet, and laptops by far constituted the majority of educational technologies in the college at the time of data collection, which began in August 2013 and spanned a year and a half.

I initially interviewed six individual teachers about their use of educational technologies. All six teachers kindly agreed to subsequently let me follow their teaching through participant observation (Aagaard and Matthiesen, 2016). Whenever I introduced myself to one of their classes, I explained that I was interested in students' use of educational technology. This would sometimes prompt witty responses like "Oh, we use Facebook quite a lot." I was very upfront about in fact being interested in this off-task activity too, but I explicitly and consistently made it clear to the students that I was not a "snitch," that is, that I did not report back to the teachers. One time, before I had a chance to introduce myself, a couple of the students actually asked me whether I was a new student, so I surmise that my relatively young appearance may have made me blend into the classroom in ways that an older researcher might not have. Situated in the back of various classrooms, I quietly participated in a total of 50 lessons in various courses such as marketing, business economics, and English, while gathering an impression of the contextual embedment of technology, which I documented through handwritten fieldnotes (Emerson et al., 2011). After 6 months of observation, I started interviewing students about their use of educational technology ("How do you use technology in class?" "Have you ever used it for off-task activity?" "When do you typically do this?" etc.). The sole selection criterion for participation in the interviews was *volunteering*. This criterion was selected to avoid pinpointing individual students, which could give my observations an inimical aura of surveillance. Each interview lasted for approximately 15 minutes, and 25 students were interviewed in total.

A little backstory to my observations may be illuminating: During my own time as a student, I had the pleasure of becoming a student instructor and teach a class of 20 intelligent, kind, and enthusiastic first-year Psychology students. Over time, however, I began to notice how some of my students would sometimes "vanish" into their laptops and how this would influence the atmosphere of the classroom. The social dynamics of discussions in particular took a hit when people ostensibly vanished into their screens. Simultaneously, however, I was also a student myself and occasionally engaged in the same off-task activities during my own lecture courses. As Dan Hassoun (2015) points out, when critics mourn students' diminished attention spans, they sometimes forget that being a student at a lecture can be, frankly, a boring experience. I can only echo this sentiment. The following observations thus stem from what Hassoun calls a *schizophrenic position*, "at once in tune with the pedagogical needs of being an instructor and the emotional-attentional flows of being a student listening to lecture" (p. 5). All the names used in the text are pseudonyms.

### *Entering the classroom*

I have attempted to illustrate the layout of a typical classroom in the business college, as shown in Figure 1. Whenever class begins, a so-called *regional structuring* of the



**Figure 1.** The layout of a typical classroom.

classroom occurs (Sørensen, 2007b): An assemblage of teacher, teacher's desk (with a desktop computer), blackboard, and smartboard constitutes a region "up there," while students seated at desks arranged in rows of tables that face the teacher form a region "down here," where I am situated myself. As agreed with the teacher and explained to the students, I am positioned at the back of the classroom with a notebook on my lap and a pen in my hand, not directly participating in the educational activities of the classroom. The classrooms are approximately  $8\text{ m} \times 6\text{ m}$  and host up to 32 students seated in rows of eight, which means I sat less than 1 m away from the students next to me (designated as D6 and D7 on the illustration). I did, nonetheless, observe students in those seats engage in off-task activity.

When class is in session, students tend to focus either on the activity "up there" or on each other or their laptops (for better or worse) "down here." The rhythmical interaction between these two focal areas means I often slipped out of the students' fields of attention. As Heidegger (2008) notes, human beings are not inert entities in three-dimensional Euclidean space like water in a glass, but caring beings engaged in situations, which means that what is "closest" to us is not what is at a minimum spatial distance from us, but that with which we are currently engaged. As students were engaged in something else, whether it was listening, note taking, discussing, or Internet shopping, I often felt far away from them despite a small physical distance. It was only when teachers directed attention at me by explicitly addressing me, directing questions at me, or providing me

with pedagogic rationales in the form of running commentary that I suddenly felt conspicuous. This open acknowledgement of my presence often felt like the teacher was somehow “breaking the fourth wall.” Students regularly talked to me and asked me about my project during recess, but in class they seemed to forget my presence. When I believe to have observed activity that was relatively unaffected by my presence in the classroom, it is therefore not because I claim to have performed a kind of *god trick* (Haraway, 1988) of seeing things from nowhere (despite the overhead perspective of my illustration). On the contrary, I believe my particular observations were made possible only *because* of my specific sociomaterial position in the classroom.

## Permeable boundaries and spatial imaginaries

Digital technologies have become ubiquitous in our educational system. As one of the students told me, they basically use technology all the time: “We work on the computer, write on the computer, get assignments on the computers, often even get texts on the computer [...] On a day like this I haven’t brought a single book, because I exclusively use my computer.” As mentioned earlier, this extensive use of digital media makes the technologically equipped contemporary classroom a fluid environment with fuzzy and permeable boundaries that are constantly transversed by flows of data.

In describing the interactions that result from these permeable boundaries, I take inspiration from Estrid Sørensen’s (2007a) notion of *spatial imaginaries*, which describe the patterns of relations among humans and learning materials in the classroom. This kind of topological approach looks at space as a web of moving relations that may have nothing to do with geographic terrains or metric distances. Instead, spatial imaginaries help us map out the complex relations between media, space, and bodies. Indeed, some scholars argue that the strategy of developing such spatial metaphors is “perhaps the only conceptual tool we have for understanding the development of a new technology” (Sawhney, 1996: 293). I will now describe the twin spatial imaginaries of moving *outside-in* (to) and *inside-out* (of) the classroom.

### *Moving outside-in: inviting presence*

The first situation is an experience I had one Wednesday morning during something as mundane as an English lesson. It is an episode that I suspect that none of the students, and perhaps not even the teacher, will remember today. To me, however, it vividly illustrates educational technology’s ability to bring the world into the classroom.

All students were seated at their desks, while the teacher Leo was meticulously going through English sentences on the blackboard in order to teach the students proper grammar. This is standard practice when teaching English grammar in Danish high schools and colleges. The importance of proper punctuation, for instance, is illustrated by writing “We are ready to eat children” on the blackboard and then, after a brief rhetorical pause, adding a comma, so the sentence instead reads, “We are ready to eat, children.” This particular English lesson was about the genitive case in which one adds apostrophe-S (*'s*) or a proposition (usually *of*) to show possession. During the preceding minutes, Leo had read individual sentences aloud and students then converted these sentences into genitive

cases using the relevant grammar rules. “My mother has a hat,” he would say. “It is my mother’s hat,” a student replied, back and forth in a steady pace.

Suddenly, after uttering the phrase “My heart belongs to daddy,” Leo hesitated. He had an amused look on his face and it seemed like he was reminded of something, but none of us knew what he was thinking about. “My heart belongs to daddy,” he repeated, hesitated, looked around, and gave us a final moment to make the connection to whichever real-life event this sentence evidently referred. The students looked bewildered. Admittedly, I was equally clueless. Invigorated, Leo turned to the teacher’s desk, where a computer is permanently connected to the smartboard and a set of speakers. He opened the Internet browser, went to YouTube, and typed the sentence “my heart belongs to daddy” into the search bar. He then managed to locate a grainy video clip from the movie *Let’s Make Love* (1960), clicked the link, and for the following 2 minutes and 4 seconds, the mediated presence of Marilyn Monroe lit up the screen while her rendition of *My Heart Belongs to Daddy* blared through the speakers. As the video ended, she disappeared from the classroom just as suddenly as she had entered. There was no ensuing discussion of what we had just watched and the transformation of sentences into genitive cases continued without further ado. Leo had no ulterior didactical motive, no hidden pedagogical agenda. Apparently, he merely wanted to share his appreciation for Marilyn Monroe and therefore invited her into the classroom. In fact, nothing groundbreaking seemed to happen in the unfolding of this situation. To me, however, the situation seemed significant for two reasons.

First, the welcome departure from the monotony of English grammar reminded me of a scene from *The Shawshank Redemption* (1994) in which the protagonist Andy rebels against the lethargy of prison life by locking a prison guard in the bathroom and broadcasting a duet from Mozart’s *The Marriage of Figaro* (1786) via the prison’s public address system. Another prisoner, Red, narrates the situation: “It was like some beautiful bird flapped into our drab little cage and made those walls dissolve away, and for the briefest of moments, every last man in Shawshank felt free.” While I acknowledge the hyperbolic nature of a school–prison analogy (and do not wish to make any direct comparisons between subject positions of students and prisoners), this is similar to what transpired in the classroom in the sense that mediated content can be interpreted as powerfully present in one’s sociomaterial circumstances. As eloquently captured in Red’s bird metaphor, this can be understood as a movement *outside-in*.

Second, a sudden impulse made Leo the curator of a spontaneous “show and tell” featuring a clip from the golden age of Hollywood. For the short duration of time that the ensemble of teacher, computer, smartboard, and speakers brought Marilyn Monroe into the communal space of our classroom, there were no students present, only an audience. This audience may not have witnessed anything connected to the official school curriculum, but I hesitate to explain away the episode as mere digression, which I think would be an unfeasible and reductive move. Although far from the wuthering heights of Goethe’s *The Sorrows of Young Werther* (1774) or Friedrich’s *Wanderer Above the Sea of Fog* (1818), grasping this kind of pop cultural movie reference may be considered part of the students’ cultural formation, their *Bildung*. In any case, the complimentary positions of curator and audience were made only possible by the presence of educational technologies. When you are connected to the Internet, digital information is instantly accessible at all times. It was thus with some amusement that I later noted that the smartboard was

called a Promethean Activboard [sic] after the Greek mythological figure Prometheus, who brought fire to mankind.

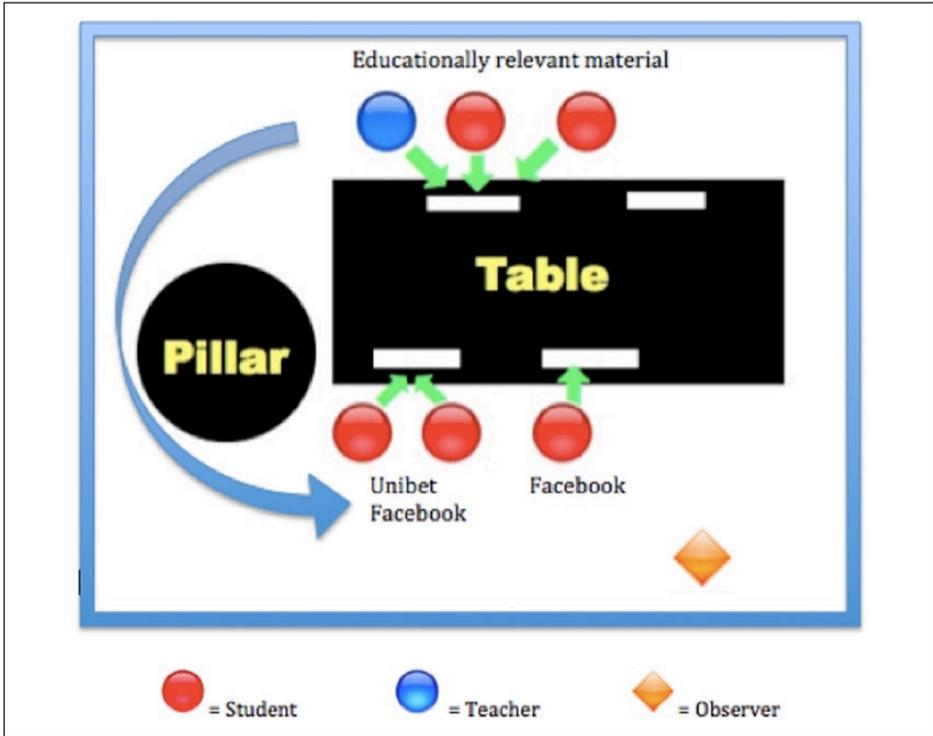
At the risk of anthropomorphizing information, I have described a situation that involved Marilyn Monroe, but the entry of factual answers is equally plausible in other everyday scenarios. Such entrances may happen by way of both teachers and students. Indeed, I often witnessed students use information searching strategies to contradict what the teacher “up there” had just said. The teachers in my project often praised this newfound ability of technologically equipped students to keep them on their toes. The teacher Nick spoke in enthusiastic terms about this development:

Nick: When I say that we need to know the economic growth rate in India over the last twenty years, it’s amazing how quickly some of my students are able to find this information, because they’re so good at information searching. They’re seniors and it’s international economics. Right away we can get the information up on the smartboard. They just send me the link. It’s absolutely fantastic. I need some information, but I outsource the task immediately just by saying so. They think it’s fun to find it. It’s absolutely fantastic. The negative part is that it has become so damn difficult to get away with little fibs [laughs], because sometimes you get caught when you go, “So and so” and they go, “Hey Nick, that’s not true, because it says here that ...” They actually google it. So they check up on you, but in a positive sense.”

The use of educational technologies allows students to “check up” on the teacher and challenges the traditional educational power structure in which the teacher is the sole gatekeeper of knowledge in the classroom. Ultimately, such invocations of Google and Wikipedia may lead to an unprecedented democratization of knowledge in the classroom. This outside-in movement of information, whether factual or pop cultural, is exactly what is usually cherished about educational technology, and in such cases the use of educational technologies can in fact be said to “enhance” the activities in the classroom. So far, so good. What I seek to challenge next, however, is that this porous membrane only leads to technology-enhanced learning. To quote Ludwig Wittgenstein (2009), “A main cause of philosophical diseases—a one-sided diet: one nourishes one’s thinking with only one kind of example” (p. 593).

### *Moving inside-out: the great escape*

I now want to describe the inseparable counterpart to *outside-in*, namely, the movement *inside-out*. This particular episode stems from a marketing lesson in the autumn of 2013. The teacher Nick had just assigned some tasks to the students, which he then permitted them to complete in small groups. Students always seemed to appreciate being “released” from the classroom to go work elsewhere (to continue the school–prison analogy). On this day, the working groups spread all over the school, including the cafeteria. It was around noon, so perhaps the idea was to get ahead in line during the forthcoming lunch break. During the group work, I situated myself at a table in a secluded corner of the cafeteria. From this safe distance (which means a few tables away), I followed the work of a five-man group sitting around a large table in the cafeteria. On the side of the table opposite from me, two students each had a laptop. On the other side of the table, the three remaining group members shared two laptops between them. From my position, I



**Figure 2.** An interaction in the school cafeteria.

witnessed the following scenario play out (Figure 2 shows a digital rendition of a crude sketch from my notebook).

During the group session, an assignment gave rise to an academic problem, and the five-man group summoned Nick for assistance. While Nick and the two students across from me focused on the group's tentative answers on one of the students' laptop screens, the remaining three group members alternated between Facebook and the online betting site Unibet. This activity happened in complete silence. The two students jointly browsing Unibet never shared a word. While these three students were all physically present, it was obvious from where I was sitting that none of them were paying attention to anything educationally relevant at that time, certainly not what Nick and the rest of their group members were discussing. In fact, they seemed quite preoccupied with their off-task activities. I was actually impressed by the sheer audacity of these distracted students: Nick was literally standing right in front of them and assisting their fellow group members with an academic problem. He could have addressed either of them at any point in time. Fortunately, he did not. When after a few minutes Nick had helped solve the group's problem, he moved along to help the next group, which meant bypassing the pillar in the cafeteria in a curved trajectory and progressing toward the other side of the table (see the sketch). As Nick made this movement, the distracted students reacted

instantaneously. Without missing a beat, the two students at the helm of the laptops immediately changed the windows of their screens to academically relevant displays in the form of note documents and the Student Plan. Such a maneuver is no simple reflex, but a skilled response that requires detailed knowledge of laptops and keyboard shortcuts (e.g. Alt-Tab on a Windows computer, Command-Tab on a Mac).

I have picked this particular situation because it showcases several important aspects of technologically mediated distraction. First, this distraction can be conceptualized as an *inside-out* movement that takes students away from their immediate educational circumstances. Just as laptops and tablets open up the possibility of bringing the outside world into the classroom, they also constitute a backdoor through which students may occasionally escape. As extensively described in the media multitasking literature, this particular multistability presents a major challenge for the educational system (Aagaard, 2015b). The magnitude of this problem is immense, and countless students are quietly and constantly engaged in all kinds of off-task activities. This distraction can be considered a form of *absence-in-class*, which may in fact have the same negative impacts on school outcomes as the more traditional and formalized absence-from-class (Jonasson, 2011). In these situations, the use of educational technologies not so much enhances as it invades, supplants, or displaces learning. This brings me to a second point.

Distracted students may not pay attention to educational activities, but they are not completely absorbed in off-task activity in the sense that they are “unconscious” of what else is going on in the classroom. There seems to be at least a marginal peripheral awareness at play, which quickly registers physical movement. As such, studying absence-in-class is an elusive and fragile process, and observing it is like trying to observe a mirage: You can gaze at it from a distance, but if you try to approach it, it dissolves and disappears right in front of your eyes. When my observations led to an awareness of my presence, they interfered with the phenomenon. I repeatedly noticed how hard it was for me to observe absence-in-class during group work: As soon as I left my position at the back of the classroom in order to achieve a bigger, better, or just different view of the activities (e.g. if groups left the classroom), I suddenly occupied a position that more resembled that of a teacher than a fellow student, which means I no longer escaped students’ attention. As I approached a group’s table, it was as if they registered a foreign element approaching and thus quickly clicked, toggled, or swiped away from various off-task websites. Without further comparison, I felt like an ethologist who had startled the animals by approaching them too conspicuously. The same process occurred whenever a teacher tried to approach students to obtain a line of sight to their screens. This leads me to a final point about inside-out.

Technological distraction is not a monolithic phenomenon. There are important gender (Kay and Lauricella, 2011), racial (Lee, 2014), and cultural differences (Karpinski et al., 2013) in the use of educational technologies. Apart from such contextual factors, there are also sociomaterial issues at stake: When it comes to distraction, concealment is key. The regional structure of the classroom means the teacher “up there” only has visual access to the back of a sea of screens. The teacher’s only clue to the content of these screens is the students’ body idioms, facial expressions, and verbal comments. As Lindroth (2012) argues, “While it is an excellent tool for work, the laptop is also a resource for great entertainment, but from the opposite side of the screen it is hard to know which” (p. 140).

Teachers occasionally tried to circumvent this issue by taking a few steps down the aisle to inspect students' screens "down here," but they rarely proceeded all the way to the back end of the classroom. As such, distraction was often most severe among the undisturbed "boys in the back row" who chatted, played games, or looked at animated Graphic Interchange Format (GIF) images.<sup>2</sup> In contrast to the boys in the back row, students in the front rows are positioned in a kind of *perpetual panoptic field*, always potentially viewable by the teacher (Hassoun, 2015). Whenever a teacher approaches, these students will immediately switch to academic-looking Word documents or the Student Plan so that the teacher does not catch a glimpse of the off-task activities, but this constant alertness means these students never stray quite as far from the perimeters of the classroom as the boys in the back row. When it comes to distraction, the materiality of the classroom matters.

## Discussion

From an educational perspective, it should now be clear that two complementary processes are at stake in the use of educational technologies: First, there is the movement *outside-in* of information, which offers genuinely new learning opportunities. Simultaneously, however, students often move *inside-out* of the classroom through engagement with irrelevant websites on their digital devices. This departure presents a major challenge to the educational system. Hence, while it is undoubtedly true that introducing technologies in the classroom has brought a lot of educational benefits, there are noteworthy downsides and drawbacks to this technological development.

Combined, the twin movements of *outside-in* and *inside-out* dissolve the paradox of educational technology. As a counterweight to current optimistic determinism and *technofetishism* (Hasse and Tafdrup, 2013), it is suggested that educational technologies are multistable and act as gateways both *into* and *out of* the classroom. As such, educational technologies are not susceptible to linear logics of cause and effect, but instead give rise to plural ramifications and simultaneous movements in opposite directions. The argument against technological instrumentalism is subtler. Recall that in the instrumentalist narrative an educational technology fulfills a pre-existing desire, suggesting that distraction is ultimately a matter of subjective volition. While I never encountered any teachers who preached about the infallible wonders of technology (i.e. optimistic determinism) in practice, I did encounter the instrumentalist narrative. Leo, for instance, had the following to say about distraction:

Leo: Of course it's negative when students are using it for something else than what's going on in an English or a French lesson. That is negative. But making it look like students are fleeing from the lesson because technology's available, I think that's wrong. Because I think that oftentimes they would've fled from the lesson anyway. It might be that it's more tempting now, because you can go look at Facebook or you can go on YouTube—I don't think they do that, however, because after all I would be able to see it if they were wearing earplugs, right? But that they're on Facebook to send a message or something ... Of course it's negative, but as a teacher you can't prevent students from letting their mind wander, and I did that myself when I was in high school. You'd just sit there and look out of the window or write your signature two hundred times or something like that.

Leo seems to argue that technologically mediated distraction is identical to historically previous ways of being distracted, such as vacantly staring out of the window or absent-mindedly doodling on a piece of paper. According to this explanation, technologically mediated distraction is an epiphenomenon entirely attributable to internal psychological mechanisms (a matter of “letting one’s mind wander”). Educational technologies make no difference, Leo argues, because the students “would’ve fled from the lesson anyway.” While not denying that distraction has always been part of the classroom, I want to challenge this instrumentalist idea by emphasizing that the sudden impulses to summon Marilyn Monroe or depart to the land of social media arise only in conjunction with our technologically mediated ability to do so. These goals do not exist in isolation from educational technologies because “technologies co-shape our ability to even catch a glimpse of such goals, and therefore also *set* them as goals” (Kiran and Verbeek, 2010: 418). Technologies are not powerless, inert things, but introduce qualitatively new kinds of distraction, which cannot be reduced to pre-existing humanist problems (Aagaard, 2015a). Leo even acknowledges this idea when he admits that Facebook and YouTube make it more “tempting” to flee from a lesson.

While I have thus far highlighted the interdependent origins of outside-in and inside-out, I now wish to focus on their performative differences in the classroom: The outside-in movement is part of a *communal* experience that requires content curation, while the inside-out movement enacts an *individual* experience that involves content concealment. In the first situation, we see a one-to-many relationship in which students, teacher, and myself all face the smartboard. The smartboard thus constitutes a region to which our collective attention is drawn. Furthermore, the volume of the video is turned up, so everybody in the classroom is engaging with the same phenomenologically public sounds streaming out of the speakers. This alignment of bodies and directional orientation of attention makes this experience communal. In this situation, a teacher wanted to show us something (“look, guys”), but a similar process occurs when a student curates content from the Internet to supplement or contradict fellow students or the teacher (“listen, guys”). External information is enrolled in favor of the here-and-now situation in the classroom. In the second situation from the cafeteria, however, we see multiple one-to-one relationships between distracted students and their laptops. All sounds have been muted, so the only things that matter are manipulation of keyboards and private visual perspectives on screens. Instead of being joint reference points, the screens become individual gateways leading from the educational situation here-and-now to the outside world. (Of course, what happens in this outside world is emphatically communal, which may be the reason social networking sites like Facebook and Twitter are so tempting.) This movement enacts an antagonistic student–teacher relationship in which the teacher becomes a watchful eye from whom students must conceal their activities. Hence, from an educational perspective, the *lines of attention* involved in these two situations are quite different (Sørensen, 2013). Notice that such lines of attention do not hinge on purely mental processes, but that several things are involved in each configuration: Bodies, chairs, tables, sounds, keyboards, pillars, and screens.<sup>3</sup>

It is of course true that students also read articles and books, which in a phenomenologically very real sense can also be said to transport them inside-out of the classroom (Gerrig, 1993). A major difference between paper and pixels, however, is that the *typographical fixity* (Eisenstein, 1980) of printed pages in a book ensures that students work

with identical readings and thus cannot stray far from the educational territory prescribed by the teacher. Sørensen (2009) describes a reading situation accordingly:

Because the exercise books were identical, the class set performed one homogeneous region, even though each child had his or her own book. This homogeneity limited the degree to which the exercise books formed an extension of the classroom. All pupils were active in the same region of the exercise books, so to speak, and thus the teacher could keep a one-to-many relationship with the children, even when they were working individually and even when she was relating to them one-by-one. (p. 162)

Books enlarge the space of the classroom. The movement inside-out, then, may be reserved to the distractive use of educational technologies.<sup>4</sup>

The big question, naturally, is whether it is possible to mitigate the downsides and drawbacks of educational technologies. Is there a way to filter out “good” from “bad” movements? Simply banning laptops in the classroom seems unhelpful, since this initiative also removes outside-in movements of useful information in the classroom. What about blocking specific websites such as Facebook and other social media? In my school, teachers told me that tech-savvy students typically found ways around these barriers. Furthermore, specific websites tend to become outdated at a quick pace. Instead, it may be relevant to look for alternative ways to handle these challenges. Taking seriously the notion of educational technologies as *gateways* to the outside world suggests at least one other way: occasionally closing the metaphorical door to the world. This means situational prevention of the use of educational technologies and could, for instance, entail shutting the lids of laptops during certain parts of a lesson (e.g. teachers’ talks or classroom discussions). Such a maneuver obviously implies a brief elimination of both inside-out and outside-in movements, but during my fieldwork I actually saw this type of open/closed policy implemented with some success in the recurring fight against classroom distraction (Aagaard, 2015a). Or, if being distracted means not partaking in the *communal* activities of the classroom, perhaps students would be less distracted if their screens and/or keyboards were all connected to the classroom’s smartboard. In this way, they could all view and work on the same material. The open/closed policy is imperfect (I often observed students using smartphones beneath their desks during these sessions), and the smartboard proposal is speculative, but if any hard-and-fast solutions to technological distraction actually existed, I am sure they would already be in place.

## Conclusion

This article provided a critical study of the ambivalent nature of educational technology. Through the use of thick descriptions of technologies-in-use at a Danish business college, it troubled prevailing discourses on educational technology that lead to the *paradox of educational technology*: When something good happens, we praise technology, but when something bad happens, we blame the students. The article instead suggested that educational technologies open a gateway to the world that can be used both to bring relevant information into the space of the classroom (outside-in) and to escape educational activities in favor of off-task activity (inside-out). In both of these processes, educational technologies act neither as deciding factors nor as neutral tools. There is no paradox of educational

technology, only educationally ambivalent ramifications that are prompted by the connectivity afforded by educational technologies. I hope to have sketched out a common ground between existing research on “technology-enhanced learning” and “multitasking.”

The twin dynamics of outside-in and inside-out have profound implications for the educational system. Indeed, these spatial imaginaries challenge the word “school” itself with its etymological roots in Greek *skhole*, which means “a holding back, a keeping clear” and refers to the traditional status of schools as privileged in their seclusion from the rest of society. Humans and technologies are now jointly capable of breaking down all the barriers associated with the traditional classroom. According to this article, such barriers should not be conceptualized only as *limiting* barriers that confine educational activity to the cramped space of the classroom but also as *protective* barriers that seclude educational activity from the hustle and bustle of the surrounding world. As educators, researchers, and scholars, it is thus imperative that we recognize these changed spatial dynamics invoked by the use of educational technologies and discuss what they mean for our contemporary educational system. Such a discussion concerns not only the pros and cons of using educational technology, but ultimately connects with larger questions of purpose in education (Biesta, 2008): What do we want our classroom interaction to be like? As one anonymous reviewer put it, “This discussion involves teachers, students, and technologies, but also the idea of the school as such.” It is hoped that the empirical and conceptual contributions of the present study will help promote such discussion.

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### Notes

1. Although she does not refer to it, Lock’s term is reminiscent of McLuhan’s (1964) notion of a *global village*, which describes how communication technologies have “electrically contracted” the world into a single village by abolishing time and space.
2. The advantage of such animated Graphic Interchange Formats (GIFs) is that they are purely visual gags requiring no sound to be understood, which means that they are easier to conceal than videos that have to be muted.
3. With regard to sociomaterial lines of attention, it is worth noting that the word “screen” itself means both showing/projecting and hiding/protecting (Introna and Ilharco, 2004).

4. Of course, additional distractive dynamics such as *inside-inside* in which students communicate with each other inside the classroom by passing notes or sending messages may also exist, but such dynamics fall outside the scope of this article.

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## Author biography

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# Drawn to distraction: A qualitative study of off-task use of educational technology



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## ABSTRACT

Today's educational system increasingly integrates digital devices such as laptops and tablets in the classroom on the assumption that the use of these technologies will increase student motivation and learning. However, research shows that students often use technologies for distractive purposes like off-task activity and multitasking. Few studies address the processes involved in this activity. This article offers a postphenomenologically informed qualitative study of students' off-task use of technology during class. Building on interviews with students in a Danish business college about their off-task technology use, findings suggest that off-task activity is not always a conscious choice. Because of deeply sedimented bodily habits, students often experience habitual distraction in the form of pre-reflective attraction towards certain frequently visited websites (e.g., Facebook). Laptops are experienced as endowed with an attractive allure that "pulls you in". Students sometimes go as far as closing the lids of their laptops to avoid this habitual distraction. Theoretical and practical implications are discussed.

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## 1. Introduction

Today's educational system increasingly integrates digital devices such as laptops and tablets in the classroom on the assumption that using these technologies will increase student motivation and learning. Nevertheless, when spending time in a classroom one quickly realizes that these devices also challenge educational practice. Numerous studies show that students frequently use educational technologies for off-task activity and multitasking, which in turn leads to significant decrements in educational performance (Bowman, Levine, Waite, & Gendron, 2010; Fried, 2008; Gaudreau, Miranda, & Gareau, 2014; Hembrooke & Gay, 2003; Junco & Cotten, 2012; Ravizza, Hambrick, & Fenn, 2014; Risko, Buchanan, Medimorec, & Kingstone, 2013; Sana, Weston, & Cepeda, 2013; Wood et al., 2012). When social networking sites, news, funny images, and videos displace educationally relevant material, digital technologies become sources of distraction instead of tools for learning. In a progressively digitized educational system, understanding technological influence on student attention thus becomes crucial. However, most existing studies focus on the outcomes of off-task use of educational technology in the form of test scores and grades, while few address the processes involved in this activity (for an exception see Andersson, Hatakka, Grönlund, & Wiklund, 2014).

The purpose of this article is therefore to present student experience of off-task use of educational technology. This empirical inquiry is informed by postphenomenology, which differs from classic cognitive theory by shifting focus from mental processes to bodily use of technologies. As such, the remainder of the article is structured as follows: I begin with a brief review of existing cognitive literature on attention and its inadequate consideration of embodiment and instead present a postphenomenological framework (Section 2). I then translate this theoretical perspective into a methodological background for my interviews and situate the current study (Section 3). This is followed by a presentation of the results with particular emphasis on the experience of being drawn to distraction (Section 4). On the basis of these results, I develop notions of *habitual distraction* and *mediated impatience* (Section 5). Finally, I discuss limitations of the present study (Section 6), before concluding with addressing its implications for educational practice (Section 7).

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## 2. Background

### 2.1. Exorcizing the ghost of cognitive psychology

Existing research on educational technology mainly relies on a cognitive understanding of attention. Like with any other theory, this implies certain ontological, epistemological, psychological, and biological assumptions (cf. Dreyfus, 1992). In the case of attention, it is assumed that.

1. The outside world consists of discrete bits of information
2. An internal mind perceives the world by processing these bits of information
3. Perception is caused by attention, the processing power of the mind
4. Because of the brain's physical limitations, attention is a finite resource

The mind is understood as a self-sufficient entity that is separate from the world. This is evident in the bifurcation of attentional processes: According to cognitive psychology, attention is mostly voluntarily controlled by the mind (this is *endogenous*, top-down, or goal-directed attention), but can also be redirected by unexpected external stimuli such as a loud noise or a flashing light (this is *exogenous*, bottom-up, or stimulus-driven attention) (Corbetta & Shulman, 2002; Posner, 1980). Attention is either directed from within or triggered from without. This division is readily adopted by educational researchers, who conclude that technological distraction is primarily voluntary and endogenous, but can also be caused by exogenous stimuli.<sup>1</sup>

While I acknowledge cognitive research on the outcomes of distraction (i.e., poorer performance), I find these explanations highly problematic (Aagaard, 2014). They rely on what Gilbert Ryle (1976) called the dogma of the Ghost in the Machine. Put briefly, this is the idea that there is a ghostly consciousness within our bodies. This ethereal mind exists outside of space, beyond the laws of matter, while the material body is a mechanical instrument like a clock that functions merely as handmaiden to the mind. A description of embodied first-person experience, however, rejects this dogma and shows the body to be active and skillful (Merleau-Ponty, 2002). This insight is vital in the field of educational technology, where engaging with a tablet, laptop, or smartphone is a highly embodied relation that includes being *face-to-face* with a screen and *hands-on* with a keyboard (Friesen, 2011). An inadequate consideration of embodiment hinders an understanding of the manual nature of media use (Moores, 2014). To firmly grasp the crucial relation between bodies and technology, we instead turn to *postphenomenology* (Ihde, 2002, 2010).

### 2.2. Postphenomenology and technology

Postphenomenology is a contemporary school of philosophy that is being increasingly used in the study of human–technology relations (Ihde, 1993; Rosenberger, 2012; Verbeek, 2011). The prefix “post-” implies a movement beyond classical phenomenology, and postphenomenology entails two revisions: Multistability and embodiment. *Multistability* ontologically replaces the essentialism of Husserlian phenomenology and alludes to an artifact's various partially determined trajectories in different contexts (Ihde, 2009). A technological artifact, as Don Ihde puts it, becomes what it “is” through its uses (Ihde, 1990:70). A lighter, for instance, is usually applied to light a candle, but can also be used to open a bottle. There is no “essential” use of a lighter. New technologies like laptops, tablets, and smartphones are even designed to incorporate this kind of multistability (Ihde, 2012). Just as multistability replaces the essences of classical phenomenology, *embodiment* replaces a transcendental notion of subjectivity and its “disembodied view-from-nowhere” (Ihde, 2008:3). Postphenomenology is not concerned with immaterial consciousness, but with situated, embodied relations to material technologies. Using a lighter to open a bottle requires a different handling than when used to light a candle.

Performing different actions with technological artifacts requires different *relational strategies*, i.e. bodily habits, intentions, and conceptions (Rosenberger, 2009). A relational strategy is what fixes the multistability of a given artifact to a specific stability. Robert Rosenberger (2009) uses the concept to explain the use of computers where a novice is forced to concentrate on each individual keystroke, whereas a skilled user barely notices the computer itself but rather focuses on its contents. Over time, past experiences have sedimented into a bodily habit that now informs the immediate experience of the computer. A user deeply accustomed to accessing specific pages on the Internet, for instance, has developed a specific relational strategy to the computer: “Armed with a highly-developed relational strategy, she or he approaches many aspects of the computer through deeply-sedimented habits and expectations” (p. 178). These deeply sedimented habits may be embodied to such an extent that the user is hardly aware of performing them. The question then is how relational strategies developed in students' everyday use of laptops and tablets intertwine with their educational use of these devices.

<sup>1</sup> Evidence for this claim can be found in the following selection of quotes from the scientific literature:

Attention is affected by “voluntary allocation of cognitive effort”, but distraction also depends on “distracter stimulus properties” such as novelty and abruptness of onset (Bowman et al., 2010:928).

Attention is often “controlled voluntarily”, but visual stimulation like pop-ups, instant messages, movement of text, and low-battery warnings prompt “involuntary shifts of attention” (Fried, 2008:908).

Distraction may either result from “conscious and intentional mechanisms inherent to the individual” or from “attributes intrinsic to the information or message” (Hembrooke & Gay, 2003:50).

Disrupting one's own learning is said to be “individual choice”, while stimuli “cause involuntary shifts of attention” in students in close proximity of laptop users (Sana et al., 2013:25).

### 3. Methodology

#### 3.1. Doing postphenomenological interviewing

Despite an increased sensitivity to embodied use of technologies, postphenomenologically oriented scholars rarely conduct empirical studies of *other* people's technologically mediated experiences and practices (Forss, 2012). Empirical phenomenology has instead become almost synonymous with Amedeo Giorgi's Husserlian descriptive phenomenological method (e.g., Cilesiz, 2011). The goal of this method is to address human consciousness while respecting the rigorous spirit of science. According to Giorgi (2009), this is done by interviewing people about a phenomenon to obtain concrete descriptions, rereading transcriptions to become familiar with data, breaking descriptions into "meaning units", transforming the meaning units into psychologically pertinent expressions, and finally articulating the invariant structure of the phenomenon. Psychological meanings are thus teased out from the raw data of descriptions, and this material is ultimately boiled down to a stock cube of *essential meaning*. Throughout this process, the researcher refrains from interpreting or bringing in her own non-given past knowledge to account for whatever she is trying to understand (this bracketing is known as the *epoché*). In fact, the researcher approaches the subject in a "naïve, pretheoretical way" (p. 135).

While admirably rigorous and clear-cut, this methodology cannot be directly transposed to postphenomenology due to its Husserlian legacy. In agreement with Linda Finlay (2012), I argue that empirical phenomenology can benefit from postmodern epistemological and methodological developments. This means moving from realist attempts to unearth essences towards inquiries into *multistability*. I examined contingent bodily relations to technology, not fixed essences or structures of consciousness. It also means rejecting the *epoché* in favor of *researcher reflexivity*. It is neither possible nor desirable, as Finlay explains, to bracket researchers' experience and understandings (p. 24). An open mind is not an empty head (Dey, 1993:229). What Giorgi calls raw data is never simply "given", for it is always produced, constructed, or "taken" in accordance with a certain theoretical lens (Brinkmann, 2013). Embracing multistability and researcher reflexivity, however, does not entail wholesale acceptance of radical postmodern claims about language ("there is nothing outside the text") or abandonment of lived experience in favor of discourse analysis. Postphenomenology retains faith in the idea that we can describe truthfully delimited segments of peoples' lives outside of the interview (Miller & Glassner, 2004).

#### 3.2. Situating the current study

The data presented here is part of a broader study of educational technologies' mediation of student attention in an educational context. The study is conducted as a long-term, multi-method qualitative inquiry at a large business college in Denmark. A business college is an institution that provides general upper secondary education in commerce covering lines of study that range from global marketing and communication to innovation and event management. Students are young men and women aged 16–20 years. This particular college and its institutes are located at three addresses in a large Danish city and employs a technological strategy of letting students bring their privately owned devices to school in a model known as *BYOD, Bring Your Own Device*. These devices are all wirelessly connected to the Internet. Laptops still by far constitute the majority of educational technologies in this college.

I was initially put in touch with six teachers selected on the assumption that they would subsequently be willing to let me observe their lessons.<sup>2</sup> I conducted exploratory interviews with the teachers about their experiences with technologies in the classroom, and all six teachers kindly agreed to let me follow their work through open, ethnographic participant observation (Spradley, 1980). During my observations, I often received witty remarks about off-task activity when initially presenting my interest in student use of technology ("oh, we use Facebook quite a lot"). I never kept it secret that I was in fact interested in this off-task activity, but explicitly stated that I was not a "snitch", i.e., not a delegate of their teachers. Situated in the back of various classrooms, I silently participated in a number of courses such as marketing, business economics, and English, while gathering an impression of the contextual embedment of technology documented through hand-written fieldnotes (Emerson, Fretz, & Shaw, 2011). I quickly saw that to some extent most students use laptops for off-task activity.

After six months of observation, I started formally interviewing students. At this point of time, I hoped to have built a mutual understanding with students as they had the chance to adapt to my presence. The sole selection criterion for participation in the interviews was *volunteering*. This criterion was chosen to avoid pinpointing individual students, which could give my observations an inimical aura of surveillance. When a student volunteered, we went into the hallway, sat down at a quiet table, and I recorded our conversation. I framed the interview as anonymized and restated that I did not report back to the teachers. The interviews were semi-structured with an interview guide consisting of questions about the student's experience with using technology ("how do you use technology in class", "have you ever used it for off-task activity", "when do you do this", etc.). Interviews lasted for approximately 15 min. In total, 14 students were interviewed. The interviews were transcribed verbatim and analyzed in accordance with a revised phenomenological methodology, which means multiple readings of data to identify experiential patterns and themes through a combination of theory, methodology, and data. I will now outline the findings. The quotations used below are those which best illustrate the points of research interest and all names are pseudonyms.

### 4. Results

#### 4.1. The mixed blessing of educational technology

From observations and interviews I quickly learned that student use of technology is ubiquitous. Digital technologies have largely superseded pencils, notebooks, and calculators. Students often do not even bring books to school because they can rely solely on their laptops. They read, write, and submit assignments on laptops. They take notes in Word, produce presentations in PowerPoint, make budgets in Excel, perform math calculations in TI-Nspire™, share files in Dropbox, search information on Wikipedia, co-author documents in Google Docs,

<sup>2</sup> This is not a given, since the culture of teaching is steeped in individualism and privatism (Hargreaves, 1994).

and exchange educationally relevant material via Facebook (“it’s faster than by mail”, students told me). These technological activities are not merely employed for delimited and well-defined purposes, but have changed the structure of educational practice itself. For example, teachers often assign information search tasks to students, but students can also use information searching to contradict what a teacher says and thus challenge the traditional power structure with the teacher being the expert. Teachers expressed great admiration of this technological democratization of knowledge. But just as laptops and tablets open up the possibility of bringing the world into the classroom, they also constitute a backdoor through which students may escape. This particular multistability presents a major challenge for the educational system. During interviews with the students, I expressed an interest in off-task use of technology and asked them whether they had ever undertaken such activity.

Frank: Well, of course I have. I do it daily, and I pretty much do it in every lesson, and I think that’s general for almost all students at school. Certainly in my own class I know that, when I look around, practically everybody is on Facebook all the time. It’s constantly running in the background. Additionally, many people often play games. This can be everything from World of Warcraft to little games online.

The question must have seemed contrived, because students usually sent me a puzzled look before responding that yes, “of course” they had. Indeed, based on my observations, I had no expectation of encountering a student that would deny ever engaging in off-task activity. Most students have Facebook open all day, and some students even watch videos on YouTube and play games during class. But how do we understand the processes behind this off-task activity? How is it experienced?

#### 4.2. Being drawn to distraction

Students often described the temptation to engage in off-task activity as a prereflective attraction towards frequently visited, educationally unrelated websites (paradigmatically encapsulated by Facebook, which is widely used among all students). Students are drawn to distraction.

Dan: I don’t know whether this is relevant, but I’m aware that it’s wrong, so I try, and have especially tried lately, not to do it. I think it’s really hard, because it pulls you in. It’s a habit you have. When you open the Internet, you just go to Facebook, or I go to 9gag [an image-based social networking site where users upload humorous images].

Jesper: So it’s practically in your fingers?

Dan: Yeah, but I try to shut it down immediately.

Jesper: But not until after you enter it?

Dan: Yes, and I can be sitting there for five minutes and then suddenly think, “Whoops, what am I doing?” and then I shut it down.

The laptop is experienced as endowed with an attractive allure that “pulls you in”. When becoming aware of this distraction, students can break at any moment and resist the attraction, but it may take several minutes before this happens. Students explain that engaging in off-task activity such as visiting Facebook can indeed be a conscious choice (as described in the cognitive literature), but this mainly happens when their visit is rooted in a specific purpose such as writing to somebody or posting something. Otherwise, distraction is usually experienced as taking place beneath the level of willful choices and purposeful decisions.

Karen: If, for instance, you’re about to do group work and have to download an assignment online, it’s just the first two letters you think about. It’s just “F”, “A”, because that’s Facebook, and then “Enter”. And then you accidentally catch yourself saying, “No, I was actually going on Student Planning [the school portal for student assignments]”.

Much like entering the personal identification number for ones credit card, the process of logging onto Facebook has become embodied in ones fingers and happens almost automatically. As a relatively active user of Facebook, this eloquent phenomenological description immediately struck me. Without ever realizing it, this is what I tend to do when, for instance, struggling with writing an article. Open the browser, move the cursor to the address bar by a smooth movement of the middle finger and tap the touchpad to highlight the current URL. Then it’s just “F”, “A”, and “Enter”. Although this only takes a few seconds, it is a deeply sedimented relational strategy that requires extensive familiarity with ones laptop. Since these acquired habits are strongly present during class, students may inadvertently and unconsciously slide into distraction. They often “catch themselves” on unrelated websites and realize they have spent several minutes on off-task activity instead of, say, writing notes.

Jim: The problem is that when you open the Internet, the first things that pop up are Facebook and YouTube and a couple of other sites. So you’re quickly caught up in it. When you’re sitting with a computer in front of you, it’s easy to accidentally do all sorts of other things if the lesson is boring or if you don’t feel like paying attention.

Students experience the seductive pull towards off-task websites when their browsers are open and unrelated tabs are visible. Getting caught by this temptation and “accidentally” scrolling down your Facebook newsfeed is different from endogenously *deciding* to go on Facebook to write to a friend or having an exogenous notification *pop up* on your screen to alert you of new messages.

#### 4.3. Difficulty and structure

When are students most susceptible to succumb to off-task use of educational technology? Across interviews, two crucial factors emerged: Difficulty of the material and structure of the lesson. First, there is *difficulty*. If material is considered too hard, students fall behind

and resort to distraction. They become mentally exhausted, disconnect from class and go to unrelated websites. A student told me she would simply “give up and go on Facebook instead”. After unsuccessfully trying to understand what is being taught, allowing oneself to lean back and relax by surfing online can be a comforting experience. At the opposite end of the difficulty spectrum, students also engage in off-task use of technology if the taught material is considered too easy. If a teacher is explaining a new theory or the class is reviewing material that students feel they have already grasped, they disconnect. This type of distraction is generally more accepted among teachers. A teacher told me she had just witnessed a student searching for off-task subjects online, but she let it pass because there was no need for the student to sit idly by and wait for the next part of the lesson to commence.

Another important element in off-task use of technology is the *structure* of the lesson. If there is a short break in a lesson, when for instance a presentation group is opening their slideshow at the smartboard, students check Facebook while waiting. This is generally accepted among teachers. Another structural factor is the interpersonal rhythm of the classroom. Students often used words like “boring” and “dull” to describe situations in which they engage in off-task activity. But what does that mean? A student explained that a lesson is boring “when we go through theory for 3 h in a row, and the teacher’s just up there talking”. When a teacher (or a presentation group) talks at the blackboard for an extended period of time, students find it difficult to concentrate. They become drowsy, lose focus, and go off-task to take breaks.

Neil: Yesterday we had two hours of math theory in a row. I was gone after half an hour. I went on[line], I’m on there for five minutes, and then I’m back to math. So I just disconnect for five minutes, and I’m ready again. And it’s because it was just theory on theory on theory. And what we did yesterday was mostly repetition.

Jesper: So what do those five minutes do?

Neil: I disconnect a little and get relaxed and gather energy. Then I can concentrate again.

Jesper: Then you’re ready. But what then when you return to class? Haven’t you missed something during those five minutes?

Neil: Yes, I have.

Jesper: You’re a little more clear-headed, but you’re behind? There’s an ambivalence here.

Neil: Yes, exactly, precisely. It’s hard coming back. But then you just have to fight extra to get back in.

Paying prolonged and undivided attention to the talk of a teacher is experienced as boring and exhausting. Students therefore take technological breaks to gather energy. Sometimes students return to the lesson almost immediately, other times it may take them several minutes. Either way, these breaks are costly. When returning to class, students have to “fight extra” to make up for lost ground, which in turn may leave them exhausted again.

#### 4.4. Closing the lid

Teachers are acutely aware of the challenges posed by off-task use of educational technology. One teacher poignantly explained that when students look at their laptops and smile during English grammar, he knows that it “probably doesn’t have anything to do with the lesson”. This remark reveals a tremendous challenge to the modern educational system: The constant accessibility of entertaining alternatives to an ongoing lesson. English grammar has to compete with funny images and social media. Teachers agree that this is a never-ending battle, but approach this situation varyingly. Sometimes they try to eliminate distraction by fighting for student attention. They try to “occupy their brains”, as one teacher put it, by sequencing lessons (i.e., 5 min of A, 7 min of B), using little shifts and variation to keep the lesson in constant flux. However, as some teachers noted, not all lessons are apt for this rapidly shifting structure. Sometimes classes need to spend time going into depth with subjects. In these cases, sequencing may be an unsuitable solution.

Other times teachers therefore implement a so-called “open/closed” policy: When a teacher gives the word, students close the lids of their laptops, and only when the teacher grants permission are they allowed to reopen them. Implicitly acknowledging the attractive nature of laptops, teachers refer to this tactic as “taking away the goody bag”. I often observed students secretly using smartphones beneath their desks during these sessions, and an open/closed policy is no magic bullet regarding off-task use of educational technology. Nevertheless, during interviews students surprisingly (and especially so if one subscribes to the idea of distraction being voluntary) expressed satisfaction with this initiative and even took similar precautions in their own fight against distraction. Student strategies varied in severity from merely closing a tab (e.g., Facebook) to quitting their web browser (e.g., Firefox) to physically closing the lid of their laptop. But what is it that closing the lid does?

Jesper: Why can’t you just refrain from looking at it?

Carol: Well it’s standing right in front of me, and then you might look down for a second and you’re just caught by Facebook. Then you sort of forget the other thing you’re supposed to focus on.

Jesper: So unless you physically shut down the screen, it’s simply too tempting?

Carol: Yes, it is for me. Maybe not for everybody.

The laptop is often described as having an uncanny ability to pull you in. You get “caught” up in it. Closing the lid of the laptop effectively eliminates this attractive nature by blocking access to both keyboard and screen. By closing the lid, students transform their laptops into hunks of plastic and metal that merely take up space on their desks. Although this is a temporary solution that also closes off the possibility of taking notes, it is a powerful way to prevent distraction.

## 5. Discussion

### 5.1. Habitual distraction

In an increasingly digitized educational system, understanding why students often use educational technologies for off-task activity is crucial. This article introduced the notion of a prereflective attraction towards frequently visited, educationally unrelated websites. I call this phenomenon *habitual distraction*. *Habitual*, because it is explainable neither in terms of mental choices nor mechanical reactions to stimuli, but as deeply sedimented relational strategies. *Distraction*, because being drawn-towards (“at-tracted”) unrelated websites means being drawn-away (“dis-tracted”) from educational activity. This is neither a willful choice, nor an involuntary reflex triggered by pop-ups and text movements. Habitual distraction challenges the dichotomous division of attention as either endogenous or exogenous. At present, the paradigmatic example of a tempting off-task website is Facebook, but as the popularity of this website decreases, students may move to other websites like Instagram or Twitter. This, in turn, will spawn new relational strategies, but as long as students interact with educational technologies through some sort of keyboard and a screen, the experience of habitual distraction will presumably remain the same (e.g., “T”, “W”, and “Enter”).

When, however, the notion of habitual distraction is methodologically described as “taken”, how does one assess its validity? Good phenomenology *makes the obvious* (Brinkmann, 2013). The vital factor is not that research claims correspond to an objective reality cleansed of human interest (“subjective bias”), but that they tap into a shared realm of experiences (Friesen, 2012). Is the present article experientially resonant? Ultimately, the judgment lies with its readers, but many technology users, this author included, are frustrated by the ease with which they drift into distraction when using their computers. This is evidenced in the influx of so-called Zenware programs such as StayFocusd, SelfControl, Antisocial, Freedom, and Chrome Nanny, which block specific websites or even break your Internet connection (Pang, 2013). In fact, acclaimed author Zadie Smith (2012) explicitly thanks Freedom and SelfControl for “creating the time” in which to write in the acknowledgments of her novel *NW* (p. 295). Relational strategies developed in our spare time intertwine with our professional use of the same technologies. In 2012, as many as 96% of all Danish 15–19 year olds used the Internet for leisure activities daily or almost daily; 46% for more than 3 h every day (Danish Ministry of Culture, 2012). This everyday activity is bound to influence students’ relations to educational technologies. The findings of this study are thus in accordance with those of Downes (2002), who argues that children who have grown up using computers to play games and communicate with peers at home see the computer as a *playable tool*, but this affordance may conflict with the perception of schools and teachers.

### 5.2. Mediated impatience

Students react particularly strongly to the perceived monotony of lecturing. They describe these lessons as “boring”, which is why they give into temptation and become distracted. But what is the role of educational technologies in this process? We often understand technologies as inanimate objects that cannot affect the inner inclinations of their users (Peterson & Spahn, 2011). Teachers sometimes link off-task use of educational technology to the “mind wandering” they personally experienced as students when writing notes or staring out the window. Notes, windows, or laptops; distraction remains the same. Distraction is taken to originate *within* students, while technologies function merely as means to alleviate tension. This sentiment is echoed in the scientific literature in which off-task use of technology is considered a symptom of a deeper humanist problem, namely “lack of academic engagement” (Risko et al., 2013:281).

Postphenomenology, however, claims that technologies are active agents that give shape to what we do and how we experience the world (Verbeek, 2005). More than just fulfilling a fixed function (i.e., “relieve boredom”), technologies introduce new possibilities that may alter the perception of its users. That a lesson is perceived as “boring” is not necessarily an expression of a factually existing experience that prevails independently of technological artifacts and is then alleviated by surfing the web. When a lesson is experienced as boring, this may to a certain extent be *because* technological alternatives are constantly available and ready to be utilized at a whim. This can be described as a kind of *mediated impatience*. As Bruno Latour (2002) puts it, “If the robe does not make the monk, wearing a frock makes us slightly more pious” (p. 253). Modern students seem to experience difficulties with the traditional educational structure in which they must listen to a teacher for an extended period of time. As mentioned, some students go as far as closing the lids of their laptops during class to avoid the problem.

## 6. Limitations

### 6.1. Paying attention outside of school

While a qualitative examination of off-task use of educational technology in *actual* classrooms is an increase in ecological validity compared to experimental setups, this article does not claim to have the final word on the subject of technology use. Skeptics might argue that habitual distraction and mediated impatience are merely symptoms of academic disengagement. In favor of this view it should be noted that official regulations of the school state that attendance is “compulsory for all planned lessons” and, as such, students are obliged to attend every single lesson. This indeed raises questions of engagement and motivation. To circumvent these issues, future studies could examine the interplay between attention and the use of technology *outside of school* in settings that young people choose more freely: How do they, for instance, handle technologies when sitting in the couch with their partners? Around the dinner table with their family? Or when

hanging out in cafés with their friends? The results of such studies could help determine whether the present issue is merely a symptom of a pre-existing humanist problem (“lack of academic engagement”) or whether it does in fact raise new posthumanist questions (“human–technology relations”).

## 7. Implications

### 7.1. Cultivating technological habits

How do we as educators cope with off-task use of educational technology? Should digital devices be banned from the classroom? This is not only impossible, but also highly unwarranted. As Peter-Paul Verbeek (2013) reminds us, dealing with technologies is neither a question of uncritical acceptance nor blind resistance. Between “yes” and “no”, he argues, we are looking for a “how” (p. 80). We need a deliberate shaping of our involvements with technologies to develop a free relation to them. However, this “never-ending battle” may be fought differently.

Certain cognitive researchers suggest that restricting the use of external educational technologies does not remove distraction within students, so trying to limit the use of educational technology merely shifts the burden from *external* distractors to an *internal*, anxiety-laden urge to check for messages and news (Rosen, Carrier, & Cheever, 2013). According to this perspective, requiring students to focus (“unitask”) for longer periods of time will ultimately turn out to be a “fruitless effort” (p. 956). Instead, these researchers recommend short technology breaks every 15 min to quell internal distraction. This suggestion, however, relies on the sharp division between “internal processes” and “external objects” which the notion of habitual distraction attempts to challenge. If the strong pull towards off-task use of technology is connected to a prereflective attraction developed through a long personal history of human–technology relations, catering to students’ mediated impatience through technology breaks may paradoxically perpetuate the problem of habitual distraction. Ultimately, students may become unable to focus for more than 15 min in a row, thus impeding their ability to go into depth with subjects. Instead, it is suggested that teachers opt for a hands-on approach to educational technology like asking students to close their laptops or “flip their tablets” during specific parts of a lesson (e.g., before going through difficult theory). As educators we must help students cultivate good technological habits.

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### **3. Mobile devices, interaction, and distraction**

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# Mobile devices, interaction, and distraction: a qualitative exploration of absent presence

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**Abstract** Mobile devices have become an ever-present and indispensable part of our lives. Despite this pronounced ubiquity, few studies have addressed the influence of mobile devices on everyday social interaction. The purpose of this article is to examine such social ramifications. Specifically, this study offers an in-depth qualitative exploration of so-called absent presence, the state where a partner is physically present, yet absorbed by a technologically mediated world of elsewhere. Building on interviews about technology use with Danish students, findings suggest that the microsocial dynamics at stake in such impaired social interaction include delayed responses, mechanical intonation, a motionless body, and a lack of eye contact. Appropriating developmental psychologist Daniel Stern's terminology, it is suggested that this mismatch between the vitality of a person and his or her absently present conversational partner amounts to a kind of *unintentional misattunement* which disrupts the smooth flow of ordinary interaction and signals indifference to what is being said. On this basis, absent presence is distinguished from related concepts of daydreaming and mind wandering. Theoretical and practical implications are discussed.

**Keywords** Absent presence · Attunement · Interaction · Mobile devices · Vitality

## 1 Introduction

In 2014, the International Telecommunications Union (ITU) reported that the number of mobile cellular subscriptions in the world would soon hit seven billion and that the global market was steadily approaching saturation levels (ITU 2014). In many Western countries, the penetration level has now surpassed 100 %. The widespread availability and use of mobile phones mean that these devices are commonly present in public and private settings and during casual and intimate interaction, often as subtle background objects. In fact, we have become so closely intertwined with mobile devices that 89 % of a recent study reported having experienced so-called phantom vibrations, that is, perceived vibrations from a device that is not really vibrating (Drouin et al. 2012). An increasing number of people even report experiencing intense unease when temporarily unable to use their mobile devices (Yildirim and Correia 2015). Mobile devices have become an ever-present and indispensable part of our lives. Despite this pronounced ubiquity, few studies have addressed the influence of mobile devices on everyday social interaction. The purpose of this article is to examine such social ramifications. Specifically, the present study offers an in-depth qualitative exploration of *absent presence*, the state where a partner is physically present, yet absorbed by a technologically mediated world of elsewhere (Gergen 2002). The study explores how absent presence is experienced from an immanent perspective, i.e., from a vantage point located within the interaction itself.

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## 2 Background

### 2.1 Mobile devices and social interaction

Existing studies on the social ramifications of mobile devices have mostly honed in on issues of connected, social, and mediated presence (Christensen 2009; Gooch and Watts 2013; Villi 2015). These concepts all refer to situations in which physically absent partners become experientially co-present to some extent as a direct result of technological mediation. The higher degree of mediated presence, the more technology recedes into the background and vice versa. An absolute degree of mediated presence is defined as ‘a psychological state in which the virtuality of experience is unnoticed’ (Lee 2004:32) or as ‘the perceptual illusion of nonmediation’ (Lombard and Ditton 1997). Obtaining this ideal is fraught with difficulty and technical limitations. Dreyfus (2009), for instance, describes the infamous curse of the webcam in which direct eye contact is prohibited by the offset placement of camera and screen: ‘You can look into the camera or look at the screen, but you can’t do both’ (p. 16). Nevertheless, even lesser variants of mediated presence can be used to sustain important personal relationships when people are geographically separated (Wang et al. 2011). As such, existing research tends to focus on the social benefits wrought by media technologies. Without disputing the importance of studying such positive aspects of mobile devices, a unilaterally optimistic focus might be inadequate since downsides and drawbacks are equally part of the technological package. As Paul Virilio (1999) once put it, ‘When you invent the ship, you also invent the shipwreck’ (p. 89). In the context of mobile devices, it is crucial to turn the issue of mediated presence upside down and also examine what has been called *absent presence*, the state where one’s partner is physically present, yet absorbed by a technologically mediated world of elsewhere (Gergen 2002).

### 2.2 Mobile devices and absent presence

In a landmark study of absent presence, Turkle (2011) describes how the student Lon preferred it when his father had a desktop computer, because it meant that his father’s work was limited to a specific place. Now Lon’s father uses his smartphone for work purposes while sitting next to Lon on the couch watching football, and this physical proximity makes his father’s absent presence seem particularly excluding. This brief portrait highlights two characteristics about smartphone use: individuality and availability. First, due to its relatively small screen size, a mobile device like a smartphone constitutes a private perspective that is not necessarily shared with co-present others and thus transforms me into a ‘windowless monad’ closed around my

own personal projects (e.g., my work). Such one-to-one coupling of smartphone and visual perspective differs from the classic one-to-many relationship of watching television together. Hence, absent presence is not due to media technologies *per se*. Second, this individuality may also apply to a desktop computer, but with a crucial spatiomaterial reservation: You have to physically seat yourself in front of a desktop computer to use it. As such, the portal into the digital world is deliberately chosen and restricted by the amount of time spent in a chair in front of the computer. A smartphone, however, is always at hand and can be utilized almost anywhere. Combined, this ‘handheld individuality’ means that mobile devices are often present, but that one cannot see what is happening on a conversational partner’s mobile phone. This uncertainty leaves room for interpretation. Nakamura (2015) argues that when a person looks away from a face-to-face interaction to their mobile phone display, this action signals one of the three things: (1) The phone is more interesting than the current interaction, (2) the partner should ‘hold’ or wait for a while, or (3) the phone is about to become part of the interaction (e.g., when looking up information in the service of the social activity). In the first two instances, the partner is curbed in favor of the device. Looking at your device when spending time with someone can send a powerful nonverbal message. But what are the effects of such gestures?

### 2.3 Effects of absent presence

In a recent Pew report, romantic couples, particularly younger ones, reported being annoyed and upset when partners use mobile devices during time spent together (Lenhart and Duggan 2014). Specifically, 25 % of married and partnered respondents and 42 % of unmarried respondents in serious romantic relationships reported feeling that their partner had been distracted by their mobile phone while they were together. In another study, 62 % of married/cohabiting women reported that technology interfered with their couple leisure time at least once a day, and such ‘technoference’ was found to be associated with lower relationship satisfaction (McDaniel and Coyne 2014). Experimental studies have further shown that the mere presence of a mobile device can diminish trust in one’s face-to-face conversational partner (Przybylski and Weinstein 2013) and that people report having better conversations and higher levels of empathy when devices are absent compared to when they are present (Misra et al. 2014). None of the existing research, however, examines the dynamics at stake in these impaired social interactions. As Przybylski and Weinstein (2013) argue, ‘The first and most important question this research leaves open concerns the mechanism through which a mobile phone impedes

relationship formation’ (p. 8). This statement clearly demonstrates the need for in-depth explorations of absent presence. While quantitative analyses have established *that* absent presence has significant adverse effects on social interaction, qualitative studies may help explore *how* these effects originate. To develop an analytical framework capable of opening up this black box, however, we first turn to the work of Daniel Stern, a developmental psychologist who pioneered the study of microsocial interactions.

### 3 Theory

#### 3.1 Forms of vitality

Daniel Stern (2010) calls attention to an aspect of human existence that often remains hidden in plain view: Vitality, how life itself is manifested in movement. We human beings are essentially and fundamentally animate beings that are evolutionarily hard-wired to pick up on movement. For instance, when a mother facing her infant goes ‘still face,’ that is, when she does not move her face, not even with slight expressions, the baby quickly becomes upset. Even later in life, vitality remains a crucial component of social understanding: If a person neither moves their body nor alters their facial expression, it is difficult to make sense of their thoughts and emotions. This is why a blank facial expression is also known as a ‘poker face.’ Stern (2010) analyzes concrete *forms of vitality*, that is, specific manners in which such vitality unfolds over time. When describing the vitality of an event, one is not describing its content (‘what’) or its purpose (‘why’), but its style (‘how’). This is best captured through adverbs or adjectives such as exploding, surging, rushing, gliding, tense, pulsing, gentle, fleeting. As an example, imagine the difference between exploding, tense, and gentle laughter. In ordinary language use, dynamic changes in vitality such as timing, pitch, and stress procure the experience of talking to a living human being (as a contrast, think of the steely intonation of robots in sci-fi movies). By infusing our language with vitality, utterances as simple and seemingly nonsensical as ‘hmmm,’ ‘uh huh,’ and ‘ahaa’ may carry forms of vitality that can actively guide our conversations: The fall in pitch at the end of ‘hmmm,’ for instance, usually signals a closing out, i.e., a prompt to move on. ‘Uh huh,’ on the other hand, is a neutral placeholder signaling continued interest on behalf of the listener. Finally, the rising pitch at the end of ‘ahaa’ signals interests in what was just said and carries an implicit encouragement to continue. Of course, such backchannel responses are always culturally embedded and vary from language to language. Nevertheless, the basic principle remains the same.

#### 3.2 Affect attunement

In social interaction, we often match and share forms of vitality across different sense modalities, what is also known as *affect attunement*: We express the vitality of another person’s actions without imitating their exact behavioral expression. An illustrative example is given in Stern’s (1985) early developmental research: When a 9-month old boy slowly sets up a steady rhythm of banging his hand on a soft toy, his mother gradually falls into the boy’s rhythm and begins to repeat the word ‘kaaaaa-bam,’ ‘kaaaaa-bam’ with ‘kaaaaa’ accompanying the preparatory upswing and suspenseful holding of his arm before it falls and the ‘bam’ falling on each stroke (p. 140). The mother switches to a different sense modality, but her speech prosody matches the vitality of the boy’s movements. Through language, she becomes part of his game. In other words, affect attunement is what brings us ‘in sync’ with each other. Such rhythmic synchrony plays a pivotal role in embodied interaction (Gill 2012). Stern (1985) also describes *purposeful misattunement* in which a person deliberately mismatches another person’s vitality to guide that person’s level of affect: In trying to soothe the crying infant, a parent could say, ‘there, there, there,’ giving more stress and amplitude on the first word and trailing off toward the end (i.e., ‘<sup>there</sup>, there, <sub>there</sub>’). Alternatively, the parent could caress the baby’s back or head with a stroke analogous to that sequence, applying more pressure at the onset of the stroke and trailing it off toward the end (p. 69). This underattunement helps instill a sense of calm into an otherwise distressing situation. Far from merely applying to the field of developmental research, however, attunement is pervasive in our everyday lives. Armed with the concepts of vitality and attunement, we now proceed to the study.

### 4 Methodology

#### 4.1 Situating the current study

The data presented here are part of a broader study on technological mediation of attention in an educational context. The study is conducted as a long-term, multi-method qualitative inquiry at a large business college in urban Denmark. A business college is an institution that provides general upper secondary education in commerce covering lines of study that range from global marketing and communication to innovation and event management. Students are young men and women aged approximately 16–20 years. Data collection began in August 2013 and spanned a year and a half. After conducting initial exploratory interviews with six teachers about their

personal experiences with technologies in the classroom, I followed their work through participant observation (Spradley 1980). The purpose of this observation was to explore how the use of digital technology affects our contemporary educational system, focusing specifically on altered classroom dynamics. After 6 months of observation in various classrooms, I started conducting formal, in-depth interviews with individual students. During my observations, I had noticed that students often used educationally unrelated Web sites during class (Aagaard 2015). In an attempt to gauge whether (and if so, how) this distractive media strategy intertwined with their broader life trajectories, I wanted to address the use of technologies outside the context of school in settings that young people choose freely. Hence, a number of interview questions regarded students' spare time ('how do you use technology outside of school,' 'do you use social media when you are with your friends,' etc.). The interviews were semi-structured, which means they took departure in an interview guide, yet remained flexible enough to explore spontaneously occurring 'red lights' such as unusual terms or intonations in participants' answers (Kvale and Brinkmann 2008). All participants volunteered and were not paid for any part of their involvement in the study. Twenty-five students were interviewed in total. The interviews lasted about 15 min each and the sound recordings were subsequently transcribed to text.

## 4.2 Abductive analysis

While reading the transcripts, I stumbled upon the following descriptions of absent presence and found them significant. Not only did students speak lucidly and insightfully about absent presence, they also gave remarkably rich descriptions of what the phenomenon entails. The level of detail inherent in these descriptions surpassed the coarse distinction between attention and distraction with which I had previously worked (Aagaard 2014). As such, my theoretical grasp of the phenomenon temporarily broke down. But a breakdown-driven or *abductive* analysis that occurs precisely in such situations of surprise, bewilderment, or wonder is a perfectly approach to qualitative research: (a) We observe *X*, (b) *X* is unexpected and breaks with our normal understanding, (c) but if *Y* is the case, then *X* makes sense, (d) thus, we are allowed to claim *Y*, at least provisionally (Brinkmann 2014). In my attempt to make sense of the students' descriptions (i.e., *X*), I eventually turned to Stern's conceptual tools (i.e., *Y*), but as befits an abductive approach, I remain open to critiques and alternative interpretations. In fact, I have certain reservations myself: Stern (2010) treats vitality as a *mental creation*, 'a product of the mind's integration of many internal and external events' (p. 4). This statement is

problematic to me, because my research project is heavily informed by Maurice Merleau-Ponty's (2002) phenomenology of perception, which explicitly breaks with such mentalist understandings of our existence. In line with other scholars, I wish to dislodge Stern's insightful descriptions from his mentalist ontology (Mühlhoff 2014). As Stern (2010) himself sporadically implies, vitality can also be understood as a *force within movement*. When understood accordingly, vitality exists at the level of mutually interacting bodies, what is also known as *intercorporeality* (Merleau-Ponty 1964; see also Tanaka 2015). This is how I read these following descriptions. The quotations used are those which best illustrate the points of interest. They have been translated from Danish to English, and all names are pseudonyms.

## 5 Findings

In this section, I go through three different dynamics of absent presence, which surfaced in my interviews: (1) delayed responses, (2) mechanical intonation, and (3) a motionless body. These themes are the abductive products of reading through and making sense of students' descriptions through the lens of Daniel Stern's analytical framework.

### 5.1 Delayed responses

The first dynamic appeared in my interview with the student John. During class, John was an avid user of technological devices for distractive purposes such as texting, playing games, and using social media. Outside of school, however, John's views on distraction were strikingly different.

John: I'm a strong proponent of not using your phone when you're together two-and-two, because then... Well, it's just not the same. It's not cool being the other person who just sits there waiting.

Jesper: It's not 'the same'. Can you elaborate on that?

John: If you were sitting with your phone here while I'm talking to you and just looked at it, I wouldn't feel like you were listening to me, although you might actually be doing so. I wouldn't feel like we were having a real conversation.

Jesper: Why not?

John: Ummm... Yeah... I wouldn't feel like you were listening or like what I was saying was interesting to you.

Jesper: I'm aware that it's difficult to describe, but I'm trying to understand what it is about sitting with

my phone that makes you feel like I'm not paying attention.

John: You're *absent*. You're just more focused on your phone. I know that from myself. If somebody's talking to me and I'm looking at my phone I don't hear what they're saying.

Jesper: So it's something about paying attention and being there. You talk about 'absence', but what does it mean that people are 'present'?

John: It's just like what you're doing now: Sitting there, making eye contact, and having a conversation instead of, like, on/off, looking at your phone and going, '... Sorry, what?'

In John's narrative, using your phone does not allow for meaningful social interaction. When a person is 'looking' at their phone, he argues, it does not feel like they are 'listening.' At first glance, the utterance makes no logical sense: We listen with our ears, not our eyes, so why should it make a difference where we look? Is the statement expressing some kind of cognitive bias? In fact, John's utterance is an indication of the cross-modality of perception: When a person is using their phone, they are often quite immersed in it. There is no question of multitasking (e.g., looking at texts while listening to friends). We sense this lack of responsiveness directly in the comportment of our partners: When a person is focused on their phone, John argues, they quite simply *look* 'absent' and preoccupied. This makes us feel like what we are saying is not interesting enough to capture the attention of the listener. I then set John the tricky task of describing what being 'present' entails. John replies that I am being present at that very moment simply by sitting there, across from him, and making eye contact while maintaining a conversation. As a contrast to this presence, John mentions the choppy and unfocused vitality of a person periodically looking at their phone during a conversation (or, what could also be described as absent presence). To describe the style of such comportment, John uses the term 'on/off,' which means starting, stopping, and then starting again, several times. If we try to make sense of this statement according to Stern's terminology, the problem becomes one of the rhythmicities: Ordinary conversation is a moment-to-moment collaborative process of steady interchanges in which the listener's vitality dynamics actively contribute to the conversation. The off-set style of *delayed responses* in absent presence like, '... Sorry, what?' however, breaks this ephemeral circle of presence and disrupts the flow. The two speakers get out of synch. What the short bursts of attention and delayed responses of absent presence hinder, in other words, is the smooth rhythmicity of everyday interaction.

## 5.2 Mechanical intonation

The second dynamic surfaced in my interview with the student Isabella, who professed to using technological devices for distraction during class, but told me that she tries not to use her phone to check social media when spends time with her friends, because she finds it inappropriate.

Jesper: Try to explain what happens when people grab their phones.

Isabella: You just don't feel like they're paying as much attention to you.

Jesper: How can you tell?

Isabella: For instance, eye contact. If I tell my friend that I've been upset this week I feel it's very important that she looks me in the eyes and tells me that she can relate and understands instead of just going, 'Yeah. Okay. Hmmm' [uttered with a flat intonation]. Otherwise, you just feel a little... It might as well have happened during class that you'd just say, 'Yeah. Hmmm' and not really take it in. You don't really relate to the situation or fully understand. Really try to understand. I know that as a girl you can multitask, but you can't multitask that damn much as to sit there and 'like' pictures.

When we tell our friends about upsetting or otherwise meaningful events, it is important that we feel understood. In fact, being empathically told by a person that they can 'relate' to an upsetting episode we describe to them may be akin to an adult version of the 'there, there, there' sequence. Of course, adult empathy is not a matter of unconditional acceptance, but attunement is just as crucial in cases of disagreement. Using your phone while conversing precludes such attunement, Isabella explains, because in such cases people do not really relate to the situation, but merely go, 'Yeah. Okay. Hmmm.' At first glance, Isabella is describing an episode in which she gets ongoing albeit limited responses from her friend, which may seem preferable to the example from above in which an unresponsive partner answers, 'Sorry, what?' But it may not be so simple. Isabella is describing a specific type of verbal responses: 'Yeah. Okay. Hmmm.' Recall that the vitality of such responses signals a closing out, a suggestion for the narrator to move on. What the overtly *mechanical intonation* of such responses indicates, then, is not the deep and empathic understanding that Isabella seeks, but an indifferent registration of facts. What Isabella is describing is not just a failure to elicit attention, but the dynamics of a lost struggle for recognition. Isabella's statements reveal other important aspects of absent presence: First, Isabella

follows John in describing how the need for eye contact in social interaction is thwarted by absent presence. This means you immediately sense the lack of attentiveness in your conversational partner. Secondly, Isabella strongly opposes being reduced to the same level of interest as school material by her friend ('It might as well have happened during class...'). This statement expresses an interesting point about students' view of absent presence in school, albeit one that we shall not pursue any further. Finally, while describing the lack of empathic attunement in absent presence, Isabella subtly repudiates the cultural cliché that women are superb multitaskers: She argues that her girlfriends cannot relate to her situation while they simultaneously browse, view, and 'like' pictures on social media.

### 5.3 A motionless body

The third dynamic appeared in my interview with the student Simon, who explained to me that his girlfriend has the 'bad habit' of checking Facebook on her phone at the dinner table. Since he chose to use such an unabashedly normative term, I asked him how this habit affects their conversation.

Simon: First of all, there's a very long response time. It takes you a while to answer. And I do that myself. If I need to text someone while my girlfriend is talking to me, she gets really, really annoyed that I can't just answer her immediately [snaps his fingers]. But I can't. I don't work like that. Although she may not be uninterested in what I have to tell her, it easily seems like she is.

Jesper: Because there's a long 'response time'?

Simon: Because there's a long response time, and because the tone of voice may be different. Like, 'Yes. That's fine' [uttered mechanically]. It may also have something to do with the fact that she's not looking up. Her movements don't signal any interest. She's not looking at me and listening to me, but looking somewhere else.

Like the previous interviewees, Simon emphasizes delayed responses ('long response time'), mechanical intonation ('tone of voice'), and a lack of eye contact. However, Simon adds a further concern for motility. When describing his girlfriend's phone use during at the dinner table, Simon accentuates movements that do not contain vitality or signal 'interest.' When his girlfriend is using her phone at the dinner table, he tells me, she is not looking at him, but has instead turned her gaze forty-five degrees down and is looking at her screen beneath the table ('she's not looking up'). A mobile device can be remarkably fixed and inflexible in its demands on the comportment of its

user, which entails being both hands-on with the keyboard and face-to-face with the screen. This constrains one's body language and allows only a limited range of facial expressions, precluding any head nodding or smiling (even frowning and eye-rolling). Absent presence, in other words, renders one's conversational partner unresponsive. It leaves them in a state of suspended animation with all the vitality of a mannequin doll. Only the thumbs are moving. This idea of an almost *motionless body* puts a new perspective on both lack of eye contact and the noticeable delay between utterance and response: Silence is sometimes perceived as a sign of reflection and deliberation, but this mostly happens when it is accompanied by a thoughtful expression of some sort (as epitomized in Rodin's *Le Penseur*). In the case of absent presence, however, a high latency and a fixed stare do not signal thoughtful hesitation, but simply makes you seem 'uninterested' in what your partner is trying to tell you. This conspicuous lack of vitality is detrimental to social interaction. Interestingly, Simon admits to occasionally being absently present when interacting with his girlfriend, although he explicitly tells me that he gets upset when she does it to him and vice versa.

## 6 Discussion and conclusion

### 6.1 Absent presence as unintentional misattunement

Across all three interviews, students mention downcast eyes as a key part of absent presence. Such lack of eye contact can thus be considered a fourth dynamic of absent presence. In this regard, however, it is important to note that although mutual gaze indubitably plays a crucial part in social interaction, we should not understand the eyes as gateway to a deeper state of mind ('the eyes are the windows to the soul'), but consider them part of a broader level of mutually interacting bodies producing vitality dynamics. To paraphrase Merleau-Ponty (2002), I do not see absent presence as a psychological fact hidden *behind* vitality dynamics, I read absent presence *in* them. In the case of absent presence, such dynamics also include delayed responses, mechanical intonation, and a motionless body. Taken together, these dynamics directly reveal the inattentiveness of absently present conversational partners. I perceive my conversational partner as preoccupied, absent, and closed off. This dynamic influences a social interaction negatively, because an absently present person's responses consistently mismatch the vitality of their conversational partners in regard to both rhythmic timing (i.e., delayed responses) and emotional intensity (i.e., mechanical intonation). Indeed, sometimes vitality all but disappears (i.e., a motionless body). These dynamics get the conversational

partners ‘out of sync’ with each other. As such, absent presence has a tendency to disrupt the smooth flow of ordinary interaction. Appropriating Stern’s terminology, we may call such a mismatch between the vitality of an absently present person and his or her partner an *unintentional misattunement*: No matter how important the subject matter of a conversation may be, absently present people’s answers usually seem slightly apathetic and indifferent. Hence, they continuously regulate their partners in a downward direction.

Communication theorists have famously argued that, ‘we cannot *not* communicate’ (Watzlawick et al. 2011). What this means is that every nonverbal behavior, gesture, and action can be considered as a form of communication. Everything we do conveys a message. This includes breaking unwritten codes of conduct. As Garfinkel (1967) showed through his famous breaching experiments in which he asked students to perform socially aberrant actions such as haggling about fixed prices or standing too close to other people, the ‘victims’ of these experiments did not find such deviations from social norms to be totally senseless, but viewed them as illegitimate and offensive motivated departures from normal conduct. Something similar can be gleaned from the interviews. As Simon puts it, although an absently present person may not *actually* be uninterested in what they are being told, it very much ‘seems like it.’ What we communicate through absent presence, in other words, is that we are uninterested in what our conversational partner is trying to tell us. Absent presence signals *indifference* to what is being said. This makes it all the more worrying when students report frequently experiencing a distinct lack of receptivity from friends and relatives who use mobile devices. Perhaps this is why so many people report having better conversations and higher levels of empathy when mobile devices are absent (Misra et al. 2014)?

## 6.2 Absent presence versus daydreaming and mind wandering

To be clear, being distracted during everyday interaction is not a completely new phenomenon. Daydreaming and mind wandering are well-known phenomena with venerable ancestries: Already in the early 1960s, Goffman (1963) described how an individual may drift from his immediate social circumstances to a ‘playlike world’ in which he alone participates (p. 69). Absent presence, however, differs from its earlier predecessors in at least three aspects: First, daydreaming is a relatively rare phenomenon, whereas the handheld individuality of mobile devices means that the possibility of absent presence is constantly lurking. Absent presence, one might say, is just a click away. Second, John’s unintentional slipup (‘If somebody’s

talking to me and I’m looking at my phone...’), Isabella’s talk of ‘trying not to’ use her phone when she is with her friends, and Simon’s self-conscious shift of perspective mid-sentence (‘I do that myself’) implies that even opponents of absent presence engage in the behavior because of a habitual element that is not entirely under voluntary control of the user (see also Aagaard 2015). Lastly, if you were to drift away during a conversation with your friends, they would most likely tell you to ‘snap out of it,’ but somehow the social norms around the use of mobile devices are too vague and novel to possess such commanding authority. Our society is still in the inaugural stages of working out and solidifying social norms regarding the proper use of mobile devices. One small example of this burgeoning development is the game of ‘phone stack’ that groups of friends play at restaurants: At the beginning of a meal, everyone puts their phone face down at the center of the table and no one is allowed to pick up their phone during the meal. The first person to give into temptation picks up the check. If no one gives in, then everyone pays for themselves (Tell 2013). Only time will tell if such minor initiatives eventually coalesce into broader societal norms regarding absent presence.

## 6.3 Limitations and future studies

This study is not without limitations. First, the microsocial dynamics of absent presence were not an explicit focus of my research project, so this study is based upon only sparse and somewhat spontaneously occurring data material. It is a highly explorative investigation based on data from only one location, involving just a few tech-savvy business students. The reason I felt compelled to write the article, however, is that when I stumbled upon these vivid descriptions of absent presence, they resonated deeply with my own experiences of absent presence. Something just *clicked*, and it is important not to underestimate the importance of such serendipitous findings in qualitative research (Åkerstrøm 2013). Based on statistics from the background section, one could argue that a major part of the Western population is already familiar with absent presence (Lenhart and Duggan 2014; McDaniel and Coyne 2014). Future research could help determine whether the identified dynamics apply equally in these cases. Second, regardless of the generalizability of the findings, a historical element remains: The dynamics found in this study may only apply to people situated in a historical watershed in which absent presence is on the rise. In pace with the ubiquity of mobile devices and, by extension, absent presence, the experience may become so normalized that its upsetting element gradually wanes. This would in turn leave the findings of this study outdated. Finally, although the identified dynamics in the

present study constitute a refinement, elaboration, and clarification of the concept of absent presence, the list is still preliminary and may be expanded by future studies. Such research might benefit from microanalysis of facial, vocal, gestural, and/or postural expressions in face-to-face interaction in which one conversational partner is attentionally occupied by a digital device such as a phone. In conclusion, in spite of its inevitable limitations this study has delineated a number of microsocial dynamics currently at stake in absent presence.

#### 6.4 Conclusion

Both researchers and the general public often understand media technologies as means to bridge distances and to connect people dislocated in space, or what is commonly referred to as mediated presence. The point of this study, however, was to explore the microsocial dynamics of the reverse situation, absent presence, in which a self-enclosed conversational partner is engrossed in their technological device. It thereby responded to a dearth of in-depth studies of such technology use. Taking departure in Daniel Stern's idea that dynamic momentary shifts in vitality allow us, automatically and without awareness, to affect one another, the present study proposed the term *unintentional misattunement* to highlight social ramifications of delayed responses, flat intonation, a motionless body, and lack of eye contact inherent in absent presence: Combined, these dynamics lead to an awkward interpersonal rhythm that emits an aura of carelessness to the non-phone user.

These findings give rise to a number of implications, theoretical and practical. Theoretically, the findings of this study add to the burgeoning field of technocritical studies (e.g., Carr 2010; Sacasas 2013; Turkle 2011). Our everyday use of digital devices entails important downsides that are worth studying and analyzing. Additionally, it is suggested that research on the use of media technologies in general and on absent presence in particular can be productively combined with embodiment theories (e.g., Merleau-Ponty 2002). Viewed from a practical standpoint, this study has important implications for citizens of the twenty-first century. Swiping around on the smartphone may start out as harmless distraction, a mere diversion from pauses in the flow of conversation, but it may end up subverting the intimacy and emotional connectivity one finds between people that are engaged in conversation. Since absent presence seems to be on the rise, it is imperative that we address this peculiar new phenomenon and maintain a critical awareness of what is currently happening. I hope that the empirical and conceptual contributions of this study will help promote such discussion and reflection regarding the use of mobile devices in social interaction.

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## 5. Conclusion

This dissertation asked the question: “How do educational technologies affect student attention?”. Attempting to answer this question has brought us far and wide. When spending time in educational practice, one quickly discovers that the popular image of educational technology as a benevolent force fails to recognize the messy realities of students’ everyday engagements with digital devices. In the first article, the postphenomenological notion of multistability was wielded against this techno-optimist narrative: Not only do digital devices ‘technologically enhance’ learning, they also afford classroom distraction. But how exactly does such distraction play out? When we see a student engaging in educationally irrelevant activity, it is tempting to say: “Well, he must have wanted to do that”. But what does that mean? That he deliberately chose to do it? That he consciously decided to do it? In the second article, students described being drawn to distraction in ways that bypass such conscious decision-making. Laptops are experienced as attentional magnets with a strong pull. The distractive affordances of Internet browsing can be hard to resist. This is due to deeply sedimented relational strategies that are built, maintained, and solidified in the course of students’ everyday lives. Although such relational strategies spring from purpose- and meaningful activity, prolonged sedimentation can make them manifest with a degree of automaticity and ‘stubbornness’ (Rosenberger, 2014b) that challenges conventional humanist conceptions of meaning, agency, and intentionality: Our technological habits have a powerful hold over us.

Not only is digital distraction tempting, however, it is also very captivating. Students describe getting carried away and losing themselves in Facebook. They go deeper and deeper into the rabbit hole with a significant element of time passing before they ‘snap out of it’ and return to the classroom. They are both habitually *drawn-towards* and perceptually *pulled-into* technologically mediated space. When engaging with such space, they leave behind their immediate circumstances in favor of these mediated realms. Everyday language reveals the importance of such experiences: We can be absorbed, immersed, engulfed, engrossed, or captivated by something. We even speak of people being lost in a book. The third article explored the consequences of such absorption from a second-person perspective. Retrospectively, we can say that it explored the phenomenology of being ‘phubbed’, snubbed in favor of a phone. In this article, students described how using a digital device during face-to-face interaction impairs the conversation and sends a hurtful message of indifference to the non-phone user. This is a peculiar new phenomenon that seems to be growing with the ubiquity of mobile devices. There is, of course, nothing novel about the concern that new media technologies trouble our social lives. There is, however, something new about mobile devices like the smartphone, namely their size and weight: A smartphone easily fits into purses and pockets and pragmatically invites or affords bringing it with us. It is ‘handy’ (*Handy* is literally the German term for a mobile phone). This portability means that distraction is constantly available, always ready to hand. Overall, these results highlight the importance of studying, analyzing, and discussing our collective 21<sup>st</sup> century technological habits.

## Validity, implications, and limitations

Doing phenomenological research helps us honor the richness and complexity of human experience. This does not imply that phenomenological research knows *everything* there is to say about experiences, however. One of phenomenological research's ardent critics, John Paley (2005), argues that phenomenological researchers often proceed to slide from a focus on experiences to making claims about the causal triggers of such experiences. As an example, Paley cites a study, which claims that nurses' feelings of inadequacy and anger were precipitated by doctors' poor communication skills. This study not only discusses some experience (i.e., inadequacy), but also addresses the underlying causes of this experience with potentially grave policy implications. But, Paley argues, there is no evidence as to whether this assessment is valid. Paley's acerbic critique dismisses phenomenological research as mere 'rhetoric' that lays illegitimate claim to scientific authority. Coming from an entirely different perspective, poststructuralists have also delivered scathing critiques of phenomenological research. Joan Scott (1991) famously argues that focusing on some experience (e.g., being gay) does not account for how that experience came to be, which means that an experiential focus precludes critical examination of the underlying ideological systems' categories of representation (e.g., gay/straight). This maneuver naturalizes the categories in question and thereby closes down critical questions about what counts as a given experience and who gets to make that determination. "The evidence of experience then becomes evidence for the fact of difference, rather than a way of exploring how difference is established, how it operates, how and in what ways it constitutes subjects who see and act in the world" (p. 777). Ultimately, this reproduces rather than contests ideological systems. Combined, these critiques push us to be clear about our phenomenological claims: How do we assess their validity, their implications, and their limitations?

## Resonance

If phenomenological research cannot provide causal inferences about objective reality ("digital devices cause distraction"), what sort of insights can it yield? And how do we assess their validity? According to van Manen (1990), a good phenomenological description *resonates* with lived life and evokes the so-called phenomenological nod of recognition. The vital factor is not that phenomenological research corresponds to an objective reality cleansed of human interest or 'subjective bias', but that it taps into a shared realm of experiences (Friesen, 2012b). The goal is thus not to shock or surprise, but to strike a chord of familiarity with its readers. Paley (2017) raises a critical objection about this criterion, namely that if the phenomenological nod is the litmus test of good research, then phenomenology cannot tell us anything that we did not already know: "In which case, what's the point of it?" (p. 71). So is phenomenology just trite, predictable, and uninformative? Not at all. As Wittgenstein (2009) once said: "The aspects of things that are most important for us are hidden because of their simplicity and familiarity. (One is unable to notice something - because it is always before one's eyes.)" (§129). Through the use of evocative examples, phenomenological research may reveal important issues by picking out and rendering something hitherto unnoticed visible. In other words, good phenomenology has the ability to make the obvious obvious (Brinkmann, 2012). This process is known as unconcealment or *aletheia* (the Greek word for truth). Aiming for such experiential resonance puts a lot of agency into the hands of the audience: It changes the process of generalization from statistical inference ("this result is applicable to people who fulfill criteria X, Y,

and Z”) to a process in which a study’s usefulness is ultimately determined by its readers (Tracy, 2010). As Ferguson (2009) puts it: “We can only generalize from these experiences for those with whom they resonate” (p. 54). In the end, validity judgments regarding the phenomena described in this dissertation therefore lie with its readers, but many technology users, this author included, can probably recognize the distractive dynamics that have been described thus far. Take this conversational exchange from earlier:

Michael: In classes where we’re allowed to have our computers open, it happens slowly. You go in and look at the computer, and suddenly you end up on different sites. It doesn’t happen consciously, it’s more of a subconscious thing.

Jesper: Okay. Do you do anything to avoid it happening?

Michael: Yeah, I close the computer.

Jesper: When would you do that?

Michael: If I realize that I’m browsing some website I’m not supposed to be on. I realize it, and then I shut it down. Otherwise, I can’t keep up.

Jesper: But it takes a while for you to realize it?

Michael: It easily takes fifteen minutes before I realize that “oh, I’m on some website, I’m not supposed to be on”.

Michael describes “subconsciously” losing focus and becoming distracted in a way that is peculiarly outside of and opposed to his conscious decision-making. Arguably, this experience characterizes much of our 21<sup>st</sup> century lives. Twitter-user @nickbilton has eloquently captured this phenomenon: “Going to Facebook has become the equivalent of opening the fridge & staring inside, even though you’re not hungry”. Our technohabits sometimes result in a habitual inclination to divert attentional engagement in spite of better intentions, or what can tentatively be called ‘digital akrasia’ (*akrasia* is Greek for weakness of will and refers to situations in which a person acts against his or her own convictions and beliefs). As Shannon Vallor (2016) recently argued: “Life online already challenges our self-control on multiple levels, causing many of us to resort to software lockout tools such as Freedom to keep us out of the digital cookie jar for a fixed period of time” (p. 124). Our self-control is routinely challenged by our technohabits and it often feels like such self-control enters the stage a moment too late. This is apparent in Michael’s description of the captivating nature of digital distraction: Michael both describes suddenly finding himself engaged in a distractive activity and how this conscious noticing allows him to break the spell of distraction and close the computer. Up until that moment, however, he has been completely absorbed in the contents of his device. Staying with pop-cultural takes on these phenomena, Twitter-user @Underchilde spoofs such captivation accordingly: “Just looked up from my phone and realized I was sitting in a restaurant that closed in 2007”. Briefly adding unintentional misattunement to the mix, a recent Pew Research report concluded that “Mobile devices play a complex role in modern social interactions - many Americans view them as harmful and distracting to group dynamics, even as they can’t resist the temptation themselves” (Rainie & Zickuhr, 2015). These jokes, analyses, and statistics all point to the fact that digital distraction does in fact resonate deeply with many of us.

## Ontonorms

When reading a research article, we must always ask an important question about its implications: “So what?” or “Who cares?” (Selwyn, 2014a). Why does the theoretical emphasis on technohabits matter? It matters because of what Mol (2013) calls *ontonorms*: Any ontology contains an embedded normativity. If we understand digital distraction as a matter of deliberately opting-out, devices become neutral tools that fulfill students’ predetermined goals. Such an understanding can take one of two forms: Blaming the teachers or blaming the students. The first approach can be summarized accordingly: “Devices don’t create distraction, *boring teachers* create distraction”. This is the techno-optimist narrative echoed in Prensky’s (2001) suggestion that Digital Natives choose not to pay attention, because they are bored at school (solution: more technology). The second approach also operates on the assumption that distraction can be traced back to students, but inverts the attribution of responsibility: “Devices don’t create distraction, *lazy students* create distraction”. If distraction is on the rise, it is because Kids These Days lack discipline (solution: better parenting). Such cultural-pessimism has prompted commentators to discuss a media-induced ‘culture of disrespect’ between young people and the educational system (Selwyn, 2009). Both understandings rely on a paradoxical logic in which technology determines the development of an entire generation (Digital Natives, Kids These Days), yet makes no difference inside the classroom. If, however, we understand digital distraction as a matter of *deeply sedimented relational strategies*, we must acknowledge that how devices are handled outside of school influences the way they are handled inside the classroom, and vice versa. This understanding dissolves the gap between teachers and students: Adults with similar technohabits may just as well be distracted as Kids These Days. This is what is so compelling about Heidi’s candy bowl metaphor: It shows that teachers get it, too. They can also become habitually distracted during courses or meetings (i.e., they can also be ‘lazy’). This understanding defuses the dramatic scenarios enacted by the other two approaches: The solution to digital distraction is neither more technology nor better parenting, but helping students cultivate technohabits that allow them to resist distraction. Students even seem to appreciate this strategy (i.e., they can also be ‘boring’):

Lukas: I actually like the way Nicolai does it, when he goes “close the computer”. It’s kinda boring and conservative and it’d be nice to take notes and all that, but you actually do remember it better. I was one of the biggest skeptics at first and complained about it a lot. I was like “you’re just an old fool; come on, let’s take notes” and stuff like that. But you really do remember what he says a lot better. So I totally get it.

Of course, the notion of teachers ‘helping’ students cultivate certain habits should set Foucauldian alarm bells ringing. Social science has always had an ambivalent relationship to relations of power: Do we understand such relations *dialectically* as an oppressive force from which we must liberate ourselves or *hermeneutically* as an inescapable part of the world through which we become subjects (Verbeek, 2013)? Following the first suggestion, neo-Marxist scholars sometimes view school as an ideological state apparatus (Althusser, 1971), whose main function is to reproduce capitalist ideology and distribute the skills that are needed to sustain this world order: In addition to the formal curriculum, schools teach students to fit in, follow rules, respect authority, obey, compete, and achieve success within the boundaries of the existing system (Selwyn, 2011b). In this dialectical model,

students have the choice between subjecting themselves to such institutional strategies of control or developing tactics that resist them (de Certeau, 1984). When it comes to the use of educational technology, such tactics include a covert appropriation of educational technologies that rejects the “hidden curriculum of becoming compliant and ‘productive’ users of educational technologies” (Selwyn, 2011b:113). Following this line of thought, we might regard digital distraction as a kind of *heroic resistance* against obedience and conformism. Where would that leave my research project? Am I attacking one of the few sanctuaries left in the ever-tightening grip of disciplinary power in school? In favor of this criticism, my research can in fact be said to fall into Scott’s (1991) trap: I have focused on the experience of distraction, but conveniently ignored the issue of who has the power to define this socially unsanctioned experience (hint: it’s not the students!). As such, my research can be seen as complicit in the capitalist production of docile subjects. Instead of attempting to refute this objection, however, I want to approach the issue from a hermeneutical perspective.

Within a hermeneutical perspective, power relations are not envisioned as threats, but as networks of relations in which subjectivity is formed (Verbeek, 2013). As such, the question becomes “What kind of people are we becoming?”. In our upbringing, we are thrown into a power-saturated web of culturally specific, normative styles of comportment that we pick up directly through our embodied being-in-the-world (Dreyfus, 2013). Schooling is an inescapable part of this process (Biesta, 2009). One of the main priorities of school has always been to educate students’ attention, and Vlieghe (2015) even argues that “the core task of education is precisely to *form* attention, in the sense of disciplining people who are not inclined to sit still for say an hour, but also - and more importantly - in the sense of teaching a subject matter in such a way that students may find it interesting enough to remain focused” (n.p.). At first glance, this argument seems to affirm the neo-Marxist critique of disciplinary practices, but before jumping to such conclusions, let us engage in a brief thought experiment: In media multitasking research, a popular practical advice is currently to employ ‘tech breaks’ every fifteen minutes (e.g., Rosen et al., 2011, Bowman, Waite & Levine, 2015, Wood & Zivcakova, 2015). The only way to get rid of temptation, it is said, is to yield to it (Rosen, 2011). Taking our starting point in the hermeneutical notion of technologically mediated subjectivity (Verbeek, 2013), let us imagine the long-term implications of adopting and accepting such ontonorms: Do we eventually ask cinemas to pause movies every fifteen minutes to allow the audience to check their devices? Should weddings and funerals be over in fifteen minutes, or should such events also include tech breaks to keep attendants from getting bored? When taken to its logical conclusion, digital distraction looks a lot less like a heroic resistance than a capitulation to instant gratification, arguably the pinnacle of capitalist consumerism. In comparison, teaching students to tolerate boredom and resist mediated impatience seems positively liberating.

### **Addictiveness**

Explicitly aiming to dismantle the techno-optimist narrative, this dissertation has been openly techno-skeptical. Techno-skepticism, however, comes in many shapes and sizes with each version evoking its own explanatory language. One of the goals of this dissertation has been to challenge the cognitive vocabulary of mental choices and neutral tools. Ultimately, I seek to replace such ‘brain-action’ accounts with phenomenological ‘habit-action’ accounts (see Rosenberger, 2015). This also

means that I distance myself from the neurobehaviorist rhetoric of digital drugs and addictions. In popular discourse, digital technologies are often said to resemble drugs in that they physiologically change our brains (the media is replete with sensationalist terms like digital heroin). Receiving a Facebook like, it is argued, triggers a chemical reward in the brain, a dopamine rush, which is why it feels so good. Over time, these ecstatic jolts alter our neurochemical structures and set up reward-driven addictions in which we continuously come back for more. In the end, this vicious cycle turns us into junkies compulsively chasing the next digital high (Kardaras, 2016). And, at first glance, there may indeed be superficial similarities between addiction and the technohabits described in this dissertation: Such habits also occur below the level of conscious decision-making, and, as such, may feel virtually uncontrollable; they often go against our best intentions, and they take immense work to change. Nevertheless, there are good reasons to curb the medicalized notion of addiction. According to 2015 statistics, 92% of US teens report going online daily with 24% saying they go online “almost constantly” (Lenhart, 2015). Addressing such hyper-frequent technology use in terms of addiction is one way of expressing a critical assessment of this uncannily close relationship to digital devices, but it is also a way of pathologizing what is a widespread and evidently ‘normal’ human phenomenon. In other words, with almost two billion active users, comparing Facebook users to drug addicts seems wildly inappropriate, and we should save the alarmist rhetoric of addiction for people whose lives are genuinely ruined by a compulsive use of digital devices.

Nevertheless, Natasha Schüll’s *Addiction by Design* (2012) does point to a limitation in this dissertation, namely its lack of concern with the *addictiveness* of new media. Based on fifteen years of field research, Schüll’s thorough investigation of the Las Vegas gambling industry describes how gamblers become so captivated by gambling that they play for hours while ignoring physical fatigue, neglecting to eat, and sometimes even wetting themselves. They are both drawn-towards and pulled-into what Schüll calls the machine zone, whose phenomenological characteristics sound eerily similar to digital distraction. “‘You’re in a trance, you’re on autopilot’, said one gambler. ‘The zone is like a magnet, it just pulls you in and holds you there,’ said another” (p. 19). Indeed, Madrigal (2013) uses the concept to explain the absorption induced by rhythmically scrolling down one’s Facebook wall. Schüll’s book, however, does not stop at the phenomenological level of experience, but meticulously analyzes how modern slot machines are designed to invite, sustain, and exploit such experiences. Their main function is to get gamblers to play till ‘extinction’, till their funds run out. Tellingly, the gambling industry has embraced the labeling of excessive gambling as addiction, because this label locates the problem *within gamblers* (e.g., in their genetic makeup or psychological profiles) rather than in the *human-technology relations*. Although the immediate consequences of social media use may be less severe, such media are also designed to invite or facilitate specific relationships with users. Vallor (2016) quotes a blog post in which the CEO of a software analytics firm argues that the goal of all software design is an addicted user base: “Whether you’re building a game, a social network or a CRM tool, your ideal customers are the people who engage with your product at least once every day – better still if they’re using it constantly” (p. 167). Focusing on the immediacy of students’ lived experience may blind us to the fact that we live in an attention economy, where attention has become a highly marketized, financialized, and sought-after commodity (Crogan & Kinsley, 2012). This digitalized landscape is ruled by media conglomerates like Apple,

Google, Amazon, and Facebook, who continuously calibrate their products to maximize the amount of attention that each person is willing to pay them. Accordingly, future research on digital distraction should perhaps supplement the candy bowl with another guiding metaphor: Flypaper.

## Concluding remarks

Although this dissertation has raised techno-skeptical concerns about digital distraction, I have tried to avoid the trap of IRL-fetishism, which consist of viewing the analog/digital, real/virtual, or of-line/online as separate realities with the first term fetishized over the other (Jurgenson, 2012). The problem with such IRL-fetishism is that it fails to capture the extent to which these realms are entangled: Facebook is real life, as Jurgenson (2012) nicely puts it. Instead of relying on a dualist logic of comparison, however, I have focused on intertwinement: Social media is not somehow less ‘real’ than social interactions in real life (IRL), but using social media *during* IRL interactions does impede these encounters. Jurgenson (2013) has further argued that IRL-fetishists’ suggestions to unplug and take ‘digital detoxes’ betray a nostalgic longing for authenticity. Adhering to the antiesentialist tenets of postphenomenology and rejecting the addiction metaphor, however, I do not advocate such purification strategies: Technologies do not ‘alienate’ us from some authentic, normal, or natural state of being (Rosenberger & Verbeek, 2015). Technological mediation *is* the essence of humanity (Ihde, 1990), and we can probably also adapt to an existence in which we concentrate in short bursts and turn to technologies if a topic does not immediately catch our interest. The pragmatic question is not whether such an existence is authentic or natural, but whether it is desirable, something to be sought after. The take-home message of this dissertation, however, is that it is not: *Digital distraction impairs interactions in ways that people would prefer it not to.* Being habitually drawn-towards and perceptually pulled-into technologically mediated space is not always voluntary or consciously controlled, and this kind of absorption may have hurtful consequences for co-present others. Perhaps this understanding does imply a hint of IRL-fetishism, but it springs from students’ phenomenological descriptions, so glibly dismissing it as moralizing handwringing about Kids These Days (i.e., cultural-pessimism) seems reductive and unhelpful.

Now here comes the \$20,000 question: How can we ameliorate digital distraction? Well, during my time in the field, I did see teachers implementing a so-called open/closed laptop policy with some success. Apart from passing on such nifty tricks of the trade, however, I cannot offer any instructions, guidelines, or solutions to the problem. This may sound like a curious ducking of responsibility on my behalf (after all, I did spend four years studying the phenomenon), but it is in fact a modest ambition to stay true to the interpretive nature of this dissertation: I have approached the distinctly 21<sup>st</sup> century phenomenon of digital distraction with an aim to describe and *understand* it, not with an ambition to *solve* it. I leave questions as to which strategies are helpful in the fight against digital distraction open for future research. Ultimately, I concur with Vallor (2016), who argues that any satisfactory solutions “will have to involve *collective* cultural agreements to seek healthier digital norms or social rituals, which will be specific to particular contexts but globally concerned with promoting the cultivation of technomoral self-control” (p. 169). Obviously, I hope this dissertation becomes part of that discussion. As already mentioned, however, how we understand something

does affect our relation to it, so although my findings cannot tell us what to do, perhaps they can tell us what *not* to do: Seeing that students often resist distraction by closing their laptops and even seem to appreciate when their teachers sometimes make this decision for them, perhaps we should not combat distraction with gimmicky solutions like tech breaks, but rather help students cultivate technohabits that allow them to focus, concentrate, and resist distraction (specifically, the habitual kind that they already try to resist). This concern squares with the European Commission's recent *Onlife Manifesto* (2015), which states that societies should strive to protect, cherish, and nurture human beings' attentional capabilities in these hyperconnected times. A crucial part of such ICT literacy is teaching our students to develop a critical attitude towards the use of digital technologies: "The 'digital natives' that populate today's classrooms shouldn't solely learn what they can do with ICT, but also come and see the limitations and dangers ICT involves. It is precisely in this fundamental and critical sense that ICT literacy should be an indispensable precondition for the art of living well" (Vlieghe, 2015:n.p.).

In the end, the purpose of this dissertation has been to provide exactly that: A critical attitude towards the use of digital technologies that counterbalances the currently reigning positive assessment of these devices (i.e., techno-optimism). I have emphasized the ambivalent nature of using digital devices, which, in addition to a lot of perks and benefits, entails a significant element of distraction. As such, this dissertation has provided at least two important insights about educational technology: Not only should we place far less faith and money in the idea of digital technology as a future educational panacea; it is also about time that we start discussing the downsides and drawbacks of our current use of such technology. Although this dissertation can (and should) be read as preaching technological caution and moderation, however, it should not be read as a defeatist *rejection* of educational technology as inherently bad. On the contrary; by shedding light on one of the darker sides of current technology use, I hope to have cleared the way for critical awareness, shared reflexivity, and practical wisdom regarding our *continued* use of these technologies. On that note, allow me to close this dissertation with my favorite quote by Foucault (1997), which perfectly encapsulates the importance of staying critical and vigilant: "My point is not that everything is bad, but that everything is dangerous, which is not exactly the same as bad. If everything is dangerous, then we always have something to do. So my position leads not to apathy but to a hyper- and pessimistic activism" (p. 256).

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