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Unveiling Educational Potentials: On Post-Critical Affirmation, Non-Formal Practices and Online Technologies

Odhalování Vzdělávacích Potenciálů: O Postkritickém Potvrzení, Neformálních Praktikách a Online Technologiích

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Declaration of Originality

I declare that I developed the thesis *Unveiling Educational Potentials: On Post-Critical Affirmation, Non-Formal Practices and Online Technologies* under academic supervision and worked independently using the works of the sources and literature here acknowledged. I also declare that this work has not been published in this form under a different or similar title and has not been submitted for a degree at any other institution.

Prague, 27.05.2024

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Luiz do Valle Miranda

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ABSTRACT

This dissertation examines the educational potentiality of online technologies and proposes theoretical and methodological pathways for an affirmative engagement with technology in education. An overview of the current discourse on online education shows the dominance of a replicative logic — i.e., the replication of practices and imaginaries originally from onsite education — that overshadows genuinely educational potentialities of online technologies. Drawing on a post-critical perspective, inspired by the works of Masschelein and Simons, and Vlieghe and Zamojski, the dissertation explores online education starting from the affirmation of technical artifacts and systems as constitutive elements of educational temporalities and spatialities. A critical analysis of Stiegler's philosophy of technology further elucidates the constitutive role of technology in education. Disclosing such potential ontological underpinnings of online education starts from approaching certain (ontic) practices involving online technologies. Drawing on Husserl and Lagerkvist, this dissertation takes non-formal online educational practices as an alternative whose study might show the sought-after educational potentiality. Vlieghe and Zamojski's thing-centered pedagogy and van Manen's and Friesen's study of phenomenological descriptions is a theoretical and methodological scaffolding for identification, presentation and analyses of non-formal practices. Inspired by both Heidegger's and Latour's discussion of the thing, I argue that an educational potentiality of online technologies is letting the multitude of aspects that make up a thing shape the spatial and temporal relations of the involvements of a person with these technologies. By getting entangled with this multitude of aspects, the involved person is able to discover different aspects of the world, develop a relation with them, and finally care about (these aspects of) the world. The approach here reported can inspire the disclosure of educational potentialities not only of online technologies but also of other technological systems.

KEYWORDS

Online Education, Online Technologies, Post-critical, Phenomenological Descriptions, Educational Potentiality

ABSTRAKT

Tato disertační práce zkoumá vzdělávací potenciál online technologií a navrhuje teoretické a metodologické cesty pro afirmativní zapojení technologie ve vzdělávání. Přehled současného diskurzu o online vzdělávání ukazuje převahu replikativní logiky - tedy replikaci praktik a představ původně z on-site vzdělávání - která přehlíží skutečné vzdělávací potenciály online technologií. Na základě post-kritické perspektivy, inspirované pracemi Masscheleina a Simonsa, a Vliegheho a Zamojskiho, disertace zkoumá online vzdělávání začínající od potvrzení technických artefaktů a systémů jako konstitutivních prvků vzdělávacích temporalit a prostorovostí. Kritická analýza Stieglerovy filozofie technologie dále osvětluje konstitutivní roli technologie ve vzdělávání. Odkrytí takových potenciálních ontologických podkladů online vzdělávání začíná přístupem k určitým (ontickým) praktikám využívajícím online technologie. Vycházející z Husserla a Lagerkvista, tato disertační práce bere neformální online vzdělávací praktiky jako alternativu, jejichž studium by mohlo ukázat hledaný vzdělávací potenciál. Thing-centered pedagogy Vliegheho a Zamojskiho, spolu s van Manenovou a Friesenovou studií fenomenologických popisů jsou brány jako teoretická a metodologická opora pro identifikaci, prezentaci a analýzu neformálních praktik. Inspirován jak Heideggerovou, tak i Latourovou diskuzí o věci, argumentuji, že vzdělávací potenciál online technologií spočívá v tom, že umožňuje množství aspektů, které tvoří věc, formovat prostorové a časové vztahy zapojení osoby s těmito technologiemi. Zapojením se s tímto množstvím aspektů je osoba schopna objevovat různé aspekty světa, vybudovat s nimi vztah a nakonec se starat o (tyto aspekty) světa. Přístup zde popsaný může inspirovat odhalování vzdělávacích potenciálů nejen online technologií, ale také dalších technologických systémů.

KLÍČOVÁ SLOVA

Online Vzdělávání, Online Technologie, Postkritické, Fenomenologické Popisy, Vzdělávací Potenciál

Table of Content

Introduction

This dissertation is a deliberation on the educational consequences of a particular technological change. Such deliberation provides theoretical and methodological support for an educational affirmation of technology. Developing such a discourse opens up a range of possibilities for exploring the educational potentiality of currently available technologies, such as online technologies. Furthermore, understanding the conjunction of technology and education is a preparation for the involvement in education of technological systems still in their infancy, such as generative artificial intelligence, or those that are beyond the current landscape.

Regardless of the reason — e.g. cost, comfort or flexibility — there is an increasing interest in distance education. This distance is currently bridged by online digital technologies[1], i.e., devices and services (including computers, web browsers, e-mail, internet service providers, and so forth) that allow users to access information and communication over geographically diverse locations. Education of participants in potentially diverse locations with time and space mediated by the above-mentioned online technologies is what I refer to with the term online education.

The major motivation for the investigation reported here was the adaptation of the formal educational process to the sudden necessity of distance education given the Covid-19 pandemic. A remarkable trend of formal education during the Covid pandemic was the urgent transformation of onsite realities to a technologically different situation (Lockee, 2021; Manokore & Kuntz, 2022). This transformation was followed by an attempt to replicate the online modality methods, behaviors, and processes that were part of the onsite educational experience (Turnbull, Chugh & Luck, 2021). These trends make up what I want to refer to and show below as the double replication of online education. By that, I mean the replication of educational arrangements and the replication of an educational imaginary.

The educational transformations following the COVID-19 pandemic brought to the fore the reflection on the presence of technology in educational processes. Unfortunately, following the dominant discourse, an affirmation of online technologies in education depends on the capacity

[1] Hereon the terms “online technology” and “digital technology” are treated interchangeably.

of such technologies to replicate predefined educational arrangements and imaginaries, as well as to effectively achieve predefined benchmarks of knowledge, skills, and competence transfer.

However, this way of thinking is not a necessity. There are other ways to theorize the link between education and technology, and especially online technology. The question I explore in this thesis is, therefore: how to go beyond a trend in online education of merely attempting to replicate onsite education by conceiving of online educational practices as truly transformative? My response to this question is an investigation into forms and practices related to using online technologies in a genuine educational way, i.e., a way that opens the world for a human being, introducing them to a particular domain of what exists, exposing them to that part of the world, establishing a relation with it, and in such a way — potentially — also thoroughly transforming the relation of this human being to the world.

In the following chapters, I explore various ways of conceptualizing the relationship between education and technology. The ways of conceiving such a relation appear to be intrinsically connected to current educational practices involving available technological artifacts. Given the ubiquity of a replicative rationality in institutionalized online education, I present the possibility of studying non-formal online practices as an alternative way of disclosing educational potentialities of specific artifacts and systems, potentialities worth affirmation in the process of introducing new generations to the world. Such an exploration of online technologies can be helpful not only in designing formal online education but can also provide directives for educationally responding to the emergence of new technological systems.

The first chapter contains a presentation of what I call the double replication of online education, i.e., the current tendency of online education to replicate educational practices and an educational imaginary with origins on onsite education, without regards for the intricacies of online technologies. This presentation contains excerpts of the documentation of the platforms Zoom, MsTeams, and Moodle. The exposition is complemented by passages from academic publications and statements extracted from European Union's projects related to online education. The chapter ends with a brief exposition of critical concepts to understand the current state of the internet (and thus online educational platforms), including surveillance capitalism, filter bubbles, and attention economy.

The second chapter explores different perspectives on education as a technologized phenomenon. First, I explore Andrew Feenberg's (2002) examination of different theories of technology, including an exposition of Max Horkheimer and Theodor Adorno's (2002 [1944]) ideas on the dialectics of enlightenment as a foundation for critical theories. Second, I present Piotr Zamojski's (2015) exercise in thought addressing three types of philosophically engaging in education — the instrumental, the critical, and the post-critical — and analyze how they relate to the above-mentioned theories of technology. Third, I examine more closely the affirmative dimension of the post-critical approach to education focusing on discourse involving technology, such as the works of Jan Masschelein and Maarten Simons (2013) and Joris Vlieghe (2015, 2022), and their reference to Bernard Stiegler's (1998) philosophy of technology.

In the third chapter, I investigate Stiegler's writings on technology (1998, 2011, 2013) to spell out his main theses on technology and on education. The starting point is Stiegler's notion of the relation between the "who" of the human and the "what" of the technologies as what inaugurates temporality. Furthermore, I continue a reading of Stiegler focusing on his writings on education, and on digital technologies as *pharmaka*. Finally, I confront the post-critical perspective with Stiegler's reference to the necessity of a critique of the contemporary technological landscape.

In the fourth chapter, through a conjunction of Stiegler's philosophy and some tenets of post-critical pedagogy, I draw attention to the possibilities offered by a study of non-formal online educational practices. Firstly, Stiegler's perspective on the connection between online "amateur practice" and educational institutions is revisited. Secondly, Hannah Arendt's notions of adult responsibility and the end of education are compared and contrasted with Stiegler's ideas concerning intergenerational transmission. Thirdly, I reconstruct Edmund Husserl's and Amanda Lagerkvist's views, interpreting them in the direction of studying non-formal practices and their applicability to the realm of non-formal online education. Finally, explicit consideration is given to some conditions necessary for the emergence of such educational practices.

In the fifth chapter, I argue for and carry out phenomenological descriptions and analyses of cases of non-formal online educational practices. First, I examine thing-centered pedagogy as representative of a post-critical philosophy of education (Vlieghe & Zamojski, 2019). Second, I present Max van Manen's (1997) and Norm Friesen's (2011) methods of phenomenological descriptions in the form of anecdotes. Third, following these guidelines, I present three cases of

non-formal online educational practices and analyze them from a thing-centered perspective. Finally, drawing from Masschelein and Simons (2013), I examine the spatial and temporal conditions put into place by online technologies in such educational practices. At last, I present a conclusion for the thesis by summarizing the arguments and proposing some paths for future research.

1. The Double Replication and the 21st Century Internet

Educational institutions are consequently turning to online education. Since the outbreak of the Covid-19 pandemic, there has been an expanded awareness of the possibilities afforded by online technologies in educational settings. However, as mentioned above, the adaptation of education to online technologies was a sudden process that attempted to provide students with at least some kind of educational opportunity while teachers and students could not gather in the same room. The online encounters often attempted to resemble face-to-face instruction, though mediated by online technologies. With the winding down of the pandemic, there is a certain crystallization of the image of online education, identifying it with the platforms used at the time and the ways they replicate face-to-face arrangements. Even those who recognize the unsustainability of this replication, such as Turnbull, Chugh, and Luck (2021), still envisage the future of online education on the basis of onsite educational concepts and practices.

Alongside the duplication of educational settings, there arose a question regarding the comparative effectiveness of online education versus traditional in-person methods. Consequently, online education sustained the instrumentalized mindset already present in face-to-face education (Biesta, 2010). In the following, I show how this instrumentalization has been central to research on online education, as a key inquiry revolves around enhancing educational effectiveness through the utilization of online technologies.

Despite this (partially enforced) turn of formal education to online technology, the current rationales shaping these practices conceal significant potentialities peculiar to the online educational modality. First, the replication of face-to-face education in the online environment overlooks the possibility of novel educational practices being opened up by digital technologies. Second, the instrumental interpretation of online education withholds these practices from the possibility of constituting unique pedagogical operations that are educational *per se*. Since the goal of this thesis is to articulate educational potentialities inherently opened up by online technologies, the first step is to make explicit the current replicative status of online education, and continuously oppose it with varying ways that online technologies can be educational. To better understand such a replicative logic, I divide it into two phenomena: the replication of educational arrangements and the replication of hegemonic educational imaginary. I complement

this exposition with a presentation of the concepts of surveillance capitalism, filter bubbles and attention economy to understand the consequences of the ubiquity of online technologies and its insertion in the logic of maximizing profit.

1.1. The First Replication: Educational Arrangements

At the bedrock of the first replication is the use of platforms such as Zoom, MsTeams, and Moodle. Examples of the replicative discourse can be found on the website and official documentation of these platforms. By examining the ways that these platforms present themselves, it is possible to get closer to the ends that they attempt to achieve, and to a certain extent have already successfully achieved.

One way to interpret the desired use of both Zoom and MsTeams, according to their official documentation, is as an attempt to use online technologies to simulate presence in a classroom. For instance, on the MsTeams website, one can read about the platform: "Engage Learners! Organize classrooms and assignments, collaborate, and share files, and access class materials in one central location"[2]. While on Zoom's official blog one can read: "Zoom has helped schools and teachers around the world quickly shift to remote virtual learning, and we want all of them to have the same productive — and secure — learning environment as their traditional classroom settings"[3].

Apart from the mere classroom presence, the experience with the use of the whiteboard is being simulated. On the website of Microsoft's application, one can read: "A digital whiteboard can help. It's a virtual canvas where your team can share notes, sketches, files, and photos, just like a physical whiteboard — except it's accessible anywhere with internet access"[4]. A similar functionality is offered by Zoom.

It is visible from such official documents that these online platforms were designed to replicate elements of onsite education such as the classroom and the whiteboard. This replication has the goal of making the online educational process as close as possible to what happens when all the participants are in the same location. This is emphasized by Zoom with the wish to have the

[2] https://www.microsoft.com/en-gb/education/products/teams (Accessed May 22, 2023)
[3] https://blog.zoom.us/best-practices-for-securing-your-virtual-classroom/ (Accessed May 22, 2023)
[4]https://www.microsoft.com/en-us/microsoft-365/business-insights-ideas/resources/make-meetings-more-engaging-with-digital-whiteboards (Accessed May 22, 2023)

online learning environment being the same as their traditional classroom setting, or by Microsoft attempting to equate the digital whiteboard with the physical whiteboard.

Moodle, meanwhile, as a learning management system attempts the replication of documentation, administration, reporting, tracking, and delivery of courses. One of the self-describing official documents reads

> A course in Moodle is an area where a teacher will add resources and activities for their students to complete. It might be a simple page with downloadable documents or it might be a complex set of tasks where learning progresses through interaction.[5]

This replication is based on different activities that are counterparts of onsite educational practices. An activity consists of something that a student will do and that interacts with other participants, such as other students or the teacher. "There are 14 different types of activities in the standard Moodle that can be found when the editing is turned on and the link 'Add an activity or resource' is clicked"[6]. Some examples of these activities are:

> Assignments: Enable teachers to grade and give comments on uploaded files and assignments created on and offline. [...]. Choice: A teacher asks a question and specifies a choice of multiple responses. Lesson: For delivering content in flexible ways. [...] Quiz: Allows the teacher to design and set quiz tests, which may be automatically marked and feedback and/or to correct answers shown [...] Survey: For gathering data from students to help teachers learn about their class and reflect on their own teaching[7].

On the one hand, unlike Zoom and Teams, Moodle is not aiming at a replication merely of the classroom, but a general replication of learning procedures connected to onsite educational institutions, such as assignments, quizzes, lessons, and surveys. On the other hand, similarly to the other platforms, the replication present in Moodle does not take into consideration the difference of the settings from onsite to online education.

[5] https://docs.moodle.org/401/en/Managing_a_Moodle_course (Accessed May 23, 2023)
[6] https://docs.moodle.org/310/en/Activities (Accessed May 23, 2023)
[7] https://docs.moodle.org/310/en/Activities (Accessed May 23, 2023)

1.2. The Second Replication: Instrumentalized Educational Imaginary

Apart from the first replication, I want to highlight the trend of developing increasingly effective online educational strategies, materials and artifacts. The search for efficiency and optimization in education perpetuates an instrumentalized perspective that commodifies education, reducing it to information exchange. Here, one party acts as a transmitter of predetermined information, knowledge, skills, and competencies, while the other passively receives them, aiming to enhance their socioeconomic status and potentially address societal issues while fostering economic growth. This instrumentalized educational imaginary is, however, problematic.

Paulo Freire's criticizes this instrumentalization by using the concept of "banking education," i.e., the treatment of students as passive receptacles of information. (Freire, 2005 [1968]). This "banking" model, according to Freire, reduces education to a one-way process where teachers deposit knowledge into the students disregarding the possibility of critical engagement or educational transformation.

Furthermore, Henry Giroux has shed light on the intricate entwinement of an instrumentalized model of education — what he calls the transmission model — with neoliberal ideologies. Giroux's 2004 work *The Terror of Neoliberalism: Authoritarianism and the Eclipse of Democracy* illuminates how neoliberalism permeates educational systems, infusing them with market-driven values and individualistic pursuits. In Giroux's analysis, neoliberalism prioritizes competition, standardization, and quantifiable outcomes within educational frameworks, emphasizing efficiency and productivity over critical thinking, creativity, and civic engagement. This neoliberal agenda, as Giroux argues, not only transforms education into a commodity governed by market forces but also undermines its role as a democratic institution.

Additionally, Gert Biesta has contributed to the discourse on education also by offering insights into its transformation within the context of neoliberalism. Biesta's concept of "learnification" (Biesta, 2010) elucidates how education is increasingly framed as a process of individualized learning, aligning with neoliberal principles of self-improvement and personal responsibility. In his work, Biesta argues that learnification reduces education to the acquisition of skills and competencies, neglecting its broader purposes related to fostering democratic citizenship and ethical development.

In the following, I want to highlight the presence of such understanding of education in online education, thus making up the second dimension of the double replication: the replication of an instrumentalized educational imaginary. It is present in two areas: academic research and educational policies. An example of the first can be found in the preface of the 2021 "Research Anthology on Developing Effective Online Learning Courses," where one reads:

> Online courses strive to be just as effective as the traditional classroom setting, utilizing new tools, techniques, and technological components to have online learning function in a way that maintains a high level of student achievement. […] Examining current research, case studies, and applications can lead to a greater understanding of the best practices and successful methods for developing and implementing effective online learning courses (Information Resources Management Association, 2021, p. xxiii).

The editorial preface for the 2021/2022 special issues on education, IT, and the COVID-19 pandemic of the *Education and information technologies Journal* further illustrates the vocabulary of efficiency in discourses on online education:

> The studies were designed to better understand the difficulties in remote learning, to investigate more effective delivery of education contents, and to find ways to improve remote-learning outcomes. […] It is an understanding of how education at all levels can be effectively delivered virtually, given geographical differences, the diversity of disciplinary constraints, and the variations in technology use (Abdel-Hameed, Tomczyk & Hu, 2021, p. 6563).

The focal point of both sets of exemplary studies is the efficient delivery of educational content. Educational research, as exemplified by these two prefaces, should be concerned with optimizing this process to achieve better outcomes. Making online education possible, thus, is not about searching for educationally meaningful ways of interacting within the environment made possible by online technologies, but rather finding ways to use these technologies to (more) effectively deliver competencies and skills that students need to thrive in a competitive society.

Furthermore, when turning to the angle of educational policy, explicit reference to student achievement and the transfer of competencies and skills is dominant. An important manifestation of such a logic is present in the European Union's "Digital Education Action Plan":

> Digital competences and skills are essential to give every individual an equal chance to thrive in life, find employment and to be an engaged citizen. Having digital competences and skills and ensuring the availability of digital infrastructure and equipment have become all the more relevant since the outbreak of the COVID-19 pandemic. Virtually all future learning and jobs will require some level of digital competences and skills. Constant technological change requires the lifelong development of competences and skills by all learners for Europe to remain economically competitive and to participate in social life.[8]

The replication of an instrumentalized understanding of education to the online modality refers not only to students but also to educators, as exemplified by the *DigCompEdu framework*:

> The European Framework for the Digital Competence of Educators (DigCompEdu) is a scientifically sound framework describing what it means for educators to be digitally competent. It provides a general reference frame to support the development of educator-specific digital competences in Europe.[9]

Both the *Digital Education Action Plan* and the *DigCompEdu framework* make explicit the instrumentalization present in the contemporary discourse on online education. According to this interpretation frame, online education should be an efficient means for the transmission of competencies and skills, more specifically: digital competencies that are connected to thriving in life, finding employment, and being an engaged citizen. Online education should not only be a means for students to acquire such skills but also for educators to develop the competencies of their students that account for a successful socio-economic future.

In sum, the double replication (the replication of face-to-face educational practices and educational imaginary) appears to dominate the discourse on online education. While the first dimension of this replication prescribes practices and arrangements emerging from a different technological setting to be replicated in the online modality, the second dimension of the double replication complements the first by disregarding any intricacy of the very online technologies that are part of the process, striving merely towards the effective achievement of planned results.

[8] https://education.ec.europa.eu/lv/focus-topics/digital-education/about (Accessed May 30, 2023)
[9] https://joint-research-centre.ec.europa.eu/digcompedu_en (Accessed May 30, 2023)

The replicative approach to online education evades the question of how to develop educational arrangements starting from online technologies as enablers of study practices. The focus is rather on developing arrangements similar to onsite education, culminating in the evaluation and comparison of the measurable results in the framework of best practices. In this movement, the educational essence of the replicated practices can be lost, leaving online education to be a set of activities empty of educational meaning, becoming ritual imitations of a mere means for the transfer of knowledge and development of competencies and skills.

1.3. The Internet in the 21st Century

In 1996, John Perry Barlow wrote the *Declaration of the Independence of Cyberspace* which captured the excitement about the possibilities offered by the internet and the space that it creates, the so-called "cyberspace". Barlow saw the internet as an uncharted territory where individuals could explore and create without the constraints of physical boundaries or governmental structures. This openness of cyberspace made it seem to be a place for continued growth and development where creativity, collaboration, and individual expression could flourish.

With the popularization of the internet and the possibility of accessing it from multiple devices — including personal, hand devices, such as smartphones, which are within arm's reach — private corporations leveraged its retail, services, and advertising potential. The generation of profit from online technologies grew to the point that in 2023, 5 out of the 10 companies with the highest market capitalization are companies related to online technologies — those being Apple, Microsoft, Alphabet (Google), Amazon, and Meta[10].

The transformation of cyberspace from a place that could potentially be conceived as a new frontier to one framed by the logic of the market was achieved by the creation and dissemination of algorithms to maximize the time spent while connected to a given platform, thus increasing the exposure to advertisement and the chances of actual purchases of advertised products. The internet increasingly becomes a medium through which we experience our relationship with the world, other people and ourselves, as there is little to no daily activity today that is not liked to online technologies. Various reports show that people worldwide spend around 7 hours using the internet every day[11]. Given the ubiquity of online experiences, it is possible to presume that the

[10] According to https://companiesmarketcap.com/ (Accessed January 10, 2024)

[11] https://statista.com/statistics/1380282/daily-time-spent-online-global/ and https://datareportal.com/reports/digital-2023-deep-dive-time-spent-online (Accessed December 5, 2023)

influence of these algorithms permeates not only the time spent online but also the very experience of human life (Stalder, 2016).

A significant reason for spending time on the internet is finding people all around the world who share the same interests, with whom one can interact and share content. By understanding users' search for content that fits their preferences, companies were able to build upon such an inclination to increase time spent on their platforms. The basis for this movement is the development of recommendation algorithms, i.e., programs that can capture and recognize previous user activity and thus attempt to predict what content fits the user's preference. With the help of such algorithms, Google can personalize search results and Facebook can show different updates, even to those that share the same friend list (Bozdag & van den Hove, 2015).

In the realm of cyberspace, where information is sculpted based on a user's past engagements — allowing for prioritization, filtration, and concealment of content — users find themselves confined within so-called "filter bubbles". These bubbles obscure not only what is omitted but also how algorithms strategically present content to provoke engagement, often by displaying outrage-inducing opposing views. This dynamic prioritizes binary, polarizing, caricatural content over nuanced perspectives. Consequently, users are shielded from accurate representation of the demands of other groups (Bozdag & van den Hove, 2015).

The personalization of the internet experience is made possible by the collection of private information by global tech companies and government bodies. Shoshana Zuboff (2018) cites Google's practices of scanning private correspondence in order to target users with personalized adverts and Facebook allowing third-party companies to collect non-authorized personal information from millions of profiles. In alignment with the concerns raised by Zuboff regarding the collection of private information by tech giants, Michal Kosinski's work on social media analytics provides further insight into the mechanisms underlying personalized internet experiences. Kosinski's research, notably on psychometric profiling and its applications, sheds light on how companies leverage user data to tailor online content and advertisements, highlighting the potential risks associated with the widespread collection and analysis of private data by both tech companies and third parties (Kosinski, Stillwell & Graepel, 2013). One example of the consequences of such data practices, is Cambridge Analytica's misuse of Facebook data. In 2018 it was revealed that Cambridge Analytica — a political consulting firm

— illicitly accessed the personal data of millions of Facebook users, including their psychological profiles, aiming to influence voter behavior in various political campaigns, including the 2016 United States' presidential election and the Brexit referendum in the United Kingdom.

A more recent example of a tech giant's privacy scandal involves Amazon, which faces accusations of violating children's online privacy laws. The company has come under scrutiny for its continuous collection and retention of children's location and voice data for commercial purposes. This practice has raised significant concerns among privacy advocates and regulatory bodies, as it potentially exposes children to risks related to their personal information being used without proper consent or safeguards. Additionally, revelations from the *Facebook File*s published by The Wall Street Journal have further fueled concerns about data privacy. These articles, which emerged in pair with Francis Haugen's revelations, shed light on Facebook's internal knowledge and decision-making processes regarding the spread of harmful content and the negative impact of its algorithms on mental health[12]. Furthermore, regarding government surveillance, Edward Snowden's leaks shed light on the close relationship between state security agencies and tech companies. Snowden's revelations particularly exposed the NSA's global collection of data on individuals, conducted without their consent or awareness, all purportedly under the pretext of American national security.

Two intertwined concepts, surveillance capitalism and attention economy, are essential for comprehending the implications of the set of online practices at hand. Surveillance capitalism, as elucidated by Zuboff (2018), encapsulates the unsettling transformation of the digital landscape into a commercial endeavor, leveraging the predictive power of data aggregation and analysis to provide businesses with insights and sway over user behavior, thereby shaping their online interactions and consumption habits. Surveillance capitalism draws on the predictive capabilities of data collection and processing concerning human behavior so that tech companies can offer businesses both knowledge and influence on user consumption leading to the success of a given business by shaping their online experience. Thus, what's capitalized upon is not merely data but the intricate tapestry of our lives—our whereabouts, needs, aspirations, beliefs, opinions, and inclinations—all meticulously woven into the data fabric. In Zuboff's (2018) words, this concept

[12] https://www.wsj.com/articles/facebook-whistleblower-frances-haugen-says-she-wants-to-fix-the-company-not-harm-it-11633304122 (Accessed January 11, 2024)

is used to make sense of the "darkening of the digital dream and its rapid mutation into a voracious and utterly novel commercial project" (p. 14).

While analyses of surveillance capitalism focus on online platforms as suppliers of goods and services, discussing the attention economy is shifting the focus to understanding the demand, i.e., the attention of users who spend time on those platforms. In this context, attention is monetized through various means, primarily advertising. Platforms and businesses leverage users' attention to sell ad space or promote products/services. This circumstance makes time a form of currency. The longer a user lingers in a platform, the more valuable the latter becomes. Platforms are designed strategically to capture and retain attention. Such design involves using persuasive techniques, optimizing content for shareability, and employing algorithms to curate personalized content to keep users engaged (Goldhaber, 1997).

Moreover, surveillance capitalism and attention economy operate on a feedback loop, wherein the data generated by user interactions is used to refine and enhance predictive algorithms further. As we carry digital devices with us everywhere, our lives are increasingly intertwined with online platforms, providing an endless stream of data that fuels this relentless pursuit of attention and profit. This continuous cycle of data collection, analysis, and refinement perpetuates a state of constant surveillance, wherein our every move online is scrutinized and exploited for profit and our attention becomes a valuable currency, eagerly sought after by advertisers and content creators alike.

Another significant phenomenon emergent in the digital landscape is the relation between new forms of tribalism and the proliferation of conspiracy theories. Joseph E. Uscinski and Joseph M. Parent's (2014) *American Conspiracy Theories* provides insight into the relation between online technologies and tribalism, by referring to social media platforms' potential spread conspiratorial content with unprecedented speed and reach, often without the scrutiny or fact-checking mechanisms present in traditional media channels. This virality can lead to the rapid dissemination and normalization of conspiracy narratives. This is coupled with the filter bubbles, as users are exposed primarily to information that aligns with their existing beliefs and preferences, while dissenting viewpoints are filtered out, reinforcing individuals' existing biases. This phenomenon is exacerbated by the erosion of trust in traditional institutions and authorities.

This brief exposition of the contemporary implications of being online sheds light on a broader context in which online platforms, particularly those implicated in the phenomenon of double replication, operate. It underscores the significant challenges inherent in crafting effective educational practices within the economic and algorithmic frameworks that define online existence. The idealistic vision once espoused by Barlow, portraying the internet as a liberating force, has been co-opted by tech corporations, which now wield considerable influence over the online sphere. Through profit-seeking practices, these corporations perpetuate and reinforce the presence of the double replication in online education, wherein educational arrangements and imaginaries originally from face-to-face education are replicated by means of online technologies. With this replication, tech corporations sell a resemblance of something educational without delving into the inherent pedagogical potentials offered by online technologies.

I want to show that online educational practices are indeed possible. In the following chapter, the instrumental relationship between education and technology is scrutinized and alternative ways of conceptualizing the relation between these concepts are presented. Having this goal, I engage with post-critical educational philosophy.

2. Towards A Post-critical Relation Between Technology and Education

Textbooks, blackboards, whiteboards, school buildings, school bells, walls, classrooms, student desks, wax tablets, android tablets, pencils, stylus, quill, papyrus, notebooks, laptops. All these technologies have been (at least once) important for the process of introducing new generations to the already existing world, i.e., to a totality of things and meaning that make up the historical conditions of human existence. The process to which — inspired by Arendt (1961) — I preliminary refer to with the term education.

Intending to avoid precocious generalizations, I start with the following premise: education is a technologized process. Already there appears a set of unavoidable questions such as: What is then the role of technology? Are technical artifacts used merely to optimize the educational process? Can the educational process at all be optimized? Can there be education without technology? Can we call processes in different technological landscapes with the same concept of education? But the question I find fundamental reads: "what does it mean for education to be a technologized process?". The answer to this question depends on the set of premises and commitments that need to be laid out first.

I would like to departure by distinguishing different types of philosophical engagement with education and the theories of technology that underlie these relations. My starting point is Feenberg's (2002) reconstruction of different sets of theories of technologies: instrumental, substantive, and critical theories. Next, I analyze Zamojski's (2015) distinction between ideal types of philosophical engagement in education. In this thought exercise, Zamojski addresses three types of relations: the instrumental, the critical, and the post-critical. While a discussion of technology is not Zamojski's priority, the few mentions of this concept are enough to link such an analysis to Feenberg's theories of technology.

The affirmative character of the post-critical way of philosophizing education encourages further examination. The insights about the intersection between the discourse on technology and education from a post-critical perspective can be drawn following Masschelein and Simons (2013) and Vlieghe (2015) and the inspiration they take from Stiegler's (1998) philosophy of technology.

2.1. Theories of Technology and Their Relation to Education

Feenberg (2002) scrutinizes three now well-established theories of technology: the instrumental, the substantive, and the critical. Feenberg's presentation starts with a concise description of instrumental theories of technology:

> Instrumental theory offers the most widely accepted view of technology. It is based on the commonsense idea that technologies are "tools" standing ready to serve the purposes of their users. Technology is deemed "neutral," without valuative content of its own [...] Technology, as pure instrumentality, is indifferent to the variety of ends it can be employed to achieve [...] Technology also appears to be indifferent with respect to politics [...] the transfer of technology, on the contrary, seems to be inhibited only by its cost [...] Technology is neutral because it stands essentially under the very same norm of efficiency in any and every context (p. 5-6).

Technology, thus, appears in such a view without any inherent purpose or representing any values. Technology seen here as a set of technical artifacts is supposed to serve subjects to achieve their goals more efficiently. Within such an understanding of technology, philosophy as an intellectual endeavor is supposed to join forces with the natural sciences in the aid of perfecting such artifacts and therefore improve living conditions given a certain understanding of the meaning of a good life. Such an understanding of technology is usually associated with the thought of Francis Bacon (2003 [1620]) and of Auguste Comte (1944 [1903]).

Bacon, often regarded as one of the pioneers of the scientific method, emphasized the pragmatic application of knowledge to improve the human condition. His vision was rooted in the belief that the advancement of science and technology could lead to tangible benefits for society, ranging from alleviating human suffering to enhancing material comfort. Bacon advocated for a systematic and empirical approach to understanding nature, one that prioritized experimentation and observation over speculation. Comte, known for his positivist philosophy, envisioned a society guided by reason and empirical evidence, where social progress was achieved through the systematic analysis of social phenomena. These perspectives underscore the significance of integrating philosophical inquiry with empirical evidence in technological development.

One significant shortcoming of such an instrumentalized understanding of technology and its role in human life is the tendency to prioritize instrumental efficiency over broader ethical and social

considerations. Additionally, the emphasis on empirical evidence and rational analysis may neglect the subjective and value-laden aspects of human experience that can shape the development and impact of technology.

Next, Feenberg (2002) presents what he refers to as substantive theories of technology, a set of theories that oppose the shortcomings of instrumentalism. According to this set of theories, technology is seen as constituting "a new cultural system that restructures the entire social world as an object of control [...] Technology is not simply a means but has become an environment and a way of life" (p. 7). Technological systems are not free of values but rather embody the pursuit of power and domination. "According to substantivism, insofar as we use technology we are committed to a technological way of life" (Feenberg, 2009, p. 11).

Feenberg considers Heidegger's to be one of the most representative substantive theories of technology. Heidegger (1977 [1954]) argues that the essence of modern technology is the prevalence of a particular relation with the world that makes all that exists appear as resources to be stored, and exploited, including rivers, trees, the earth, humans, and time itself. To this essence, he proposes the German term *Gestell* rendered in the English translation as enframing. The essence of technology, therefore, is a way of relating to the totality of that which appears to us. The essence of technology is rendered ontological.

Technology, in this ontological sense, cannot be reduced to concrete technological artifacts, it is not conditioned by existing technologies, nor can it be altered by the development of new artifacts, "yet [it] overdetermines all technological action and conditions all concrete technological invention" (Lemmens, 2021, p. 4). Heidegger writes: "all those things that are so familiar to us and are standard parts of an assembly, such as rods, pistons, and chassis, belong to the technological. The assembly itself, however, together with the aforementioned stock parts, falls within the sphere of technological activity; and this activity always merely responds to the challenge of enframing, but it never comprises enframing itself or brings it about" (Heidegger, 1977, pp. 20–21).

Horkheimer and Adorno (2002) — regardless of their highly critical stance towards Heidegger — also approach technology as an all-encompassing phenomenon. They argue that the appearance of industrial control systems together with the increasing dependence of human life on such systems leads to a significant loss of human subjectivity, autonomy, and a capacity to judge.

Horkheimer and Adorno's criticism of technology as efficient means of control is deeply embedded within their broader framework known as the "Dialectic of Enlightenment." This framework explores the relations between mythical thought and enlightenment rationality, together with the consequences of the latter to human freedom and autonomy. They argue that the Enlightenment's project of mastering and controlling nature, exemplified by Bacon's aim to conquer and rule over nature, ultimately leads to the domination of human beings by the very systems they create.

In their view, the quest for control over nature, initially seen as liberating humans from the forces of superstition and ignorance, ironically results in humans becoming imprisoned by their own creations. They draw parallels to the myth of Odysseus, who, in his pursuit of control and knowledge, orders his men to tie him hardly (i.e. to imprison their master) and to ignore his orders when passing by the Sirens. To know, to control the nature results – therefore – in imprisonment of the self.

Furthermore, Horkheimer and Adorno argue that the process of demythologization, which was supposed to liberate humanity from irrational beliefs, ends up creating new myths. The belief in the infallibility of instrumental reason and technological progress becomes a new form of mythology, obscuring the true nature of human existence and leading to the erosion of individual subjectivity and autonomy.

This critique extends to their analysis of the culture industry, which they see as a manifestation of instrumental reason within the realm of culture and entertainment. The culture industry, through its mass production of standardized cultural products, reinforces conformity and passivity among the masses, further eroding critical thinking and individual autonomy. In this sense, Horkheimer and Adorno view technology not simply as a tool but as a pervasive force that shapes and constrains human life, ultimately leading to a loss of genuine freedom and self-determination.

Drawing on Horkheimer and Adorno as well as on Heidegger, Herbert Marcuse (1968) examines the consequences of technological systems. While he acknowledges the freedom from labor successively made available thanks to the existence of these systems, he warns that this very freedom is subsumed to mechanical processes. The structure of social, political, intellectual, and economic life becomes intrinsically dependent on technologically produced commodities. Technology, as the enabler of such a production, becomes a means of social control. As both the

needs and the satisfaction of those needs become entangled in a technological system, an alternative to such a status quo becomes increasingly unimaginable, technology, thus, becomes ideology (cf. Delanty & Harris, 2021).

In sum, substantive theories of technology emphasize that technology extends beyond mere tools to fulfill human objectives. They view technology as a pervasive system embedded within society, influencing various aspects of human life. Particularly in the traditions of Horkheimer and Adorno, as well as Marcuse, these theories recognize technology's profound impact and advocate for a reevaluation of the social, economic, and political influences shaping its development, deployment, and utilization. This understanding serves as a crucial starting point for reconsidering the broader implications of technological systems.

According to Feenberg (2002) both instrumental and substantive theories of technology, share some characteristics and, consequently, particular shortcomings:

> Despite their differences, instrumental and substantive theories share a "take it or leave it" attitude toward technology. On the one hand, if technology is a mere instrumentality, indifferent to values, then its design is not at issue in political debate, only the range and efficiency of its application. On the other hand, if technology is the vehicle for a culture of domination, then we are condemned either to pursue its advance toward dystopia or to regress to a more primitive way of life. In neither case can we change it: in both theories, technology is destiny. Reason, in its technological form, is beyond human intervention or repair. (p. 8)

Technology, following both theoretical stances, is seen as a given. Within instrumental theories, technology is viewed as tools and techniques aiming at efficiency. Within substantive theories, technologically mediated practices are seen as entangled in a logic of exploitation of resources, leaving a decision of either accepting such a logic or escaping from it in certain areas of human life. Feenberg refers to such a purported limitation of the possibilities for human intervention and agency in shaping technological development and its societal impacts as the bounding of technology Neither of these options allows for recognizing how concrete tools and techniques embody specific modes of relating to the world and meaningfully constituting dimensions of human life, including education.

Feenberg (2002) gives a compelling argument for linking the bounding of technology (as present in substantive theories) with instrumentality:

> Finally, the very project of bounding technology appears suspect. If we choose to leave something untouched by technology, is that not a subtler kind of technical control? Have I not domesticated a wild tree or bush or, indeed, a distant mountain peak visible from my garden, if I plant around it in such a way as to bring out its beauty? (This is a standard technique of Japanese gardening called "borrowed scenery.") If I suddenly need meaning in my overly technologized life, and obtain it by returning to my family's religious traditions, am I not using religion as a kind of supertechnology? If so, how can I believe in it? How can I ever leave the technical sphere if the very act of bounding a reservation instrumentalizes it? (p. 10)

Neither of the two theoretical perspectives takes into consideration the design and development aspect of new technologies. Considering such a limitation, Feenberg proposes an alternative, critical theory of technology:

> We could tame technology by submitting it to a more democratic process of design and development. [...] According to critical theory the values embodied in technology are socially specific and are not adequately represented by such abstractions as efficiency or control. Technology can frame not just one way of life but many different possible ways of life, each of which reflects different choices of design and a different range of technological mediation. (Feenberg, 2019, p. 12-13)

Furthermore, Feenberg claims that

> In critical theory technologies are not seen as tools but as frameworks for ways of life. The choices open to us are situated a higher level than the instrumental level. We cannot agree with the instrumentalist that "Guns don't kill people, people kill people." Supplying people with guns creates a social world quite different from world in which people are disarmed. We can choose which world we wish to live in through legislation either making the possession of guns legal or illegal. But this is not the sort of choice the instrumentalist claims we make when we control technology. This is what you might think of as a meta-choice, a choice at a higher level determining which values are to be embodied in the technical framework of our lives. Critical theory of technology opens up

> the possibility of thinking about such choices and submitting them to more democratic controls. (Feenberg, 2019, p. 13-14)

In essence, Feenberg's project centers on identifying characteristics of technology that align with broader societal values and empower a wider range of individuals beyond the predominant focus on efficiency and domination. Such an investigation can show that a future "radical democratization can thus be rooted in the very nature of technology, with profound consequences for the organization of modern society." (Feenberg, 2002, p. 34). Through the development and promotion of what Feenberg calls critical theory of technology to account for the increasing weight of public actors in technological development, Feenberg attempts at "[o]pening technical development to the influence of a wider range of values [...] requiring broad democratic participation" (Feenberg, 2002, p. 34).

An example of Feenberg's (2002) critical theory of technology concerns online education. In *The Factory or the City Which Model for Online Education?* he evaluates two alternatives for how the Internet can be enmeshed with the educational process. On the one hand, using networked computers in education can be articulated in an automated, narrowly specialized, and tightly controlled process. On the other hand, a model leveraging on the potentiality of the Internet to foster human interaction could "facilitate participation by underserved groups and might raise the cultural level of the population at large" (p. 115).

Echoing his critical theory of technology, Feenberg further argues that it is not something intrinsic to educational technologies that decides which of these paths is to be followed:

> On the contrary, the politics of the educational community interacting with national political trends will steer the future development of the technology [...] it is a question of different civilizational projects with different institutional bases. The traditional conception of education must be preserved not out of uncritical worship of the past but for the sake of the future. I have tried to show here that the educational technology of an advanced society might be shaped by educational dialogue rather than the production-oriented logic of automation. Should a dialogic approach to online education prevail on a large enough scale, it could be a factor making for fundamental social change. (2002, p. 128-130)

In this context, the critical question is not merely assessing different technological solutions to find possibilities of resistance and use such technologies towards social change. Feenberg's point is the necessity of involving people concerned with a certain practice (e.g. the educational community) in the very design and development of technological tools. It is through a widely democratic input in this design and decision-making process that technologies allowing resistance and the realization of a critical educational vision can appear.

In the following section, I examine Zamojski's ideal types of relation between philosophy and educational practice. By contrasting these types of relations to Feenberg's theory of technology, it is possible to discern different ways that education can be conceptualized as a technological phenomenon. Furthermore, for each ideal type mentioned by Zamojski, I present the view on online education that emerges from following such a philosophical stance.

2.2. Ideal Types of Philosophically Engaging in Education

2.2.1. The Instrumental Relation

The first type of relation between philosophy and educational practice mentioned by Zamojski is the instrumental relation. Following this ideal type (cf. Weber, 2004 [1904]), philosophical research has the role of formulating recommendations for educational practice. This relation is embedded in a wider project of improving human living conditions through understanding the causal relationships that govern the natural world and being able to use this knowledge in specific applications, either by the construction of artifacts or the design of institutions following a pre-meditated understanding of the good life (cf. Bacon, 2003). Education would then be one of these means to improve society and living conditions.

Technology is a significant term in Zamojski's (2015) articulation of the instrumental relation between philosophy and education:

> To think about educational practice as an application of procedures which are supposed to evoke results assumed beforehand, means to understand education in terms of the technical tooling of 'human material'. Thus, according to instrumental logic, educational subjects are reified and the whole process dehumanizes itself, becoming a purely technical, repetitive procedure for producing the desired effects, derived a priori from a

> philosophical ground. [Thus, educational practice – L.V.M.] will be implicitly framed by the logic of production, its means and outcomes. (p. 134).

An instrumental relation to education is intrinsically related to what Feenberg calls an instrumental theory of technology. This coupling usually leads to a certain variant of the transmission model of education. Within such a mode, the educational process is constituted of predefined goals, e.g., key competencies to be mastered, or a set of facts to be remembered. Educational practitioners are supposed to refer to contemporary theoretical research reporting on best practices involving the newest techniques and technical artifacts to achieve their desired goal (cf. Biesta, 2007) more efficiently. According to the best practices for the given set of competencies to be achieved, the practitioner decides which technologies to apply in her or his involvement with the students. Thereafter, technologies are applied in the processes of classroom information transfer, grading academic assignments, and preparing the presentation of a given subject matter, among others. It is plausible that sometimes the practitioner can reach the decision that no technical artifacts should be used in a certain arrangement, however, the educational process is continuously involved in a technological logic of efficiency.

In sum, from an instrumental perspective, education is a technologized phenomenon because it is optimizable by means of technical artifacts and academic research — the whole point of research is to look for effective means. Such an instrumental perspective is precisely the dominating understanding of online education underlying the double replication.

2.2.2. The Critical Relation

The instrumental perspective of education can be countered by an alternative critical perspective. Zamojski associates the emergence of such a paradigm with the works of Horkheimer and Adorno (2002). As exposed above, Horkheimer and Adorno consider instrumentality to be a worldview of reducing everything, even reason, to the level of pure means to be optimized. Such an instrumental worldview opens a threat of acting efficiently without the ability to morally judge such an action. This makes us prone to taking part in radical evil without noticing it. According to their observation, it is such a worldview that has allowed the totalitarian atrocities of the 20th century. After Auschwitz, the role of philosophy is no more to investigate and promulgate the ground or the ends for different practices but rather to engage in an endless process of criticism, of negation of the current repressive status quo (Adorno, 1973 [1966]). By developing a critical

philosophical discourse about education, one can attempt to escape the loss of the capacity to judge, a loss of autonomy (Adorno, 1998 [1966]).

From a critical perspective, the process of education is seen as originally reproductive of social inequalities (Bourdieu & Passeron, 1977 [1970]). The educational system is criticized for more than just its academic content. It is considered to subtly promote certain societal values (often associated with the middle class), which were not explicitly taught but ingrained through its structure and practices. This system is accused of favoring a dominant European and male-centric perspective, which overshadows other cultural viewpoints. Additionally, it is said to encourage passivity among students by emphasizing obedience to authoritarian figures like teachers and focusing excessively on standardized tests rather than fostering critical thinking and independent learning (cf. Freire, 2005; Giroux, 1983).

The critical model of education seeks to break away from the flaws of the old system. It's viewed as a means to create an ideal society and promote emancipation. This new approach politicizes education, seeing it as a powerful tool for societal change. It involves critiquing the existing education system from an external perspective, a "concrete utopia" (Giroux 1983, p. 242) to inspire educational actions. Such a utopia is derived from philosophical considerations of an ideal vision of society and used to guide it towards a more enlightened direction. In this view, education isn't just about information transmission but is seen as a means to shape a better, more equitable society. In other words, education should follow a vision that celebrates what could be, a new set of alternative, richer human possibilities (Giroux, 1983). Such goals would be achieved by teaching "students to think critically, take risks, and resist dominant forms of oppression" (Giroux, 2003, p. 7).

One example of such a critical theory of education is Freire's (2005) *Pedagogy of the oppressed*. His pedagogical project focused on teaching literacy as more than just learning to read and write. For Freire, literacy wasn't solely about acquiring basic skills, rather it was a matter of empowerment of the oppressed who were enabled by a critical pedagogue to use the written word as a tool for achieving social justice. In his view, the classroom activities and teaching methods were justified by their potential to empower literate individuals, enabling them to have a political voice in society. Essentially, the goal was not just to teach reading and writing but to use these

skills as a means for marginalized individuals to advocate for their rights and participate in shaping the socio-political landscape.

Critical education necessitates continuous reflection by the educational practitioner aiming at escaping the technological work of a mindless implementation connected to the reproduction of an unjust status quo. Such a reflection is made possible by the "intellectual tools which come from the outside, from the theoretical domain (or philosophy)" (Zamojski, 2015, p. 138). In this process of reflection, the practitioner *après coup* utilizes these intellectual tools to identify the "sins of the practice" (p. 138) and distill "its assumed utopian project as an alternative vision of an ethically desired educational practice and a desired condition of society" (p. 138). Education, then, is a political battleground for different visions of a more just communal living.

As mentioned above, referring to a technologized education from an instrumental perspective is the basis for treating it as a process to be made more efficient. From a critical perspective, however, such a conceptualization is the basis of a movement of opposition. Drawing on what Feenberg refers to as substantive theory of technology, technology is seen as an all-encompassing phenomenon promoting anonymity, alienation, and carelessness toward values beyond the economic. Conceptualizing education as a technological phenomenon is equivalent to asserting that it shares these characteristics and thus plays a role in the reproduction of an unjust reality.

Following a critical perspective on education is accompanied by a suspicious attitude toward the presence of technical artifacts in the educational process. Artifacts appearing with a possibility of being included in education are evaluated according to their potential to either reproduce (or worsen) the *status quo* or serve the purposes of the critical project. Nevertheless, while the practitioner can potentially deny the use of certain technical artifacts, education is always a technologized phenomenon since it is inevitably enmeshed in technologically reproductive rationality.

When it comes to online education, the main critical question is whether and to what extent online technologies can be used as answers to social problems towards social change. A trend in such studies is the evaluation of the extent to which different programs, tools and techniques are helpful for the achievement of a particular vision of a better society. One of the most prominent discussions is whether the technological possibilities of online education promote social equality due to its character of accessibility, e.g., in the form of MOOCs (Pollack Ichou, 2018), or perhaps

this open access is the foreground of a hidden curriculum that merely reproduces social inequalities (Oztok, 2019).

Such a critical discourse about online technologies is exemplified by Giroux's discussion with Petar Jandric (2017). Giroux argues that the real question of online technologies is their pedagogical function in the possibilities and ways to solve real problems. While such technologies are haunted by an instrumental logic, he argues that the internet has an "enourmous potential for development of participatory democracy" (p. 141). In another passage Giroux claims:

> Information technology is not purely instrumental in the culture of cruelty because it is a question of how technology gets used in ways to reproduce that culture [...] Your question is predicated on the educative role that the technology plays – on the fact that technology is basically a form of education. So the links between information technology and the culture of cruelty must reach far beyond simple instrumental logic and be deeply concerned with matters of power, wealth, economic control, etc. (Jandric, 2017, pp. 144-145)

Giroux's point is that online technologies involve a heterogeneous landscape of tools, techniques and systems. Such technologies have a general tendency to reproduce social inequality through matters of economic control and surveillance. However, it is possible to find possibilities of resistance in a certain subset of these technologies that can be appropriated to educationally address social problems through the imagination of a different future and the initiation of new generations in various forms of collective and political struggle.

2.2.3. The Post-Critical Relation

Zamojski (2015) refers to an emerging ideal type of relation between philosophy and educational practice, what he calls the post-critical relation. This approach emerges as a response to the shortcomings of a critical perspective. These drawbacks are articulated by Vlieghe and Zamojski (2019) in their post-critical investigation of teaching:

> First, it [the critical approach] has become an almost inevitable framework within which to think and speak about education [...] Second, it also seems to have become ineffectual [...] following a critical perspective all the way through amounts to agreeing to

> resignation, relativism and cynicism [...] a critical approach is essentially a political endeavour which testifies to a hate for the present world, whereas education can be conceived of in terms of an unconditional love for this world. (p. 2)

The focus of critical pedagogy (such as Giroux's) is on a world to come. Education, as the means of achieving this better world, becomes some kind of negation of what actually exists, aiming at an always delayed better society. Gazing at a possible future is a form of neglecting what *hic et nunc* makes practices, arrangements, gestures, relationships, tools, and techniques educational. Vlieghe and Zamojski name it their educational "essence", "logic" or "rationality".

One of the goals of a post-critical inquiry is distinguishing the specific educational logic of the practices under investigation. Drawing on Arendt (1961), the starting point of such an endeavor is the approach to education as a separate and autonomous sphere of life, assuming its fundamental difference from the political and economic spheres. Philosophy, then, opens up a symbolic space, a horizon of action that enable practitioners to recognize "intrinsic worth of what they are already doing and experiencing" (Vlieghe & Zamojski, 2019, p .4) and might help them in inventing their own way of uniquely engaging in this educational practice. As an attempt to getting closer to an educational practice and articulating how it collaborates in constituting a specific educational essence, a post-critical investigation is at its core affirmative.

An important part of the post-critical approach to educational research is the attempt to find the right language to speak about an educational practice. What is at stake in such research is an articulation of a recognizable interpretation of the educational potentiality that could be taken up by the educational community to potentially reinvent their engagement in education. As Vlieghe and Zamojski (2019) put it, a post-critical inquiry assumes the role of making distinctions that matter,

> to connect to what we all can experience ourselves […] to bring to the surface what we already know and what we already do, but which often remains difficult to render explicit. Thus, the aspiration of such an exercise is merely to give an account that readers (hopefully) will recognize and which highlights aspects of experience that make a difference – to paraphrase here Norm Friesen's (2011) beautiful definition of phenomenology. (p .4)

Furthermore, this approach is inspired by Klaus Prange (2005), who encourages bringing to the forefront and expressing in clear terms the implicit understanding of education that we have always applied in practice. By doing so, it is possible to reveal the distinctive nature of education in both contemporary times and the past, distinguishing it from other domains of human activity. This process leads to a deeper comprehension of education as a whole. In the context of a post-critical investigation, the approach of elucidating an educational practice on its own terms is referred to by the term immanence. As Vlieghe and Zamojski (2020) put it:

> For the realm of education, this means that educating and being educated should be considered as practices that are valuable in and of themselves. They are practices that have their own specific logic that sets them apart from all other practices (p. 35).

Such a discourse is dependent on the fact that "we have been ourselves educated" (p. 36) and thus it is possible, drawing from this experience, "to look for words that may adequately bring to life that which has constituted us as educated beings" (p. 36). Starting from an immanent approach is acknowledging that education is intrinsically worthwhile and that "it is utterly senseless to ask whether what happened was good or not. Asking for a justification is felt as completely redundant" (p. 37).

The immanent approach can be better understood in opposition to the critical approach. Commenting on Freire's project of politicizing literacy education, Vlieghe and Zamojski (2019) argue that:

> From an immanent view, an introduction into a world of letters and words is itself transformative. Obviously, literacy is a very important, if not a necessary precondition, for political agency and hence for a more just and equal society. We do not want to argue against this at all. However, this is not the major point to draw attention to when articulating the properly educational value of what happens when someone learns how to read and write. The transformation which takes place here cannot be reduced to political empowerment. There is a sense of potentiality (a strong experience that one is capable of doing something […]) which is meaningful and important in its own right. (p. 72)

In other words, by prioritizing political objectives over education — even when those goals appear justified — one diminishes education to a mere tool. This approach causes a neglect or oversight of education's core purpose and essence. Consequently, it overemphasizes only those

aspects of education that align with a certain viewpoint, disregarding all other, i.e., narrows down education.

Vlieghe and Zamojski (2019) also emphasize the distinction between the ontic and the ontological. There are many ways that an educational practice/setting/arrangement manifests itself, and the manifestations are always entangled in a variety of non-educational contingencies. Nevertheless, there are essential elements of every particular practice that can be recognized as educational, which sets them "apart from all other educational and not-educational practices, tasks, events, situations, etc." (p. 6). Even though these practices are in reality much messier than the way they are portrayed in such a post-critical interpretation, the bracketing out of such accompanying phenomena is fruitful for focusing on their educational essence.

The focus of Vlieghe and Zamojski (2019) is on the essence of teaching, and therefore they bracket out ontic elements of being a teacher, such as filling formal and writing reports, and disregard the fact that some aspects of being a teacher can be ontically shared by other figures, e.g., "it is inevitably the case that teachers support students in ways that parents, friends, counselors, medical professionals, guardians, etc. do" (p. 6). As Vlieghe and Zamojski put it "our endeavour could be compared to making a portrait – the quality of which is to be judged on its capacity to show something that strikes us as relevant and meaningful, i.e., something that appeals to our own experiences with teaching" (p. 7).

In the former subsections, I have showed how the instrumental and critical ideal types of relation between philosophy and education can be complemented by Feenberg's discourse on the different theories of technology to conceptualize education as a technological phenomenon. The same cannot be easily done for the post-critical relation. One of the difficulties is that the concept of technology that emerges from the post-critical perspective is not easily discernible. A clue about how the role technology plays in this account is presented in Vlieghe and Zamojski's (2019) articulation of a "materialist" development of Arendt's concept of education:

> we show that her defence of an autonomous sphere of education, distinguished from other dimensions of life, is dependent upon particular material and technological conditions [...] for Arendt (1961, pp. 195–196) and ourselves, education has a precise beginning and an end, and it is dependent upon specific spatial and temporal conditions – which we will call, following Jan Masschelein and Maarten Simons […], school conditions (p. 11-12)

Technology, as visible from this precursory exposition, seems to be a constitutive aspect of the spatial and temporal conditions of particular educational events, in this case, the school. This indication of the presence of technology in the post-critical approach brings to the surface the other difficulty, that is, the lack of a theory of technology in Feenberg that makes a conjunction of temporal, spatial, and technological dimensions[13]. However, a closer look at the concept of school according to Masschelein and Simons (2013) can help develop a post-critical understanding of education as a technologized phenomenon.

2.3. School and Technology From a Post-Critical Perspective

One of the main premises of a post-critical understanding is that education "is an inevitable dimension of our common humanity" (Vlieghe & Zamojski, 2019, p. 13). First, this tenet draws on Klaus Mollenhauer (2013 [1983]), who affirms that it is impossible not to educate, i.e., the very contact between generations is per se an educational moment. Mollenhauer refers to Johann Friedrich Herbart's (1908 [1806]) concept of Bildsamkeit, i.e., the innate educability of humans. According to Herbart, Bildsamkeit suggests that individuals have the inherent capacity to transform themselves. This concept underscores the dynamic nature of education and its fundamental role in shaping individuals' intellectual, moral, and emotional development. In essence, Herbart's notion of Bildsamkeit aligns with Mollenhauer's argument that education is omnipresent in human interactions and experiences, further reinforcing the idea that education is an inevitable aspect of human existence.

Second, Arendt's (1961) influence is continuously celebrated, especially in her affirmation of natality as what makes education a necessity Arendt's concept of natality highlights the idea that the continuous arrival of new individuals into the world necessitates education as a response. In other words, the emergence of new generations presents a constant need to pass on knowledge,

[13] Even though Feenberg's concept of critical theory of technology, similar to a post-critical educational philosophy, incites the acknowledgment of a constitutive role of technology in the formation of educational events, there is one point of incompatibility between these two typologies. For Feenberg's approach, the support of an affirmation of technology is only adequate as a step in the development of specific artifacts aiming at the implementation of democratic values toward social change. As mentioned above, a post-critical perspective attempts to counter such a movement of overlooking the present in favor of the future. Feenberg focuses on how it is possible to install these values to bring some educational practices closer to democratic values for the benefit of a future society, while a post-critical relation to technology is interested in how technology *hic et nunc* constitute some practices as educational in their spatiality and temporality.

values, and traditions to ensure their introduction to the old/shared world. Arendt's perspective underscores that the arrival of newcomers signifies not just a continuation but also a renewal of the shared world. Education thus becomes an unavoidable response to this perpetual cycle of birth and renewal, as each new generation requires guidance and instruction to navigate the complexities of the world they inherit, and the world requires their newness to be rejuvenated. Considering this inevitable dimension of human life, the existing generations throughout history have developed various means of showing the world to the coming generations.

Furthermore, Arendt (1958) argues that education constitutes a different realm, separate from the family (oikos) and politics (polis). Education constitutes a unique space where children are introduced to the world by adults who are already acquainted with the world. One significant dimension of this process is the cultivation of a profound love for the world, that is, recognition that what surrounds us must be taken care of, and potentially renewed. Furthermore, education fosters a strong sense of belonging to a new generation. As children learn something old alongside their peers, they form bonds and connections that transcend individual differences and unite them as members of a shared community. Additionally, the educational process enables children to experience a profound sense of "being able." Through encounters with challenges, successes, and failures, children come to the realization that they can have an impact on the world, and thus potentially renew it. This understanding of education is originally articulated in respect to the contingent arrangement of the school.

Drawing on Arendt — as well as on Agamben, Rancière and Pennac — Masschelein and Simons provide a more extensive argument about the essence of school. They refer to the Greek word *scholè*, which means "free time", i.e., a time free from private preoccupations, dedicated to study, thought, and exercise, a time without a productive aim or end set beforehand. This free time is, in Masschelein (2011) words "the time of the gap between what is possible and what is actual, or between past and future" (p. 530). *Scholè* is more than a transitional period between the past and the future, a time of initiation. It is a time of deep focus, a time to truly observe and be present in the world, to be fully attentive and engaged with it. The event of school, thus, is about making free time happen.

What happens within *scholè* is not determined by results and outcomes. In this sense, free time is a kind of suspension. Children are free as the constraints of professions, the obligations of

knowledge, societal demands, family responsibilities, and future plans are suspended. By suspension, Masschelein and Simons refer to the fact that all of these constraints are present or potentially present, but in a state of uncertainty or indecision. The participants are free to experiment with different ways of engaging with the things they study, as they are disconnected from the established ways of the older generation. This freedom is what enables the new generation to be a "new" generation, to escape from predetermined ways of life, and thus to have the potential to renew the world.

The school as *scholé* is a contingent arrangement originating in the Ancient Greek City-State of Athens that articulates specific spatial and temporal conditions. The articulation of the event of *scholé*, then and now, is intrinsically connected to the (scholastic) technologies that make it happen, in Masschelein and Simons' words:

> giving form to the school, that is, stimulating interest by carefully creating and presenting the world, is inconceivable without technology [...] Here we are thinking very simply of the chalkboard, chalk, pen, paper, book, but also of the desk and the chair. The architecture and spatial arrangement of the school and the classroom are also relevant (2013, p. 50).

Technology, according to Masschelein and Simons, is a constitutive element of education. The very conception of school as free time (understood as a response to the fact that there are newcomers to the world) depends on a certain technological landscape that makes it possible. The affirmation of the constitutive role of technology in the articulation of educational concepts is the guiding thread of a post-critical understanding of education as a technologized phenomenon.

While the value of school education and the role of the above-mentioned scholastic technologies is clear in Masschelein and Simons' writings, the possibility of new technologies — such as online technologies — giving rise to educational spatial and temporal conditions is a matter of discussion. Masschelein and Simons (2015) call for experimentation with the potential of online technologies

> ICT may have a unique potential to create attentiveness (indeed, the screen has the ability to attract our attention in an unprecedented way) and to present and unlock the world [...] their the challenge is to explore how screens help to create a (common) presence and enable study and practice (Masschelein & Simons, 2015, p. 93)

The approach proposed by Masschelein and Simons is an interesting way to explore how understanding scholastic technologies might widen our understanding of school and education. Inspired by Arendt's view of education as an intergenerational interaction and the renewal of the world, as well as Masschelein and Simons' pedagogical conception of school education, Vlieghe (2022) develops a timely perspective on the consequences that online technologies have on what it means to educate today. Vlieghe argues there is a negative appropriation of online technologies represented by the "[unwitting introduction – L.V.M.] from one day to the other conferencing technologies such as Skype and Zoom, so as to copy traditional classroom or lecture hall practices online" (2022, p. 7). Vlieghe argues that the presence of certain technologies in a given time and place profoundly changes universal aspects of being human, such as education. Online technologies are one such example. Vlieghe counters the replicative approach to online education but simultaneously affirms the necessity of educational experimentation with these technologies. As an example of such experimentation, Vlieghe cites the *Manifesto for Teaching Online* (Bayne et al., 2020).

The goal of such experimentation is precisely to articulate what and how fundamental pedagogical operations are possible in online education. The operations mentioned by Vlieghe are "sharing love for the world, showing newcomers that there is a common world, drawing attention to things that matter, creating the student experience and sense of belonging within a new generation" (Vlieghe, 2022, p. 1). According to Vlieghe, however, online technologies apparently cannot sustain these kinds of operations.

Masschelein and Simons analysis of online technologies starts from a concrete understanding of the temporal and spatial conditions necessary for education to take place, that is, *scholé*. Vlieghe's starting point are fundamental pedagogical operations, and his question is whether such operations can also happen in online education. Despite the advantages of following such approaches, I attempt something different in this work. Instead of starting from a concrete understanding of the temporal and spatial conditions — or a set of pedagogical operations — that make certain arrangements educational, I want to start from an analysis of discernible educational practices made possible by online technologies, and afterwards articulate the educational logic that make these practices educational. This attempt is in not in opposition to the works of Vlieghe and Masschelein and Simons, instead, it acknowledges their contributions as continuous sources of insight for the present thesis. However, by taking online technologies as the starting point, I

want to show that there is educational potentiality that emerges from these technologies. At last, this thesis does not delve into a detailed examination of how this potentiality relates with *scholé* or Vlieghe's pedagogical operations.

Vlieghe's technocentric account of education indicates how technical artifacts and systems may constitute educational temporalities and spatialities, i.e., elaborates the meaning of education as a technologized phenomenon. This is achieved by reference to Stiegler's philosophy of technology. As a preparation for the articulation of the educational logic of online technologies, I continue the exploration of a post-critical interpretation of education as a technologized phenomenon. Stiegler gives a fundamentally ontological understanding of technology, what can serve as a foundation for making sense of the potentiality of emerging technologies to disclose new educational imaginaries and arrangements. Thus, Stiegler's analysis of technology, time, and space is the next point in this investigation.

3. Stiegler's Philosophy of Technology

Present, past, future. Interior, exterior. Reachable, out of reach. Long-term, short-term. For Bernard Stiegler, the focal point of all these concepts is technology. In a continuous confrontation with the history of philosophy, Stiegler (1998, 2011, 2013) attempts to put technicity at the center of significant philosophical questions, such as the nature of time and space, the meaning of being human, and what makes life worth living. Technology is both an all-encompassing dimension of human life as well as the particular technical artifacts that surround us. It is precisely being immersed in technological landscapes that make us the beings which we are.

In the following, I explore three dimensions of Stiegler's work: humans' original technicity (the relation of technical artifacts to space and time), the indeterminateness of technology (its possibility of being both cure and poison), and lastly, the matter of education in the current technological landscape. The goal of this exercise is to formulate a theory of technology that can assist in a post-critical interpretation of education as a technologized phenomenon.

3.1. Technology and the Origins of Humanity

At the beginning of *Technics and Time I*, Stiegler (1998) singles out 4 traits that characterize being human inherited from Heidegger's (2010 [1927]) existential analytic of *Dasein*. Those traits are temporality, historiality, self-understanding, and facticity. In Stiegler's own words:

> Dasein is temporal: it has a past on the basis of which it can anticipate and thereby be. Inherited, this past is "historial": my past is not my past; it is first that of my ancestors, although it is in essential relation with the heritage of a past already there before me that my own past is established. This historial, nonlived past can be inherited inauthentically: historiality is also a facticity. The past harbors possibilities that Dasein may not inherit as possibilities. The facticity implied by heritage opens up a twofold possibility for self-understanding. On the one hand, Dasein can comprehend itself on the basis of an understanding of existence which is banal and "opining" (subject to everyday opinion). On the other hand, Dasein can "possibilize" this past, in that it is not its own, insofar it has inherited it: it is then on the basis of its possibility — such that its past is constituted therein — that it inherits possibilities of "its" factical past. Dasein is in the mode of

> "having-to-be" because it never yet totally is; inasmuch as it exists, it is never finished, it always already anticipates itself in the mode of "not yet." Between birth and death, existence is what extends itself [*Er-streckung*] between "already" and "not yet." This ecstasis is constituted through the horizon of death in that Dasein, in any act of self-anticipation, is always already anticipating its own death (its own end). Any activity on Dasein's part is always essentially ordered by anticipation of the end that is "the most extreme possibility" and that constitutes the originary temporality of existence. (p. 5)

Following Heidegger's *Dasein*, Stiegler conceptualizes the human being as a being always already involved in different projects, and different possibilities. The involvement in these projects is only possible due to a capacity for anticipation, i.e., an attunement towards the future. However, not every possibility is available for a given human being. Human beings inherit their possibilities given the achievements of a historical community of which they are part. The inheritance of such achievements always already occurs. Furthermore, this inheritance can be differently organized by a human group as a matter of selection of what and how such an intergenerational contact takes place. This process of inheritance is closely connected to Stiegler's concept of education.

Starting from this understanding of the human being and the significance of temporality, Stiegler (1998) attempts to understand the place of technology in the human condition. In his words "The following work aims to establish that organized inorganic beings are originarily [...] constitutive (in the strict phenomenological sense) of temporality as well as spatiality" (p. 32). His insight is to understand technology as what is already there before us, as what allows us to relate to our ancestors, and that overall gives us possibilities of having a future.

Stiegler not only maintains that technology is at the heart of human temporal relations, but he affirms that the crafting of technical artifacts is what enables the appearance of humans in the first place. This affirmation is based on André Leroi-Gourhan (1993 [1964]) works in anthropology and paleontology, concerning the process of humanization occurring between the Australopithecus and the Neanderthal species. Leroi-Gourhan promotes the thesis that the human invents itself in the moment of its exteriorization by employing tools. Stiegler (1998) analyzes the ambiguity present in the idea of the invention *of* the human:

> the ambiguity of the genitive imposes at least the following question: what if the "who" were the technical? and the "what" the human? Or yet again must one not proceed down a path beyond or below every difference between a who and a what? (p. 134)

The paradox refers to Leroi-Gourhan's concept of tools as social memory, a kind of memory different from individual and genetic memory. Tools would have allowed early humans to stabilize the inheritance of adaptive innovations of a given population on a much faster and wider scale than genetic modification. Thus, what differentiated humans as a species would have been strictly linked to the availability of tools as an additional type of inheritance. In this case, the tool would be inventing the human. However, what Leroi-Gourhan (1993) stresses is that the very fabrication of tools is only possible if the one that fabricates is able to anticipate into the future the situation where the tool would be used. In his own words "the operations involved in making a tool anticipate the occasions for its use and the tool is preserved to be used on later occasions" (Leroi-Gourhan, 1993, p. 114).

Connecting the role of tools in early human evolution with the Heideggerian notion of temporality, Stiegler articulates the paradox of human, technics, and time. On one hand, anticipation is only possible given the appropriation of historically past achievements. On the other hand, anticipation is necessary to be able to fabricate the very artifacts that make possible the appropriation of past achievements. Regardless of a possible solution for this paradox, one thing is clear for Stiegler: the technological rooting of all relation to time, thus the technological rooting of *Dasein*, the being that we ourselves are.

Stiegler further raises the stakes of the paradox of the "who" and "what" in the discussion on tools as an exteriorization of the human:

> Interior and exterior are consequently constituted in a movement that invents both one and the other: a moment in which they invent each other respectively, as if there were a technological maieutic of what is called humanity. The interior and the exterior are the same thing, the inside is the outside, since man (the interior) is essentially defined by the tool (the exterior). However, this double constitution is also that of an opposition between the interior and the exterior (Stiegler, 1998, pp. 141-142)

The interior of human beings — be it called mind, or subjectivity — is only thinkable in the light of possibilities of exteriorization. Simultaneously, the exteriorization as tools makes up the

categories of reachable and out-of-reach, what, drawing on Heidegger (2010), is the fundamental distinction that makes up space. Stiegler continuously refers to technical artifacts as prostheses, a term that, in his view sums up this ambiguity of interiority and exteriority, since "[b]y prosthesis, [Stiegler understands – L.V.M.] (1) set in front, or spatialization (de-severance [é-loignement]); (2) set in advance, already there (past) and anticipation (foresight), that is, temporalization." (p. 152). With these passages, Stiegler introduces the notion that the simultaneous arrival of humans and technology is not only an originally temporal phenomenon but also necessarily spatial. Temporal and spatial conditions are necessarily interconnected with given technologies. Stiegler gives the example of telecommunications bringing about the alteration of

> not only inter-individual spaces and times, by the globalization of interactions through the deployment of telecommunication networks, the instantaneity of the processes, the "real time" and the "live," but also the space and time of the "body proper" itself, by tele-aesthesia or "tele-presence" (p. 88)

Stiegler also refers to Heidegger's discourse on the consequences of the radio and the telephone (Stiegler, 1998, pp. 250-251). From now on, not only in Stiegler's work, but also in this thesis, every reference to either space or time should echo the inseparable presence of the other term.

This idea of the mutual becoming of space and time, interior and exterior is profoundly inspired by Jacques Derrida's (1982 [1972]) concept of *différance*. Even though a thorough reconstruction of this concept is beyond the scope of this work, a brief exposition might clarify Stiegler's conjunction of time and space in the technological origin. In Derrida's words:

> The verb *différer* [...] has two meanings which seem quite distinct. [...] In this sense the Latin *differre* is not simply a translation of the Greek *diapherein*, [...] the distribution of meaning in the Greek diapherein does not comport one of the two motifs of the Latin *differre*, to wit, the action of putting off until later, of taking into account, of taking account of time and of the forces of an operation that implies an economical calculation, a detour, a delay, a relay, a reserve, a representation — concepts that I would summarize here in a word I have never used but that could be inscribed in this chain: temporization. *Différer* in this sense is to temporize, to take recourse, consciously or unconsciously, in the temporal and temporizing mediation of a detour that suspends the accomplishment or fulfillment of "desire" [...] this temporization is also temporalization and spacing, the

> becoming time of space and the becoming-space of time. [...] The other sense of *différer* is the more common and identifiable one: to be not identical, to be other, discernible, etc. When dealing with *differen*(ts)(ds), a word that can be written with a final ts or a final ds, as you will, whether it is a question of dissimilar otherness or of allergic and polemical otherness, an interval, a spacing, must be produced between the other elements, and be produced with a certain perseverance in repetition. (Derrida 1982, p. 7-8)

While for Derrida, *différance* refers to a fundamental process of differentiation and deferral, wherein meaning is both created and deferred through the interplay of signifiers, Stiegler argues that such an abstract movement is materialized as technology. Technology, thus, as the materialization of *différance*, is at the origin of the human as the making of the space and the delay necessary for things to be non-identical. The exteriorization of technical artifacts is the *différance* making up the distinction of a now, a constituted a past, and the space for a possible future.

3.2. On Pharmacology, Attention and Online Technologies

While the originary relationship between humanity and technologies is the main theme of *Technics and Time I*, Stiegler emphasizes in later works that the question concerning technology is an always pressing question, given the ubiquitous possibilities of technological inventions. In *Technics and Time II* and *III*, Stiegler examines the consequences of the acceleration of technical development since the Industrial Revolution. In *Technics and Time II* (Stiegler, 2009), Stiegler focuses on the temporality, spatiality and exteriorization of humans given the globalization of information systems through the development of technologies such as the telegraph, telephone, photography, phonography, cinema, radio broadcasting and television. In *Technics and Time III*, Stiegler (2011) investigates the convergence of informational, telecommunications, and audiovisual technologies and its consequences in "subordinating the entire worlds of culture, knowledge, and the mind, along with artistic creation and advanced research and instruction, to the imperatives of development and the market" (p. 2).

Both works present significant investigations of the human condition given the appearance of impactful technologies. These investigations culminate in Stiegler's utilization of the concept of *pharmakon*, a term originating from Plato's *Phaedrus*, famously discussed by Derrida (1981 [1972]) in the article *Plato's Pharmacy*. Using the term *pharmakon*, a Greek word that means

both cure and poison, Stiegler refers to the relation between technology and humanity. In *What Makes Life Worth Living: On Pharmacology*, Stiegler (2013) argues that technology is both a poison that always continuously affects society and the cure through which a given society can be saved[14]. One example of *pharmaka* examined by Stiegler are writing technologies.

Stiegler's starting point is Plato's condemnation of writing for being an artificial memory, an exteriorization of attention. Writing produces forgetfulness in the soul of those who learns it because they cease to exercise their memory, rather trusting what is written, what is outside oneself, instead of what is inside. Writing becomes poisonous as it hinders true knowledge — thinking for oneself — while allowing a mere semblance of knowledge — merely remembering what is written. Such a consequence hinders not only the development of a single individual but also the intergenerational delivery of a thinking tradition.

At the same time, writing enables practices of grounding attentional forms such as philosophy, law, and geometry. As Stiegler (2012) puts is

> These comprise an ensemble of mental disciplines that each constitute an attentional form furnished with its own particular rules. It is the concert and unity of this always diverse collection of literal techniques for the formation of attention that amounts to the deep attention that the Greeks named logos. (p. 6)

The development of writing is intrinsically connected to Stiegler's (2010a) concept of grammatization. According to Stiegler, grammatization is the encoding of a certain continuous process into discrete and meaningless elements that can be combined in various ways to create meaning. The most prominent example of grammatization is the recording and representation of language using visual symbols, such as letters or characters in the form of writing. Writing technologies give the ability to manipulate letters, words, sentences, or their structures, enabling their liberation for versatile use. Writing gives a creative possibility because its rules can be created, modified, and played with, what allows the possibility of something new to emerge. Masschelein and Simons (2013) follow Stiegler on this, claiming that the school is precisely the place where the world is grammatized, thus allowing for students to freely experiment with the grammar of different aspects of the world, and consequently letting something new to emerge.

[14] Such an approach to technology as both a danger and the origin of a possible salvation echoes the famous ending of Martin Heidegger's (1977) essay *The Question Concerning Technology*.

In writing, grammatization is the spatialization of the time of speech through the letters, i.e., the reproduction of speech in durable spatial forms. Grammatization is what allows speech to be repeated, compared, analyzed, criticized and started anew from generation to generation. The very thinking experience becomes an intergenerational process, thus making possible the heritage of Ancient Greece. From the example of writing, it is visible that the pharmacological aspect of technology is strictly connected to the concept of attention. Attention, as Stiegler (2012) explains,

> is a word derived from the Latin *attendere*, 'to shift one's attention to' or 'to take care.' The verb form has kept this sense in English: 'to attend a patient' means to take care of his or her illness. In French the verb *attendre* has today a temporal dimension, and in general *attention* supposes an expectation of some kind, be it positive or negative. *Faire attention*, like 'paying attention', is in this sense a synonym of taking care (*prendre soin*). This is why a philosophy of care assumes a philosophy of attention, especially in our epoch where an 'attention economy' dominates, one which puts to work relational technologies both analogue and digital. Toward the object of concern, the French say one is *attentionné*, that is, 'thoughtful'. To be thoughtful means to be *civil* or urbane (in the original sense of the word). Although we normally take attention to be a mental capacity for concentration, it is nonetheless a social phenomenon. *Être attentionné*, in English 'to be thoughtful', also means to be pensive or reflective. Attention has a significance at once psychological and social, and the one does not work without the other. This is fundamentally what distinguishes attention from vigilance – something we share with animals. And this is why attention must be formed, which is the role of education. Attention has two inseparable faces, psychic and social, constituting a kind of *interface* for what Gilbert Simondon called psychic and collective individuation (2007). Without it, there is simply no longer any such individuation. (p. 1)

As discussed in *Technics and Time 1*, technology is what enables the discretization of a temporal flux, the possibility of a temporal project, and the differentiation of the non-identical. The formation of an interiority given the temporality enabled by the non-identical exterior of the temporal technical artifact is how Stiegler refer to Gilbert Simondon's concept of psychic individuation. Simultaneously, collective individuation is the formation of interpersonal relations, especially intergenerational relations, made possible by the exteriorization of the technical artifact.

Attention, as a temporal phenomenon of the now, of a momentous giving time, of letting something linger in our *hic et nunc* is connected with the technological landscape that surrounds us. Attention as the momentous giving of time and space underlies the capacity of attending to the other in the sense of taking care. In such a manner, conceptualizing a philosophy of attention as a philosophy of care allows Stiegler (2013) to affirm that

> The *pharmakon* is at once what *enables* care to be taken and that of *which* care must be taken — in the sense that it is necessary *to pay attention*: its power is *curative to the immeasurable extent [dans la mesure et la démeseure]* that it is also *destructive*. This 'at once' characterizes what I call a *pharmacology*. (p. 2)

Developing a pharmacology is discovering how to live in a world within a technological landscape without opposing its curative and poisonous moments, i.e., according to the attention forms made possible and impossible by the existing set of artifacts and systems. Attending to the question of the conjunction of attention, time, space, and technology is taking care of what allows care to be taken, what grants us the present time by making possible a past and a future, that is, of technical artifacts.

According to Stiegler, the emergence and dissemination of online technologies, more specifically the development of the World Wide Web, establishes a new pharmacological milieu. Such technologies enable the delegation of comprehension functions to machines and the transmission of information with no delay. To study the consequences of online technologies, it is necessary to understand human original technicity and the historical technological conditioning throughout the ages, such as the example of writing mentioned above. In Stiegler's (2012) words:

> If anthropogenesis is a technogenesis, with the digital this process arrives at a new stage where the techno-logic of knowledge as such must become central both to the reconsideration of the history of established knowledge in the light of the contemporary moment and to the interrogation of the new forms of knowledge that digitisation brings forth. (pp. 15-16)

With such an acknowledgment of the inaugural role of technicity for human knowledge (i.e. the role of discretization and temporization referred to by Stiegler and Derrida with the term *différance*), the question becomes "to what degree can and even must these digital relational

technologies also give birth to *new attentional forms* that pursue in a different manner the process of psychic and collective individuation" (Stiegler, 2012, p. 8).

On the one hand, the association between the delegation of mental capacities to computer systems and the increase in speed of information processing leads to the obsolescence of the time of reflection, deliberation and adjustment between the human and the computer systems. The result is what Stiegler calls short-circuiting. The short-termism of such a relation to technology results in a deterioration of attention and care capabilities.

On the other hand, online technologies "permit the formation of collaborative spaces of discussion which produce conflicts and critical debates" (2012, p. 15). Collaborative initiatives are precisely at the core of the therapeutic dimension of the digital *pharmakon*. Such practices start mostly as 'bottom-up' processes where each participant products certain forms of knowledge. Even though the 'bottom-up' direction have a huge potential given the vast amount of raw data generated by mere interaction within digital networks, this potential is unrealized if left in its unprocessed form. For this potential to be realized an organization into metadata is required, allowing for patterns to be recognized, patterns that can actually make explicit such innovative directions for human collaboration. As Stiegler (2013) puts it:

> Rather than opposing the 'bottom-up' to the 'top-down', it is a matter of constituting systems for producing metadata that organize and create political technologies encouraging the emergence of psychic and collective individuation processes of a new kind. These systems must be grounded in the representation of differing perspectives, polemics and controversies, as well as convergences of interest or perspective enabling re-groupings […] that recognize themselves in meanings, thereby constituting collective individuations, and establishing, at the heart of digitalized public life, argued and analysable critique that counters the murmurings that abound in a falsely consensual digital world lacking instruments for enhancing collective singularities (p. 95).

The study of initially 'bottom-up' practices that can potentially undergo processes of 're-top down' is an alternative for the deteriorative aspects of online technologies. 'Re-top down' is the movement of starting with bottom-up practices and afterwards creating institutional projects using the potential of such practices. While there is algorithmic collection of metadata from tech giants used to amplify the confinement of singularities, as in the case of echo chambers, Stiegler

argues that the organization of such metadata could be used not only to amplify division and isolation (poisonous dimension of the *pharmakon*), but also for the analysis and proposal of ways for reconciliation of the current divisions (curative dimension of the *pharmakon*). Despite mentioning these curative possibilities, Stiegler falls short of providing compelling example of how they are or could be enacted. Moreover, it is noticeable that Stiegler considers the poisonous aspect of the digital *pharmakon* as the standard trend in our relation to these technologies. The articulation and promotion of the curative dimension becomes the role of a philosophy of technology. In Stiegler's words: "if you don't use the *pharmakon* to produce therapies it will necessarily be a poison" (2016, p. 296).

3.3. Education and Original Technicity

Visible from the exposition of Stiegler's philosophy is a prolonged involvement with the issue of education. First, the thesis of human original technicity present in *Technics and Time I* is inherently an educational thesis. Vlieghe (2022) presents this line of argument in the following passage:

> For Stiegler, *anthropogenesis* is *technogenesis*. It is the dominant technological apparatus we depend on at a given time that defines us. That is to say, it is thanks to our learning to embody the practices and routines required by particular and historically situated technologies that we are who we are. Given that technology has its own history, this implies that the definition of the human also may shift, sometimes dramatically … The educational point here is that, due to particular processes of subjectification during our formation process, which vary according to different dominant technologies we need to learn and master, we experience ourselves and our world in different ways. We are literally educated to become another sort of human being. (pp. 5-6)

The fact that technologies exist gives both the imperative and the means of education. On the former, the existence of exteriorized artifacts constituting the world of a given group is a call for education. Humans are characterized by their immersion in temporality. However, this immersion is only possible given the appropriation of an inherited past. The appropriation of the technically delivered past, even though somehow inevitable, is not obvious and needs attention. Hence, particular practices are called to life — practices here called education. These practices take place via certain artifacts, i.e., the delivery of a world to a new generation is only possible around the

artifacts that organize (and have organized) the temporal and spatial life of a certain group. Education, then, is intrinsically related to forming relations to time and space given a certain technological environment.

Furthermore, Stiegler considers education to be a process of attention formation. This process is what allows an individual as well as its relation to a collective to emerge. Following the thesis of original technicity, Stiegler (2012) claims

> The memory of the human entity is essentially exteriorised, materialised and spatialised. It is spatially, materially and technically projected into what is constituted as a common space and time, projected if not out of time then at least beyond its own original temporality and in a certain way put into reserve in space, enabling it to become at once the memory of the individual and of the group. It is through this external memory, and as this exteriorisation that is a socialisation and an expression, that attention is able to constitute itself as interface between the psychic and the social. (p. 3)

Experiencing something as an individual, learning something by oneself is only possible given a heritage of attention forms inscribed in technical artifacts. Given the possibility of the group sharing the knowledge embodied by such an artifact, the inscription of individual experiences in artifacts turns these into a collective experience. Stiegler names transindividuation the ongoing process through which individuals and collectives co-constitute each other by participating in shared cultural, social, and technical practices. Transindividuation is dynamic, iterative, and dependent on the interaction between individuals and their environment, including other individuals, objects, and technological systems.

Technical artifacts, thus, are inscribed in attentional forms that were present during their creation. Over time, the cumulation of such forms leads the artifacts into being a materialization of collective memory. This collective memory is the source of knowledge of how to live, to do things, as well as of cognitive and theoretical knowledge. Following these ideas, Stiegler (2012) posits that

> Education is the fruit of the accumulated experience of generations. It develops a patina over time like the pebbles rolling in the current along the riverbed that they themselves constitute. Education is the transindividuation of individual memories engendered by individual experiences, ones which, through being transmitted and developing a patina —

> that is, in being regulated, in forming a body of procedures, and sometimes in becoming formal regulations — have resulted in a collective memory constituted by the attentional forms of knowledge: knowhow, lifeskills, cognitive and theoretical knowledges. (p. 2)

On the one hand, technical artifacts accumulate collective memory. On the other hand, such attentional forms must be reenacted in order to be inherited by a new generation. This process of bringing back to life the collective experience stored in external memory is another way of describing Stiegler's notion of education. Education is a taking up in the present of the memory generationally accumulated in artifacts, that boils down to a re-temporalization of the practices that made this artifact possible. This re-temporalization, however, is always conditioned by individuals coming from the new generation that participate in the process. As an undetermined encounter, it allows the renovation and transformation of social time and space and thus the rejuvenation of the collective.

Understanding education as always necessarily conditioned by surrounding artifacts and the attentional forms therein embedded, Stiegler questions the forms of attention made possible in our contemporary technological condition. In other words, Stiegler asks for the consequences of engagement in multiple streams of attention given the rise of new media technologies. A thorough examination of this issue is present in *Taking Care of the Youth and the Generations* (Stiegler, 2010a), drawing strongly on the analysis of the poisonous dimension of the digital *pharmakon*.

Stiegler argues that the fusion between the industries of computation, production, and telecommunication of symbols — including television, film, music, and digital media — sets forth a globally integrated industry of transmission. The consequence of the industrialization of the production of technical artifacts is the insertion of memory and attention in a system of global commodification. Thus, attention becomes entangled in an economical system with monetary profit as the ultimate goal. Naturally, for the increasing of profit in an economy of attention a commodification of education becomes a necessity.

This commodification is the result globalized conglomerates of digital media technologies taking over the role of attention formation from families, schools, and communities. Such a transformation leads to eroded attentional forms that bring up consumers uninterested in the long-term formation of knowledge and life skills, neither in their past as historically delivered, nor

their future as the possibility of the rejuvenation of the world. Rather, by drowning people in a constant flow of information, their aim is to turn people into a captive audience that merely takes up offered lifestyles, which are profitable for these programming industries. In sum, these industries "do not fabricate products that we might want to consume, but ourselves as consumers" (Lindberg, 2020, p. 12), and this process is what education is becoming in such a technological landscape.

Furthermore, another issue with the globalized conglomerates of digital media technologies is the deprivation of the possibility to grammatize the digital media. In the digital realm, the structure that guides the creation of text is now concealed within digital devices as coded data — represented by 1s and 0s, making it indecipherable to the human eye. Furthermore, our interactions with online technologies are intrinsically shaped by algorithms — such as search engines and recommendation algorithms — whose inner workings are proprietary and closely guarded as trade secrets. Consequently, unlike the inherent familiarity that literate individuals have with written grammar, the code governing the digital environment remains unseen and concealed. In the context of digital technologies, "we become strangers to our own productive capabilities." (Vlieghe, 2015, p. 220). The process of grammatization, which enables the emergence of novel ways of engaging with the world, is impeded in the realm of online technologies. Such an obstruction further exacerbates the challenges facing the articulation of an educational essence of online technologies.

By stressing the educational consequences of the emergence of contemporary media technologies in the process of a continuous loss of autonomy and capacity to judge, Stiegler approximates his analyses to a critical theory similar to Horkheimer and Adorno's (2002) and Marcuse's (1968), as exposed in Chapter 2. The digital landscape is recognized as a form of oppression, manifesting through various mechanisms that exert control over individuals' autonomy, agency, and access to information, such as tribalism, filter bubbles and surveillance capitalism. The next subsection presents a discussion on the intersection of Stiegler's critical dimension and the post-critical educational philosophy.

3.4. Stiegler, Critique and the Post-Critical

The investigation of Stiegler's writings started with the aim of establishing a philosophy of technology that responds to insights present in the post-critical discourse of philosophy of

education. As mentioned above, these insights are that technology plays an important role in the constitution of spatial and temporal relations between humans and the world, and that changes in the technological landscape ontologically transform human life, given the transformation of spatiotemporal relations.

Stiegler's theses of original technicity and the pharmacological nature of technologies provide a solid groundwork and a substantial formulation of these insights into a philosophical theory. Furthermore, Stiegler associates education with attention, and thus with the spatiotemporal relations that make up the relation between humans and technics. These clues approximate the identification of Stiegler's theses as a guide in making sense of education as a technologized phenomenon from a post-critical perspective.

However, the conjunction of the term post-critical with Stiegler's philosophy is in some respects problematic. As visible from his writings about online education, he stresses the continuous loss of autonomy and the capacity to judge as consequences of the emergence of contemporary (i.e. digital) media technologies. As Lewin (2016) puts it "what is somewhat ironic in Stiegler's account of the erosion of our critical consciousness is that it acknowledges the pharmacological nature of technological development, but then appears to rely on a conventional, even banal, critique of modern technology and new media as the manipulation and erosion of attention and critical consciousness." (p. 260). This reveals some kind of implicit commitment to a substantive theory of technology, as exposed by Feenberg (2002) and thus to the critical theory of Horkheimer and Adorno (2002) connected to such an approach to technology.

At the same time, Stiegler highlights that Horkheimer and Adorno ignore the fact that the existence of the technologies that gives rise to the condition they criticize is what makes their critique possible in the first place. For example, denouncing the domination of Hollywood by means of the culture industry is only possible due to a capacity of imagination enabled by the existence of projectors and cinema[15].

Stiegler accuses Horkheimer and Adorno of failing to understand technics pharmacologically. While Stiegler supports the legitimacy of a critique of short-termism and "a weakening of the spirit", he maintains that "these struggles ignore the originally pharmaco-logical constitution of this spirit itself. They ignore the pharmacology of spirit by taking pharmakon in general as a

[15] Cf. *Technics and Time III* (Stiegler, 2011, pp. 35-78).

pharmakos: a scapegoat" (2013, p. 20). In Stiegler's words, Horkheimer and Adorno's critical theory "remains unsatisfactory, in lacking what constitutes the condition of any critique […] namely, the *pharmakon*, which also makes possible the short-circuit of any critique" (p. 22).

Referring to the limitations of Horkheimer and Adorno, Stiegler (2013) affirms that a new critique is needed given the "originarily pharmacological situation of spirit" (p. 23). In Stiegler's own words:

> What, however, remains at worst ignored, but at best a site that has hardly been opened — which thus constitutes, and this is my thesis, the major site on which to build a *new critique* — is the pharmacological and therapeutic question constituted by […] *pharmaka* (p. 21).

In Stiegler's vocabulary, the therapeutic question is understanding how a given *pharmakon* can create practices that lead to sustained forms of attention and a connection between the past of a group and a possible future for it. It is not possible to reduce the pharmacological status of technology, but it is possible to ignore the therapeutic aspect, thus overlooking how the very things that supposedly create a crisis are the means for overcoming such a situation. Critique, then, becomes the development of such therapeutics.

Stiegler affirms the necessity of developing a positive pharmacology of online technologies, however he does not develop it thoroughly. Furthermore, there is no discussion on the consequences of such a positive pharmacology of online technologies for education. If Stiegler's project is to think technology pharmacologically, an affirmative approach to the potential of online education is not only possible but required. Thus, developing Stiegler's writings on technology from an educational post-critical perspective becomes a continuation of his very project of a new critique, therapeutics, and pharmacology.

4. Delineating Non-Formal Online Educational Practices

A post-critical philosophy of education aims at the affirmation of certain practices as inherently educational. The constitution of such practices as education is intrinsically linked to the technological arrangement that makes them possible. Thus, a post-critical discourse has the potential of articulating and affirming educational technology. Such an affirmation would concern not only the instrumentality of technology but also its constitutive potentiality for education. A more precise understanding of technology and how technology can have a constitutive impact on human life is found in Stiegler's writings. Stiegler's theses of original technicity and the pharmacological nature of technology help clarify the post-critical insights on the constitutive relation between education and technology.

A significant lesson from Masschelein and Simons (2013) exploration of *scholè* is treating it as an ontological concept. *Scholè* refers to a particular collective experience that can happen in an institutional setting, as much as outside of it. Similarly, an ontological concept for the educational potentiality of online technologies can be reached irrespectively from a study of formal, informal, and non-formal education. Stiegler, in his discussion of the possible therapeutic dimension of online technologies, mentions bottom-up collaborative practices as articulating such a dimension. Minding these possibilities, in this chapter I turn into non-formal online educational practices as the starting point to study online education beyond the double replication. To better understand of what these practices might consist, I draw on Stiegler (2011), Arendt (1961), Husserl (1970 [1936]) and Lagervkist (2016).

4.1. Stiegler and the Rearrangement of Educational Institutions

Stiegler's main approach towards education is to consider it as a process of attention formation through which exteriorized memory in the form of artifacts is appropriated, thus forming the temporality and spatiality of the individual. Various systems emerge around educational practices, giving a certain shape to this encounter between generations. Educational systems are themselves spatial and temporal programming institutions. School, in its current state as the

prevailing educational system[16], has as its purpose teaching a common past, through the interiorization of memory conditions by which technologies of a shared future became possible. In Stiegler's (2011) words, "[o]nly an educational institution can provide historical consciousness to collective consciousness, and only an educational institution has the skills to construct geographic consciousness" (p. 147).

This whole educational apparatus depends today not only on notebooks, books, pens, classrooms, blackboards, and tables but also on paper manufactors, bookstores, office supply stores, power plants, libraries, etc. In other words, the educational system is necessarily embedded in the overarching technical system. Parallel to the tendency of global commodification of attention formation, educational systems are increasingly intertwined with the global marketplace. This integration into the marketplace goes in line within the double replication of online education. As shown above, a result of this replication is the identification of any kind of possibility for online education with the platforms that are currently at use. Such platforms, especially in the case of MsTeams and Zoom, belong to private companies with profit as their ultimate goal.

Even though online technologies are intrinsically connected to the marketplace, there are online collaborative practices that offer a different potentiality for these technologies, different from the logic of the market[17]. These are originally spontaneous practices that, as argued in the last chapter, have to be taken up by an organizing project able to form new forms of living together around these technologies (Stiegler, 2013, p. 95).

The movement of initiating spontaneous collaborative practices and organizing projects around them also refers to the task of rethinking of educational institutions' use of online technologies beyond the logic of the market. Stiegler (2015) writes:

> Reconstituting an academic project, renewing, between interscience and its outside, which is the internation, an intergenerational relation re-founded on, by and in the retentional field of contemporary noetic nativity (and knowing is born, that is, individuates itself, as is well known – that is, reborn in and through the generation to which one wants to give a place), reactivating through this the hypotheses and questions of action-research in the

[16] Such an institutionalization of school, and the departure from its origin as *scholé*, i.e., free time, is precisely what Masschelein and Simons (2013) oppose.
[17] Online collaborative such as Ubuntu/Linux, Wikipedia, and similar initiatives, even predate the advent of Google and Facebook.

> epoch of digital media, of the associated milieus that they form, of the collaborative technologies and contributory economy that emerges. (p. 220)

Stiegler (2015) emphasizes that the development of educational practices based on the collaborative potential of online technologies is not meant to replace current on-site education. Online technologies, rather, are essential for a movement of rearranging existing practices taking into consideration the potentials inherent to the existence of this set of artifacts.

Even though Stiegler opens up the possibility of thinking of collaborative practices together with education, and vaguely mentions the concept of "contributory teaching" (Stiegler, 2015, p. 204), he fails to explain and exemplify what kind of online collaborative practices are educational and how they can actually lead to changes in formal education. The rest of this chapter focuses on delineating non-formal online educational practices in contrast to formal education, and some possible ways of addressing the entanglement of the former with the latter. A confrontation of Arendt's and Stiegler's views on education and inter-generational contact starts to elucidate the need for a study of non-formal educational practices.

4.2. Stiegler, Arendt and the Issue of Adult Education

4.2.1. Arendt and Adult Responsibility

A main topic in Arendt's (1961) *The Crisis in Education* is the issue of responsibility. In her view, a refusal to assume the responsibility for introducing new generations to the world is at the heart of the crisis to which the article is responding. As she puts it, the very fact of crisis allows the inquiry into the essence of the matter. What is the essence of education is laid out towards the end of the article, where she argues that:

> Education is the point at which we decide whether we love the world enough to assume responsibility for it and by the same token save it from that ruin which, except for renewal, except for the coming of the new and young, would be inevitable. And education, too, is where we decide whether we love our children enough not to expel them from our world and leave them to their own devices, nor to strike from their hands their chance of undertaking something new, something unforeseen by us, but to prepare them in advance for the task of renewing a common world. (1961, p. 196)

The world is always older than both generations. Adults have the responsibility of pointing to children how the current world works and what it consists of, since they have been part of this world longer. This is a responsibility for the renewal of the common world and for introducing newcomers to it. This renewal can only take place if the older generation does not force a concrete vision of how a future world could look like or leave children alone in oblivion of the common world itself. Education is about mediating the old and the new, by protecting "the child against the world, the world against the child, the new against the old, the old against the new" (p. 192).

Another point that Arendt stresses is the fact that education should have an end. She argues there should be an explicit line that separates children and adults, signifying that adults cannot undergo education and children should not be treated as grown-ups. The end of the education is precisely this line that separates the two generations.

Arendt's writings on education provide a unique perspective in describing essential elements of this dimension of human life. However, some important elements of her perspective become contradictory if we start from the point of education as a technologized phenomenon. Mainly, if education is the introduction to the world as a mediation of past and future, but the dominant technological systems have radically changed in the lifetime of the adult generation, how can the latter introduce the new generation to this world, being that they have not been part of this temporal mediation? In a situation of rapid technological change, doesn't taking responsibility for the younger generation mean blurring the educational line separating children from adults? Some answers to these questions can be achieved by referring back to Stiegler.

4.2.2. Stiegler and Intergenerational Contact

The issue of mediating past and future is also present in Stiegler's writings. Stiegler distinguishes two different paths for a group's developing a relation to a *pharmakon*: long and short circuits of transindividuation. Short circuits happen when attention and consumption patterns are shaped by the logic of the market economy, which prioritizes immediate gratification, constant stimulation, and the pursuit of novelty. This short-circuiting can weaken the bonds between generations, as the focus on immediate gratification and constant stimulation can hinder a sustained engagement with the world, that enables new generations to inherit the world from the older generation, and create new possibilities for the world.

In *Taking Care of Youth and the Generations*, Stiegler (2010a) examines a TV channel's advertisement campaign that undermines generational differences and the responsibility of older generations, by encouraging adults to submit to their children's desires. Referring to this issue, Stiegler writes:

> Short-circuiting generational inheritance effaces both what differentiates children, parents, grandparents, and, at the same time, cultural memory, consciousness, and attention to what is passed down through the myriad human experiences accumulated as secondary and tertiary retentions underlying cultural knowledge. [...] Channel Y's ad campaign clearly shows attention control made possible by psychotechnological systems (the key technologies of societies of control), short-circuiting the psychic system for the production of desire, which is inherently intergenerational. This short-circuiting is consistent with "job skills" and "life skills" [des savoir-faire et des savoir-vivre], chief characteristics of hyperindustrial, service societies that lead to consumers not being in charge of their very existence. But this deprivation, which is also a deprivation of the responsibility that defines human existence, also short-circuits the psychic links between the generations — and of the psyche itself (p. 13).

Short circuits of transindividuation happen when children get acquainted with the world through interaction with artifacts and practices effectively reproducing the logic of the market economy. Such short-circuits translate into a collective that loses the spiritual, cultural, and communal connection between generations and the formation of signification, identity, and desire of the newer generation.

On the other hand, long circuits of transindividuation are characterized by a situation where an individual in formation is able to participate in the creation of novel relations to a given technical system while the already existing technical system can influence such a formation. Creating long circuits depend on organizing educational practices around technological artifacts in temporalities that go beyond the present, connecting to a shared communal history, so that a future in relation to this artifact can be conceived. This future is based on a truth found in the potentialities of this object and projected as an idea that creates desire and motivation. Stiegler writes:

> Protentions of psychosocial temporality, however, are not absolutely calculable, and always exceed relative anticipations: they emerge from a libidinal economy that

> infinitizes itself, that is, an *economy of excessiveness* that produces a psychosocial will, otherwise called motivation, that is, that produces *motives for living,* otherwise called meaning. and which presupposes what Simondon names the transindividual — founded on a process of transindividuation in which protentions are elaborated into the formation of long circuits. (2010b, p. 93)

The creation of long circuits is dependent on the intergenerational space where an older generation acquainted with knowledge and practices given a technological system is able to pass it to the coming generations to start anew with them. Such an intergenerational transmission is, for Stiegler, the basis of education, and education, thus, an essential movement in the creation of long circuits. He writes:

> It is equally the problem of academic institutions, because when you are teaching geometry or geography in scholarly institutions, you are creating long circuits with very distant generations — creating a unity with the past that allows for creating a unity with the future. Religion, politics, even sports, and in fact everything that is a support in the human life is a support of those circuits. [...] For example, in Husserl's last discourse about geometry, he says that it is impossible to access geometry without writing, and writing is a condition of the invention of geometry—and he says "invention," not discovery. He shows that in this type of education—which is typically the model of scholarly education—geometry is the matrix of scholarly education. That geometry exemplifies a theoretical, scholarly education, in which he states that there are technical conditions for accessing geometry. (Stiegler & Rogoff, 2010, p. 2)

For education to be the origin of long circuits for younger generations, the older generations must have already developed long circuits connecting to distant past generations. However, today we deal with a situation where long circuits should be developed connecting newer technologies that the current older generations were not able to get acquainted with while they were the new generation. Considering this case, it could be worthwhile investigating the benefits of conceptualizing the creation of circuits outside intergenerational transmission in terms of adult education[18].

[18] A thorough investigation of adult education in terms of long-circuits of individuation is beyond the scope of this thesis.

4.2.3. Formal Vs Non-Formal Adult Education

Arendt argues that education is the point where we assume responsibility for the renewal of the world. Drawing from Stiegler, to enable the renewal of the world is to create long circuits of transindividuation. These circuits are usually created from within intergenerational transmission. An interesting inflection point in the confrontation of Arendt's and Stiegler's view on intergenerational contact is the case when *pharmaka* appear during one's lifetime. In this case, I want to argue, adults have to take the responsibility of developing these long circuits without intergenerational transmission.

As it is apparent from Arendt's writing, education is a matter of protection. Children are withdrawn from the public world towards a dedicated space where they can study the world. "Everything that lives, not vegetative life alone, emerges from darkness and, however strong its natural tendency to thrust itself into the light, it nevertheless needs the security of darkness to grow at all" (Arendt, 1961, p. 186). On the other hand, what characterizes the adult world is public existence. As Arendt (1958) argues in *The Human Condition*, the public represents the sphere of political action, a space where individuals come together to act through speech and where their actions and words can be seen and heard by others. She argues that it is through public existence that individuals can achieve a form of immortality and meaning, as their actions can leave a lasting impact on the world.

The combination of Arendt and Stiegler's views shows that in the case of adults, education as the protection from the world aiming at its renewal through the intergenerational transmission of long circuits of transindividuation is not possible. For the adult development of transindividuation circuits to take place it is necessary to refer to another dimension of education. As mentioned above, Stiegler refers to education as the reappropriation of the exteriorized space and time as attention formation. Such a movement can be noticed 2 million years ago in our Zinjanthropian ancestors (Stiegler, 1998). On the other hand, school formed education is a contingent arrangement originating in the Ancient Greek City State of Athens (cf. Masschelein & Simons, 2013)

While it is possible to limit education as the school arrangement to children and conceptualize it as a process that has a concrete end, one cannot argue that education as attention formation and the appropriation of individual space and time is a process with an end. This is one step forward

towards the conceptualization of the contrast between formal and non-formal education. The term formal education, thus hereafter refers to attempts at explicitly developing technological and practical arrangements to bring about attention formation. As seen above, those formal arrangements, in the case of online education, are governed by the logic of instrumentalization and replication. Non-formal education, on the other hand, refers to practices that more or less spontaneously happen, but are not essential parts of pre-defined formalized arrangements, while formalized arrangements might enable them.

Returning to the issue of adult education, one can, following Arendt and Stiegler, maintain the conceptual impossibility of adult formal education but still allow the possibility of non-formal adult education. While for children both forms of education are possible. The issue of responsibility for the renewal of the world in Arendt's vocabulary, or of developing long circuits of transindividuation in Stiegler's vocabulary, is thus intrinsically dependent on forms of non-formal education of adults.

4.3. Online Education and a Turn Towards Non-Formal Practices

After a preliminary identification of the importance of non-formal education, I move to the concrete arrangement of online education. As presented above, the urgent need for educational institutions to offer online educational possibilities given the Covid-19 pandemic led to a certain crystallization of the concept of online education. This image is restricted by identification of online educational practices with the use of platforms such as Zoom, MsTeams, and Moodle, and their replication of onsite education.

From the perspective of post-critical pedagogy, the double replication analyzed in Chapter 1 leads to suppression and oblivion of the essence of education in online educational practices. As highlighted, online educational practices appear to be empty of an educational sense, being a mere means for information transfer. In other words, the practices of online education that mostly happen within formal educational settings of schools and universities are designed and used as an effective means, turning education into a production process.

I want to propose an investigation of non-formal practices as the starting point for a post-critical inquiry into online education. While online education practiced by educational institutions tends to follow an instrumentalized essence, a post-critical inquiry would start from experiences that

can be recognizable as educational *per se*. In this section, I inspect two approaches to the relation between formal and non-formal practices — Husserl's and Lagerkvist's.

4.3.1. Husserl and formal practices

One of the main themes of Edmund Husserl's (1970) *The Crisis of European Sciences and Transcendental Phenomenology* is the relation between formalized technical activity and pre-theoretical, everyday practices. Husserl attempts to understand and propose an alternative to what he sees as the anti-rationalism of his time. Without underestimating the practical and technical achievements stemming from the scientific endeavor, Husserl argues that the sciences were failing to reflect on their place in human existence. Furthermore, following a scientific worldview, i.e., seeing reality as composed of whatever — according to a certain scientific method — can be successfully asserted to become facts, ends in a situation where "all the conditions of life, ideals, norms upon which man relies, form and dissolve themselves like fleeting waves, that it always was and ever will be so, that again and again reason must turn into nonsense, and well-being into misery" (1970, p. 7).

Within a scientific worldview reality appears to be devoid of meaningfulness for human existence. However, Husserl argues, it has not always been the case. In what follows, Husserl (1970, p. 17) attempts to understand where this restriction of the idea of science comes from and tries to look for alternatives, which he claims to be the task of philosophy.

The starting point for this investigation is Galileo's mathematization of nature. Husserl (1970, p. 23) claims that after Galileo, the European sciences have inherited a certain way of scientifically dealing with nature, i.e., treating it as an idealized mathematical whole drawing upon the idealization of geometry, considering it as a set of lawful patterns devoid of relations to the subject. According to such an interpretation, nature is something that exists objectively in itself. These laws are inductively accessible a posteriori through factual experiential data.

Husserl identifies, however, the prescientific ways of engaging with the world that were obvious to Galileo, and that are invaluable for scientific activity to have a meaning for human life. Husserl points out two such activities: measuring and predicting. For Husserl, this is important for rehabilitating the subject because "[p]rescientifically, in everyday sense-experience, the world is given in a subjectively relative way. Each of us has his [sic!] own appearances; and for each of us they count as that which actually is". (p. 23)

First, Husserl refers to the geometrical practice of starting from experientially given bodies and moving towards ideal shapes. He argues that it "points back to the methodology of determination by surveying and measuring in general, practiced first primitively and then as an art in the prescientific, intuitively given surrounding world." (p. 27). These shapes, however, are without "objectivity" (p. 27), as they necessarily refer to the rivers, mountains, buildings, among others, and are dependent on determinations ruled by the sensible objects being measured. "The art of measuring discovers practically the possibility of picking out as [standard] measures certain empirical basic shapes, concretely fixed on empirical rigid bodies which are in fact generally available" (p. 28). This possibility of generalization and idealization is what gives rise to the purely geometrical way of thinking. "The art of measuring thus becomes the trail-blazer for the ultimately universal geometry and its "world" of pure limit-shapes" (p. 28). Galileo, then, expanded this idealization not only to shapes but to the whole of nature, overlooking human activities behind this idealization (p. 29).

Second, Husserl refers to prediction. While prediction in the form of induction is essential to the scientific project as establishing natural laws, it is originally based on a primordial human experience. Husserl argues that all life rests on prediction.

> Things "seen" are always more than what we "really and actually" see of them. Seeing, perceiving, is essentially having-something-itself and at the same time having-something-in-advance, meaning-something-in-advance. All praxis, with its projects, involves inductions; it is just that ordinary inductive knowledge (predictions), even if expressly formulated and "verified," is "artless" compared to the artful "methodical" inductions which can be carried to infinity through the method of Galilean physics with its great productivity. (p. 51)

Referring to the way scientific idealization is meaningfully dependent on everyday measurement and scientific induction in everyday prediction, Husserl can better understand the meaningfulness of the scientific endeavor: the idealization of measurement and prediction to serve purposes that lay in prescientific life, purposes intrinsically connected to personal projects. Based on the analysis of the activities that are meaning-fundaments for the scientific endeavor, Husserl wants to stress that

> Mathematics and mathematical science, as a garb of ideas [...] encompasses [sic!] everything which, for scientists and the educated generally, *represents* the life-world, represents the life-world, dresses it up as "objectively actual and true" nature. It is through the garb of ideas that we take for true being what is actually a method—a method which is designed for the purpose of progressively improving, in infinitum, through "scientific" predictions, those rough predictions. (p. 51)

Since the mathematician and the natural scientist themselves, in their daily business, work as a "brilliant technician of the method" (p. 56), it is the task of philosophy "to inquire back into the *original meaning* of all his meaning-structures and methods, i.e., into the historical meaning of their primal establishment, and especially into the meaning of all the inherited meanings taken over unnoticed in this *primal establishment*, as well as those taken over later on." (p. 56)

In sum, Husserl searches for connections between scientific activity and everyday life to escape the meaninglessness stemming from positivistic science. The rediscovery of meaningfulness is only possible by reference to the pre-scientific practices that give science a place in human life: prediction and measurement. While the term pre-scientific for Husserl has a clearly historical dimension (before the advent of a formalized scientific method), it is important to emphasize that the advent of a scientific method has not erased the significance of such pre-scientific activities.

In today's context, day-to-day activities involving prediction and measurement remain integral to human existence. These spontaneous practices are not bound by formal rules or procedures but are deeply embedded in our everyday lives. Whether it is estimating travel time based on traffic patterns, assessing ingredients for a recipe, or gauging the weather forecast, these practices of prediction and measurement continue to shape our interactions with the world. Following this link between pre-scientific and non-formal, Husserl's insights offer a valuable framework for elucidating the significance of studying non-formal educational practices, as emphasized in this work.

In a situation where the meaningfulness to human life of a set of formalized practices is being overlooked, Husserl's movement is to go back to everyday activities that give meaning to such activities. Such a movement serves as conceptual framework for the investigation of non-formal online education to disclose new horizons for online education. Furthermore, exploring non-

formal online education could even be a source of transformational insights for formal online education.

4.3.2. Lagerkvist and Online Life

As shown above, instrumental theories of technology conceptualize artifacts as neutral tools, devoid of inherent biases or influences. Within this framework, users are often perceived as detached subjects capable of freely controlling their interactions with technology. Furthermore, I argued that an instrumental theory of technology underlies the discourse on the double replication of online education.

Lagerkvist's (2017) existential media studies present an alternative view that focuses on the question of how our everyday life is shaped by digital media. More precisely, Lagerkvist investigates the question "*What does it mean to be a human being in the digital age?*" (p. 2), she wants to show

> how digital media have a uniquely existential burden, resonance as well as potential. This means bringing forth the recognition that media are indeed tools of everyday existence, but they are at the same time momentous and life-defining [...] this perspective both firmly acknowledges vulnerability as a given of human existence [...] and accentuates what distinguishes the current predicaments of the digital age. (pp. 4-5).

Drawing from Stiegler (1998), Lagerkvist recognizes the original technicity of human beings. The thesis of human original technicity combined with the ubiquity of digital media enables Lagerkvist to use the Heideggerian concept of thrownness in reference to digital human existence. The concept of thrownness refers to the fact that we find ourselves always amidst a predetermined world, situated in a specific place, historical era, and among a particular community, facing profound uncertainty and the inescapable responsibility of attributing significance (Heidegger, 2010, p. 169). This state of being thrown implies a simultaneous experience of openness and constraints. We exist within this world, presented with the opportunity to actualize our potential within the confines of our given circumstances.

Lagerkvist (2017) claims that to better understand the position of human beings among digital technologies, and the meaning of such technologies, it is necessary to start from a concept of the human as

> a precarious, embodied, relational, mortal creature; sometimes at loss, bewildered, and in search for meaning before the abyss. She is imbricated in socio-technological ensembles, traversing these terrains more or less successfully, in search for what may be cautiously termed existential security. Existential media studies actually require a paradigmatic change of casting. The principal inhabitant of the digital ecology, our principal subject in media studies, is not a savvy, early adopter, but the human being who sometimes stumbles, falls, misunderstands, struggles, is vulnerable, hurting, speechless, and finds no solution; but who may also experience moments of ultimate meaning, community, support, and fullness, as she navigates through the torrents of our digital existence. (p. 12)

One of the manifestations of ambivalence while living online are the "ominous intimidations of an eternal memory" (Lagerkvist, 2015, p. 188), as records of activities with online technologies, that persist much beyond a person's presence. As Lagerkvist (2015) puts it "[t]he forever of data leaves us ambivalent, anxious and quite vulnerable about where our traces may be situated, and how they may bear on our lives and afterlives" (p. 190). Furthermore, inspired by Lagerkvist, Frosh (2018) relates the everyday experience of tagging leads to a summoning of a person in unexpected situations, thus making the person vulnerable to the influences of photographic representation of its body or to insertion in situations that it would arguably want to be connected with. Following this framework, Miller (2018) analyzed the data leaks from the "Ashley Madison" website to draw attention to the vulnerability of the always lurking possibility of exposure to activities on the internet. This is only possible given the ubiquitous collection and archiving of user information.

Even though it is possible to find analyses of a variety of online activities and situations from such a starting point of ambivalence, such a framework has not been applied to the study of online education. A discourse on online education based on the double replication, by replicating an instrumental theory of technology, fails to take account of what Lagerkvist calls the "thrownness" of online life. One of the ways that the replicative logic of formal online education overlooks the educational potential of online technologies is through an attempt to make education secure, predictable, and risk-free. Massive Open Online Courses (MOOCs) — as already presented above in the form of Moodle — are a good example of such a search for predictability and risk elimination, as they are systems composed of a strong linear structure with clear instructions on what needs to be done with the content. With an abundance of instructions,

MOOCs appear as a structured progression of tasks, leading to a foreseeable outcome in a straightforward, linear fashion (Marin, 2021). This linearity and predictability of MOOCs are what restrain the possibilities of educational gestures while participating in these courses, therefore undermining their educational value.

As Biesta (2014) asserts, education is always an open endeavor, a place allowing something new to come about, where inputs and outputs can never perfectly match. Seeing this mismatch, this weakness, this risk only as a defect, something to be dealt with, a problem to be solved, is missing the educational point. If we take the risk out of education, there is a real chance that we take out education altogether. Starting from Lagerkvist's (2017) concept of thrownness into digital existence and the corollary that human everyday life among online technologies cannot be characterized by predictability, but rather by risk and vulnerability, a conceptual horizon is open to understanding online education beyond the linearity of MOOCs. Investigating non-formal, everyday educational online practices have the potential of revealing a different meaning for online education, one that encompasses "experiences of uncertainty, ambivalence, and vulnerability [that — L.V.M] entail meaningfulness and inescapable tragedy and span both the mundane and the extraordinary". (p. 11)

The interpolation of Husserl and Lagerkvist views on the relation between everyday activities and formalized practices articulates two essential implicit dimensions of this work. First, the emphasis on the significance of investigating everyday non-formal activities. Second, that the present investigation of non-formal educational practices in their everydayness necessarily has in its horizon a potential rearrangement of formal education

4.4. Elements of Non-formal Online Education

Following Stiegler, the basis of education — be it formal or non-formal — is the interiorization of a certain relation to space and time, of a certain form of attention or thoughtfulness. One essential element for such acquisition is the rehearsal of various practices. The identification of these practices in the context of onsite education is relatively unproblematic. The importance of such practices for the education is also shared by authors connected to post-critical educational thought. For example, Masschelein and Simons (2013), e.g., refer to these practices with the term scholastic, linking it with technological arrangements of various onsite pedagogical forms such as essays, assignments, dictation, and exams. Vlieghe and Zamojski (2021) argue that notetaking is

one such formative practice, as it shapes the student's attention and grants possibilities for self-transformation.

In Stiegler's case, the analysis of such practices and the connection to their educational sense is made possible by a general analysis of the overarching technical system. In the case of onsite education such an understanding heavily draws on the potentialities and consequences of writing as a technological system. Formative practices are thus formative in their reference to attention formation passing through the former technical concepts.

Stiegler draws attention to the collaborative potential of online technologies. This potential is based on the reconciliation of production and consumption made possible by these technologies. This is visible, for example, in the realm of the internet and open-source movements. People can generate content and participate together in the generation of knowledge. Platforms like blogs, forums, wikis, and social media sites allow individuals to create, share, and curate content independently. Projects like Wikipedia, where users collectively contribute to the creation and editing of articles, illustrate how decentralized collaboration can result in the accumulation of vast amounts of knowledge. Similarly, initiatives like open-source software development enable programmers worldwide to collaborate on code, leading to the creation of innovative software solutions that benefit the entire community. Such collaborative platforms encourage peer-to-peer interactions. Online technologies' enabling of connection, interaction, and collaboration across geographical boundaries is an essential indicator of its possible educational potentiality.

Lagerkvist contrasts the perspective of a savvy user of technologies, to the view of online technologies as part of human errant existence. By having the latter as a starting point in the identification of formative practices, the range of possibilities opens up beyond mere clicking "next" and the linearity of pre-established programs, applications, or platforms. Education can potentially happen within every aspect of living among online technologies, sometimes within moments not totally in our control. Education might just happen without the realization that the participant has undergone a formative practice. Formative practice can happen without the necessary label of "online education". In this case, even monetized platforms — such as Google, Facebook and YouTube — can foment formative practices, however, it does not make them essentially educational platforms, though they intermediate in the articulation of an educational potentiality of online technologies.

Furthermore, from the confrontation of Arendt and Stiegler, it can be assumed that such non-formal online educational practices can involve people of all ages. As previously discussed, it is necessary to conceptualize some kind of adult non-formal education for the formation of long circuits of transindividuation in the context of technologies that appear within one's lifetime, and to which new generations have to be introduced.

At this moment only a preliminary delineation of the concept of non-formal online education practices can be achieved. I conceptualize these practices as practices of attention formation involving online technologies that contribute to the formation of a particular relation to time and space. These formative practices are activities, experiences, and routines in which people engage with (actively or passively) in their daily involvement with such technologies. A preliminary way to identify such practices is following Stiegler's thread of online technologies as enablers of collaboration, and mutual knowledge creation. In the next chapter, drawing on post-critical educational perspective I identify and examine non-formal online education practices, and the educational potentiality of online technologies that they articulate.

5. Non-formal Online Education and the Potentiality of Online Technologies

From now on, I attempt to approach non-formal online educational practices from a post-critical perspective. Even though it is clear that every aspect of living online potentially creates metadata to be collected and sold, and that the appearance of links to certain webpages is dependent on advertisement and is customized to the user, it is necessary to bracket out this particular actuality of the digital if the goal is to understand the educational potentiality of online technologies. Such a maneuver is inspired by Vlieghe and Zamojski (2019) in their bracketing out of non-essential elements of teaching. In the case of this thesis, I attempt to bracket out the actual replicative use of online technologies and reconstruct everyday online practices and the educational moments they might evoke. With such a reconstruction I aim at conceptualizing the educational potentiality of online technologies and, thus, the possibility of online education.

Additionally, this work draws on Vlieghe and Zamojski's thing-centered understanding of education. Such an approach highlights that "education always takes place in relation to a concrete thing, something that has a materiality of its own" (p. 24). As an alternative to teacher-centered and student-centered views on education, Vlieghe and Zamojski offer a model focusing on the subject matter as the central point of the pedagogical process. The interpretation of subject matter draws on Heidegger's (2001 [1950]) distinction between a thing and an object.

Objects always appear as a useful whole, having a fully established meaning according to their functions for human beings. On the other hand, thing is "the name for an affair or matter of pertinence. They denote anything that in any way bears upon men, concerns them, and that accordingly is a matter for discourse" (Heidegger, 2001, p. 172). We can relate to the world through our concern with the thing. A thing is always included in a larger context, a context which gives a thing its significance, this context is the world. A thing is always referring to the world, but the world is only approachable through the things that compose it. By following the continuous withdrawal of the thing towards the world, one can get acquainted with the world. Losing oneself and finding oneself in this withdrawing movement is what allows for educational transformation to take place.

For education to take place, Vlieghe and Zamojski (2019) claim, aspects of the world need to be presented as matters of pertinence: things that potentially can touch the students and call for further interest and investigation. The world — the larger context made up by things — is revealed as a matter of common interest, instead of a set of objects with certain functional relations to be appropriated for students' personal gains. In this sense, education is understood as a set of practices through which students become interested in the world, discover why it matters, and start to care for it, instead of a process of equipping students with knowledge, skills, and competencies. Furthermore, one way of articulating a practice as educational involves understanding its manifestation of spatial and temporal conditions that allows an introduction to the world in ways that allow for its renewal. Drawing on Stiegler and the conjunction of technology and attention, such an examination depends on the materiality of the situation under question, especially the technical artifacts involved in the process.

Drawing on the post-critical perspective and the thing-centered framework of Vlieghe and Zamojski (2019), I aim to disclose potential educational aspects of online technologies through a study of existing non-formal educational practices. The aim is to bring to the surface precisely the manner in which pedagogical operations (cf. Vlieghe, 2022) are articulated in educational practices involving online technologies. With the popularization of online technologies and access to the internet, the chances are high that the reader had or potentially can have educational experiences online, and that she can recognize the following phenomenological descriptions in her own experiences.

5.1. Phenomenological Descriptions

One way to reconstruct everyday online practices is by drawing on van Manen's (1997) and Friesen's (2011) methodological account of phenomenology for educational research. These authors argue for the presentation of case studies as phenomenological descriptions attempting to evoke an experiential moment in the reader. This approach to philosophical research in education is based on an understanding of the necessity of re-awakening the basic experience of the world and the things that make up this world. Giving a direct description of some phenomenon is

> not just narratively reporting, copying, or telling a story. Rather, to describe is to write directly (unravel or uncover) what remained hidden or concealed. Doing phenomenology on the phenomena means taking up the attitude of immediate seeing and practicing an

> attentive awareness to the things of the world as we live them rather than as we conceptualize or theorize them (van Manen & van Manen, 2021, p. 1071).

According to van Manen (1997), the methodology of phenomenological descriptions involves actively and reflectively engaging with the meaning of a particular question or phenomenon. In this approach, the researcher, for the writing of such descriptions, doesn't follow a strict data gathering phase with a predetermined timeline but rather immerses themselves in the question as it takes shape. During this process, different sources of experience, including films, novels, radio programs, conversations, and observations may unexpectedly resonate with the researcher's question, shedding light on different aspects of the phenomenon under investigation. Thus, the data source for those descriptions becomes rather blurry. Instead, a more fitting approach would be to describe the relevant contexts and experiences that the researcher engages in while contemplating the problem. The emphasis is on the researcher's ongoing and evolving connection with the question as they "dwell" with it throughout the entire research journey, including the writing process.

The result of the writing process is so-called "anecdotes", short accounts developed through careful refinement. They are intended to vividly present particular incidents highlighting a specific aspect that is noteworthy for the person involved. Such anecdotes often revolve around everyday events and experiences, capturing the essence of a moment in a simple and evocative manner. It is worth emphasizing that such anecdotes do not provide overarching principles, statistical trends, or theoretical frameworks, but rather to make explicit some essential elements of an experience that might be overlooked.

Following van Manen, Friesen (2011) also emphasizes that the experimental data that comprise these descriptions can be based on cases drawn or adapted from several sources, including personal experience, formal and non-formal interviews, and other texts. Furthermore, these descriptions should be enriched by descriptive techniques closer to fictional writing, as this exercise aims to evoke an experiential moment in the reader. Finally, Friesen claims that a successful phenomenological description interweaves with reflection, analysis, and interpretation.

The focus of the presentation of cases of a particular phenomenon assumes the possibility that the reader is somehow able to "participate" in the described experience, recognizing this salient phenomenon and the truth of the relations disclosed in the description. "The reader is asked to

help ‘breathe life’ into these descriptions, to encounter these passages with the expectation and sensibility of someone reading fiction, from an orientation of involved receptivity rather than analytic detachment” (Friesen 2011, p. 34). Their capacity to make some phenomenon explicit to the reader is more important than the precedence of such cases.

Friesen (2011) presents a brief assessment of these methodological steps which is worth repeating: “Despite its unconventional ambiguity and informality, this type of inquiry can be both valuable and accessible […] it can address familiar issues and questions in ways that are quite different from conventional research. This method can be particularly valuable in cases where conventional research has asked the same questions again and again, only to repeatedly receive the same answers” (p. 34). Furthermore, Friesen presents some examples of phenomenological descriptions related to online education. First, he warns:

> When employed as a means of studying engagement with computer technology, anecdotal accounts generally do not serve as evidence of what can happen with this technology. Instead, they attempt to provide the reader with recognizable experiences of this kind of engagement. Anecdotes are not presented to the reader with the tacit claim, “This really happened”; they instead bring with them the tacit appeal: “Is this experientially recognizable or resonant?” More specifically then, the anecdote is told with the intention of raising the further question: “What is the experiential meaning of what happened?” (p. 38)

Later on, Friesen presents and analyses different anecdotes related to the use of a specific program for the simulation of a frog’s dissection. Here is an example of one of the anecdotes:

> I log into my course web site, and click on a link called “Frog Dissection: try the demo at froguts.com” as listed on the course homepage that greets me with pleasant musical tones. I click on “demos” and then choose “frog” from a list. After another moment of waiting, an image of what appears to be a life-size bullfrog fills much of my browser window, with a row of buttons on the right. Underneath, text instructs me to ‘press the pin button on the toolbar” so that the frog can be secured. I do this, and a box of pins appears. I click and drag these pins one by one to spots on the frogs’ arms and legs that are now marked with small red “Xs.” I discover that I can then insert the pins simply by double-clicking. When they land in place, they make a dull percussive sound. Next, a red line running up

> and down the length of the frog's abdomen appears. I am instructed to "make 3 incisions along the dotted red line." I feel a slight sense of unease as I click on the button, and then drag a scalpel without resistance along the frogs glistening and mottled underbelly. (p. 91)

The analysis of anecdotes of such type allows Friesen to point out the educational limitations of online (simulation) technologies. He points out that the manipulation of the virtual object (in this case: a frog) follows clearly coordinated, specific, enumerated objectives, it is mediated by an interface making the process comfortable, certain, smooth and familiar, and it is an operation that can be undone. It is exactly the certainty of this arrangement, the lack of inconvenience, encumbrance, or disruption — the lack of risk — that limits its educational value.

Friesen's analysis compellingly shows some of the limitations of online technologies to be educational. However, more than that, they successfully exemplify the use of anecdotes for the study of the educational value of online technologies. Naturally, such analyses do not portray the whole picture when it comes to online education. Friesen's (2011) analyses take as a starting point the engagement with linear, predictable programs, without taking into consideration the uncertain, ambivalent, and vulnerable aspects of online life (as explored by Lagerkvist, 2017).

I assume that identifying, describing, and interpreting cases of non-formal educational practices can make explicit educational potentialities intrinsic to online technologies, but absent in the currently replicative use of online technologies. This is performed by following Friesen's and van Manen's account of phenomenological description and having as a starting point a thing-centered pedagogy and the tenets of a post-critical inquiry. Starting from these premises, I refer to three cases of non-formal online educational practices, what I call involvements with online technologies.

5.2. Cases of Non-Formal Online Educational Practices

5.2.1. The Internet and My First Loaf

I was living in an isolated village in Iceland, where the bread available was either too expensive or of poor quality. As I always wanted to learn how to bake, I felt this was the time to start it. The first thing that came to my mind was to open my computer and search "how to bake bread?." Immediately on the screen appeared an endless list of links that could help me making my first bread.

Choosing between the different links was a bit overwhelming, but I finally decided to open the one with the title “Homemade Bread Recipe”. While the page loaded, I anxiously awaited the new world that would be on this page. Besides the photos of how the bread should look, there was a long text with some concepts whose meanings I didn’t understand, such as “Proofing the yeast”, “Rising”, and “Stretch-and-fold”. I felt dizzy just by facing the magnitude of things that I would have to learn.

Luckily, together with the photos, there was a video of a patient woman slowly showing the necessary moves to follow this recipe. Linked to this video was the suggestion of another video, this time of a man going through kneading techniques step-by-step. There was also another suggestion, of a series of videos with hand-drawn frames explaining the influence of different factors in bread making, such as the protein content of the flour, adding sugar or oil, and the temperature of the dough. I even found a lecture discussing the influence of bread on the rise of human civilization.

I opened each video in different tabs, and after watching them, more doubts appeared. I asked myself “So what is the correct amount of water for the type of flour I have here”, “what is the best pH for increasing yeast activity”. Apparently, there are videos describing every aspect of bread-making! The hardest part was knowing when to say “enough watching” and actually getting my hands dirty. Even though the result was nothing like the first picture I saw, I had to admit I was proud of my first loaf.

5.2.2. Collaboration, Coding, and Forums

I felt the need for a change in my career, as sales didn’t resonate with me in the long term. I yearned to have the ability to create something of my own, to start from scratch, and to build something extraordinary. While browsing YouTube I came into contact with the videos of Steven, who streamed himself coding line by line in projects such as a mobile application for uploading pictures given a person’s geographical location. Seeing how something so complex could be built from scratch was a big factor influencing my decision to take a step toward such a career change

I doubted Steven would respond, but still, I contacted him. I was delighted when he accepted the idea of meeting once a week to help me develop a website for a fake tourism company. We would connect via Discord and TeamViewer and Steven would look at the HTML, CSS,

JavaScript, and Python code I had written during the week and suggest more appropriate solutions. The worst was when he marked in red a big part of my code!

Besides collaborating with Steven, I started posting my doubts on StackOverflow. It was amazing to see that someone already had the same question as I did. The answer was already there! Rare was the case when I would need to initiate a discussion. Others, strangers from all around the world, who had been in the same position as I helped me immensely to finish this first full-stack application. By the end of the project, I was surprised to see I was already answering questions and that I indeed can create something from scratch.

5.2.3. Sugata Mitra's Self-Organized Learning Environment

In this final case, I want to consider a student participant in Sugata Mitra's SOLE. In this project, a group of children is presented with a computer with internet access and are prompted with questions by volunteers. These questions can be, for example, "why are the poles melting?," "why is glass transparent?," "where do languages come from?" These are often related to the children's experience but phrased such that they would incite children's curiosity.

To answer these questions, the students need to browse through the internet, evaluate answers, and discuss among themselves. Furthermore, volunteers, who can be connected from all around the world, can elicit comments and queries. By the end of the session, the students present some answers they have found answers to these questions. Even though these arrangements might be located in a physical school, I include it here due to their educational involvement with online technologies that go beyond the use of particular platforms and embody a more spontaneous interaction with these technologies that might well happen beyond the school environment.

After a general presentation of Mitra's SOLE project, I want to add as another case study a passage from Sugata Mitra's (2020) "The School in the Cloud". A case of the involvement of students in these arrangements is present in the following anecdote:

> A group of boys Grade 7–8 […] were observed looking at a picture of the human body. When asked what they were searching for, they said "bones" and although there was a link to anatomy, they did not appear to know that might be a relevant one. By chance, they clicked on the word "red" and went into a completely different site, seemed to realize that it was not what they were looking for [it showed the color red, flowers, etc.] and

> came back to the original site. […] They later found some pictures of brain, kidney, ears. Another group of boys sitting at the adjacent terminal were looking on interestedly [...] (p. 22)

5.3. Discussion

5.3.1. From Case Study to Educational Potentiality

As previously stated, the goal of this inquiry is to distinguish a way of speaking and thinking about the educational potentiality of online technologies starting precisely from these online educational practices. It is necessary to suspend for a moment the similarities between the cases above to those onsite educational practices — tutoring, library, dynamic encyclopedia, and learning community — and attempt to examine these online educational practices as they appear and afterward to derive what is essential for them. In phenomenological term, this can be conceptualized respectively as a transcendental reduction and an eidetic reduction

Apparent from the cases above is that the involvement in such non-formal online educational practice usually starts from some kind of task to be fulfilled, some assignment, some practical need. In case one, the student starts with a certain need (lack of good bread) and sees bread as something to be ultimately consumed. In case two, the involvement is motivated by the wish for a career change. In case three, the starting point is an assignment given by the teacher. Following a thing-centered pedagogy, given this presence in a functional whole, bones and bread are initially rather objects for the students — instead of things — objects to be utilized for a given objective.

By the end of the movement portrayed in these cases, the students have developed a more profound, long-lasting relationship with this subject matter, or at least an interest. For instance, in case one, because of the interest in bread, the aspects of the world behind yeast, growing wheat, and molding into bread became explicit, just as the importance of these elements in the contemporary world. In case two, the participant has realized the ubiquity of collaboration behind the development of computer applications.

Something happens to the approach to these topics: beginning as the means to achieve something according to a personal project, and ending in the position of disclosure of them as aspects that make up the world, aspects to be cared about. In the following subsections, I want to show that there is something in the materiality of online technologies that enables this movement.

Moreover, following Vlieghe and Zamojski's thing-centered pedagogy, I conceptualize this movement — following the Heideggerian vocabulary — as the movement from an object to a thing.

From the cases presented above, the involvement of the student with the object in the multiplicity of perspectives made possible by online technologies slowly dissolves the useful whole of the initial object. With the addition of each new element that this object is connected with, it gradually becomes a subject matter, a thing to be continuously explored, studied, and associated with. In the first case, this is presented in the ever-increasing number of pressing questions to achieve the initial goal, i.e., baking bread. With every new appearing element within reach, the goal of having bread recedes into the background, while in the foreground appear the multiple aspects that have to be in place to make up this object a subject-matter, a thing to be studied.

In the second case, even though the initial goal was to acquire a new skill, by the end of the movement it became clear the necessity of a diversity perspective for the successful development of an application came to obtain a prevalent significance. In the third case, the students' initial goal is to answer the prompted question, and through their technological involvement they (and adjacent kids) develop an interest in what was searched for.

In Chapter 1, I presented how the internet is framed by the logic of the market using algorithms that maximize profit through surveillance and the control of possibilities of engagement with opposing points of view. Despite algorithms narrowing down the internet experience, the anecdotes presented in this chapter suggest that educational experiences enabled by online technologies are indeed possible. Thus, online education is possible, not as double replication, but a scaffolding for developing an interest on a thing behind an object.

5.3.2. The Thing Beyond the Fourfold

It is worth reflecting on how the interpretation of the thing, starting from online technology, refers to the Heideggerian approach of Vlieghe and Zamojski. For Heidegger, a thing is only thinkable through its coming together in what he refers to as the fourfold, i.e., earth, sky, mortals, and divinities. The withdrawal of the thing from functional references can be properly conceptualized through the disclosing of its connections to these four aspects of being. However, I presented above an understanding of the thing as made up of a varying multiplicity of aspects

that cannot be subsumed to four, but rather are acknowledge in their multiplicity. This understanding draws on Bruno Latour's (2004) discussion of matters of concern.

Latour argues that even though Heidegger, in his discussion of objects and things, offers a powerful vocabulary to talk about getting closer to the world, for caring, for being interested in the world through the proximity to things, the latter nevertheless restricts the intimacy to a certain class of objects. This restriction is precisely given the limitation of the folds to four. Aware of this limitation, Latour argues for an expansion from four folds. Latour argues that within the fourfold there are thousands, millions of folds, there are thousands, millions of connected aspects, of perspectives that gather to make a thing approachable. In Latour's (2004) words

> Heidegger was not a very good anthropologist of science and technology; he had only four folds, while the smallest shuttle, the shortest war, has millions. How many gods, passions, controls, institutions, techniques, diplomacies, wits have to be folded to connect "earth and sky, divinities and mortals" — oh yes, especially mortals. (p.236)

Latour gives the following illustration to his approach to objects and things

> [The space shuttle Columbia disaster] offered me a tragic instantiation of yet another metamorphosis of an object into a thing.
>
> What else would you call this sudden transformation of a completely mastered, perfectly understood, quite forgotten by the media, taken-for-granted, matter-of-factual projectile into a sudden shower of debris falling on the United States, which thousands of people tried to salvage in the mud and rain and collect in a huge hall to serve as so many clues in a judicial scientific investigation? Here, suddenly, in a stroke, an object had become a thing, a matter of fact was considered as a matter of great concern. [...] how could there be a better example of this making and unmaking than this catastrophe unfolding all its thousands of folds? (pp. 234-235)

An overlooked object, merely expected to achieve its functional goal, suddenly and tragically reveals what needs to be in place for this object to exist. Individual pieces of metal fabricated in industrial plants, calculations of atmospheric conditions for the launching of a rocket, court decisions, the court hall, judges, spectators, security, and much more. All of these are folds that come together to make an object into a reliable whole, and that can be potentially unfolded disclosing the aspects of the world that make them up.

With such a Latourian understanding of the thing, the folds, and the aspects of the world, I argue that online technologies enable one to depart from an object showing ways to approach the thousandfold connected aspects gathered in a thing. Through the exploration of these perspectives, students can discover the world in its thought-provokeness, as a matter of interest, of pertinence, of concern. Objects are not simply given, they are constituted given a significant number of aspects, of perspectives. By getting acquainted with the gathering of these perspectives the thingness of the object can appear, and then a relation to the world can be developed, perhaps a relationship of care.

By the end of the article, Latour, advocating for the expansion of the concept of the thing as a matter of concern, writes: "Archimedes spoke for a whole tradition when he exclaimed: 'Give me one fixed point and I will move the Earth,' […] I exclaim in turn 'Give me one matter of concern and I will show you the whole earth and heavens that have to be gathered to hold it firmly in place.'" (p. 246). Drawing on Latour and Archimedes, one can claim: "Give me an object and the possibilities enabled by online technologies, and I can unfold the world through a multitude of thought-provoking aspects."

5.3.3. Spatial and Temporal Conditions of Online Education

Masschelein and Simons (2013) show scholastic technologies as educational through the lens of the spatial and temporal conditions of free time, *scholé*. Following this framework, it is worth disclosing what, then, are the spatiotemporal conditions articulated by online technologies' movement from objects into things. Preliminarily, it is helpful to draw from Niels Brügger (2021) who presents different ways of considering the temporality of the World Wide Web.

Brügger starts by presenting an anecdote about a personal experience at an art exhibition exploring new technologies. Brügger describes the room *Temps différé – Deferred time* as

> a long corridor divided in two by one of the grey cloths hanging from the ceiling, and in each of these two smaller rooms were nothing but a chair, a camera focused on the chair, and a television screen in front of the chair – an identical setup in each room. But what was not visible was the differed time between the two rooms. It worked like this: a visitor came into one of the two rooms, s/he maybe sat down in the chair to look at the television screen, but to her/ his surprise what was shown on the screen was not a self-portrait, but rather what was taking place in the other – identical – room, but with a five seconds of

> delay. When the visitor(s) realised this they reacted (by surprise, by laughing, or something else), and then this reaction was transmitted to the other room as well, still delayed, then followed by a new reaction, and so on. In all its simplicity this exhibition room made it perceptible to visitors that the new media technologies placed them in something that looked like a recognisable temporality, but that was, in fact, always already differed, a "time out of joint". (p. 58)

Inspired by such an experience, Brügger discloses different approaches to temporality but focuses on time as the linear duration between an earlier occurrence and a subsequent one — a sequence of events unfolding, such as this event followed by that event, and so on. These events are understood in connection to visible phenomena and tangible entities in the surrounding environment. Just as time can be observed in the clock, as the movement of the mechanical hands, there is also a kind of time that can be perceived in the objects present on the web.

Within this approach to temporality, Brügger mentions various forms of time are "recorded" within the digital realm of web pages, websites, and the online sphere. These encompass the time taken to fetch and load a webpage and its components, and the coexistence of diverse temporalities inherent in each element like images, text, audio, and video. There's also the time spent navigating between web pages within the same site using hyperlinks, the instant incorporation of history into the present through archives, the immediate transition to and exploration of other websites, and the swift presence of recent history across different parts of the web. However, this presence is transient and may lead to potential disappearance.

Thus, for Brügger, online time is differed time. The web is constituted by different elements which can have different durations and different loading times. These elements correspond to Latour's folds in discussion of the thing. The same internet page can be composed of aspects of a things that are happening at the moment — including live streams, real-time data feeds, or social media update — aspect with a few milliseconds of delay — such as stock market updates, or weather forecasts — or even the archived past, e.g. books and drawings from past centuries. This deferment can either manifest as a historical depth that exists without necessarily being actively utilized or as a dynamic past that is consistently and seamlessly repurposed as an integral part of the current day's content.

However, taking Stiegler's writings on time seriously — together with their Heideggerian inspiration — it is necessary to grasp what is the movement behind the possibility of such a differed presentation of successive time. In other words, what is the ecstatic time that accompanies such an exteriorization.[19] The indication of an answer can be found in Mike Sandbothe's (2006) confrontation of Derrida and Rorty on the issue of the temporality of the internet.

The point made by Sandbothe refers to "[t]he actual and fascinating potential of the Internet [...] [which – L.V.M.] is that it makes possible decidedly pragmatic forms of temporality by providing the formal technical prerequisites for determining the conditions of presence" (p. 8). With the term pragmatic, Sandbothe draws on Rorty (1980; 1989) to refer to the idea that the making of an object within the context of the internet is always related to the context of concrete performed action, where the object only acquires sense by being enmeshed in a web of mutually referential signs.

Given this condition of the internet, Sandbothe argues that it allows users to frame the appearance of objects in their duration, in their appearing and disappearing. According to Sandbothe, this framing is connected to personal goals, as well as "dealings and discussion within the Internet's virtual communities". In his own words:

> in the virtual surroundings of text-based communications worlds users themselves have the chance to invent and to program the narrative description of the virtual space in which they, along with other participants, move. […] [Users – L.V.M.] are not forced into prescribed simulations of space and time, but rather experience space and time as creatively shapeable constructions of their narrative and cooperative imagination. (p. 10)

Sandbothe contrasts this experience the time of online technologies with time of television, as the latter supposedly imposes a predetermined sequential temporality on those who receive it[20]. For

[19] Heidegger makes a distinction between what he terms "ordinary" or "successive" time and a more fundamental understanding of time that he refers to as "ecstatic" or "temporal" time. These terms correspond respectively to the ontic/ontological distinction. Successive time refers to how time is experienced in our everyday lives. It is the time of clocks, calendars, and schedules. It is the time that we can count in seconds, minutes, days etc. Ecstatic time refers to the fundamental temporality of Dasein. Every experience of Dasein only makes sense as it is inserted into the structure of future, past and present. Future as anticipation, past as the everlasting influence of what has happened and present as the openness for an engagement with the world. It is the temporality of Dasein — ecstatic time — that makes any kind of experience of successive time possible (cf. Heidegger, 2010, p. 385–407).

[20] However, the internet also allows for linear temporalities, as argued in the case of Moodle and the frog dissection simulation

Sandbothe, online technologies are unique in the sense that the spatiality and temporality of practices involving these technologies is intrinsically connected to previous activities of users within the context of these technologies. Having certain goals in mind, users create websites, post content, hyperlink pages. Furthermore, for most of the internet, every other page can be reached with just one click. The space created by such a reachability — reminding, a reachability shaped by users — allows time to be dedicated to certain parts of the web. If something is on the internet, but is not reachable, users cannot spend time with it. This potentiality of online technologies allows Sandbothe to affirm that it can be creatively shaped by users given an interplay of signs and their reference to other signs and so on.

While Sandbothe's presentation accurately discloses some aspects of online life, I want to show that a more engaging depiction can be achieved by bracketing the role of the user and its predetermined goals. A justification for such an exercise is that perhaps the "pragmatically determined relative end" not only influences the creative shaping of online time and space, but it is also simultaneously shaped by what appears in this time and space. To escape engaging in a discussion of origin (who frames first the user as the medium or the medium the user) I attempt a re-reading of Sandbothe from a thing-centered perspective.

For better or worse, as soon as something appears on the internet it lives a life of its own. It draws users to access it, to connect it to other elements — to other folds — by aggregating their links to the same page, or the same post. Thus, it shapes the reachability of the next element, the access to it. Furthermore, the potentiality of diverse elements to constitute a matter of concern is a significant aspect that makes up its duration as something worth seeing, worth commenting on or else becoming inaccessible as broken links. In other words, the interlinkage of elements, as folds of a thing, simultaneously makes up the space (as reachability) and time (as durability) of the thing under question.

In sum, the fascinating potential of the internet is making possible the self-constitution of online elements as things. In bringing the internet into their everyday lives, the users inescapably get enmeshed in this movement, thus having their plans framed by the things on the web, simultaneously giving shape to links, pages, and websites. The cases presented above illustrate such activity. In the first case, the participant lingers in the space constituted by the linking of protein, sugar, drawings, and pictures of bread. In the third case, a domain is created where bone

and flowers are linked together through the keyword "red" drawing children to realize this unexpected connection. Such a thread of online elements as things shaping time and space is discernible in the above-mentioned Lagerkvist's (2015) discussion of online "eternal memory" and Frosch's (2018) study of tagging.

The shaping of time and space by the interaction of things and their aspects is what makes possible the differed times mentioned by Brügger. The technicalities of the web allow the presentation of things in different formats and different connections. However, such a movement can only be fulfilled because things, in their bearing on those on the internet, give themselves as worth writing about, filming, or being hyperlinked to other things. It is the potentially withdrawing movement of the thing that enables the deferred time of the web. It is because a thing is composed of multiple folds that it lets itself be hyperlinked, while simultaneously linking to an archived past, and real-time information. Thus, being involved with online technologies can potentially lead to such an exploration of the thing, and thus to the disclosure of unexpected aspects of the world.

In this section, I have tried to show the temporal and spatial conditions of online technologies' movement from objects into things. Though, it is worth stressing that, ontically, such an educational potentiality is entangled with factors that might suppress its. For example, search engines, web pages, and online forums are explicitly programmed in a way to gives rise to such conditions. Economic factors such as advertisement give priority to links leading to companies that paid to be placed in the top results in a search engine. Furthermore, recommendation algorithms, that have the goal of keeping the user the longest in a certain platform systematically controls the appearance of the next elements given the user's history. At last, such a movement can be severely neglected, as it happens in the case of Moodle courses where linearity and predictability are essential factors.

Despite these ontic difficulties, I attempted to indicate that the educational potentiality of online technologies is ontologically present. The shaping of online space and time given the peculiarities of the things under question make possible a sustained interaction with a subject matter, thus disclosing the world in its different aspects and as something to be thought about, to be cared about, something worth developing a relationship with. Having in sight such a potentiality of

online technologies can be the first step for rethinking online education as education for its own sake.

5.4. The Educational Potentiality and Online Educational Projects

To better elucidate the consequences of the disclosed potentiality of online technologies for established online educational programs, I present and discuss two projects that draw on a post-critical educational philosophy. The goal of this presentation is to disclose how the potentiality of online technologies previously articulated can better clarify the phenomenon of online education present in those projects. The projects I discuss are bMOOC and Studio_D.

5.4.1. bMOOC

Nancy Vansieleghem (2019) presents the project bMOOC[21] as a case study to articulate "[what] happens when technology is used in a scholastic way" (p. 146). bMOOC is a concrete online course for the arts set up by LUCA School of Arts and KU Leuven in Belgium. The design of bMOOC is focused on countering the fact that in other online educational platforms — such as Moodle — the user becomes alienated from the possibility of being able to play with the underlying potentialities of the artifacts enmeshed in the educational process. Vansieleghem (2019) stresses how bMOOC can alternatively lead to such an embodiment of the creative potentiality of online technologies:

> One of the challenges within digital education is how to relate to the digital in a way that the possibility of grammatization and poetization isn't ruled out (cf. Vlieghe 2015). That is to say, how to create conditions in which the grammar of the code may show itself, so that we can find a certain distance towards it in a way that makes us think. [...] A vital characteristic of bMOOC is that it is a technology that tries to grasp how the digital works and to see how these operations could be used scholastically, i.e., as digital objects, discarding in this way instrumental and essentialist notions of technology [...] The central issue for students working with bMOOC, therefore, is: how to design a digital platform in which the user becomes engaged in the life of the digital, viewed as a heteronomous assemblage in which discourse and technology are bound up with one another. (p. 147)

[21] http://www.bmooc.be (Accessed March 17, 2024)

bMOOC is accessible to everyone, regardless of age and university affiliation. Participating in this course means contributing with pictures, texts, videos, films, audio, and all sorts of hybrid media related to a certain topic given particular exercises and instruction. In bMOOC, the content is not fixed and there isn't a specific trajectory that everyone should follow. The trajectories are dynamically produced by the students who upload new contributions next to existing ones forming a network of different media. "The posts which students find meaningful to contribute, is not determined in advance, it just makes sense at the moment of paying attention [...] The student must be attentive to the path that invites him or her to see and read what is written, and to search for a possible response" (pp. 149-150). The student confrontation with their contribution provides a "bodily experience" (p. 150) leading to a clearer sense of the constitution of the digital world as digital.

Vansieleghem (2019) provides the topic "the ignorant schoolmaster as object of study" as an example of the bMOOC project. This topic is based on Jacques Rancière's (1991) book *The Ignorant Schoolmaster*. This topic received contributions of a series of translations and transcodings, including a translated pdf excerpt, a video clip in which a participant recorded herself while reading this excerpt, a translation of the reading into French, a drawing of the reading, a Dutch language version of the reading of the text, etc. Vansieleghem highlights that the majority of contributions were translations of digital objects, which is intrinsically linked to the main theme of Rancière's book. As Vansieleghem puts it:

> Translation as an issue was never planned by the instructor: there is no item in the course that explicitly demands this to be the issue. Translation is what the text of Rancière itself is about, and it emerges as something the students not only paid attention to, but had started to put into practice (p. 151.)

The exercise on the ignorant schoolmaster, according to Vansieleghem, showed a "digital structure of media objects and media visualizations" (p. 152). Such a structure cannot be computed in advance but is rather continuously formed given the contributions. "[T]he potentiality of media visualization consists in the fact that students become able to enact a space in which it becomes possible to navigate and traces out the thinking space of the course to a great degree." (p. 152).

bMOOC shifts away from the linearity of Moodle as a pre-existing structure. Drawing on Latour (2005), Vansieleghem affirms that bMOOC emphasizes the enactment of specific relationships between participants, highlighting that what seems stable and organized isn't predetermined but rather continually forming and evolving. Furthermore, this digital structure formed by the concatenation of contributions can be differently visualized. In Vansieleghem's (2019) words:

> By designing the interface in such a way that its media visualizations become part of its navigational structure, bMOOC turned the variation of media visualization into an activity users can control themselves. By default, in bMOOC all images in the 'list' are sorted chronologically. Pressing the button 'tree' makes appear the order of posts within one topic according to its genealogy, and the 'network' reveals relations between contributions or posts according to the tags that are added with each post [...] This enables users to set the diagram free for use and to operationalize it, i.e., to turn it into an activity, into a verb: the scholastic practice of diagramming. Hence, diagramming can be understood as an excessive form of grammatization in which we visualize power relations. (p. 153)

Vansieleghem (2019) concludes with an interpretation of the educational potentiality of bMOOC. In her view, bMOOC is educational as long as it "[tries] to exteriorize the possibilities of the digital in order to use it as a scholastic technology, and as such to turn digital operations and actions into objects of study." (p. 155). In this sense, operations with online technologies become educational objects as long as students can experiment with their inherit grammar.

While Vansieleghem's analysis and conclusion are indisputably valuable, I believe she misses the mark on one essential point. Emphasizing the possibility of grammatizing the digital — by transforming the latter into an object of study — Vansieleghem overlooks the fact that what is at stake is not only the study of online technologies themselves, but also their functioning as presentation of the world, a world worth getting acquainted with and worth of being renewed. In other words, following Vansieleghem's analysis, if bMOOCs are educational as the grammatization of the digital, then the subject matter is replaceable, it is just a mean for the goal of getting acquainted with the backend of the digital course.

While the grammatization of the digital is an important dimension of bMOOC, it does not exhaust its educational logic. I want to argue that, more importantly, bMOOC is educational as it

articulates online technologies' potentiality of letting the thing shape a particular space and time corresponding to its peculiarities. bMOOC invites for contribution of varying media around a topic by connecting different perspectives on the matter of the topic — on why the topic matters. Thus, these contributions make up a space, whose topology is first and foremost guided by the topic, the thing under question. "The ignorant schoolmaster as object of study" is an excellent example of this potentiality, illustrated by the convergence of publications on the issue of translation.

Thus, the conclusion is that bMOOC is not (only) educational due to transforming digital operations into objects of study. bMOOC is educational as it is a project articulating the educational potentiality of online technologies, by fomenting a disclosure of the world through the forming of a space given the subject matter and its significance. bMOOC is educational in letting (aspects of) the world show themselves as something to be thought about, to be cared about. A bMOOC on the topic "The ignorant schoolmaster as object of study" is not educational because it "exteriorize the possibilities of the digital" but because it brings about original ways of articulating the significance of the work *The Ignorant Schoolmaster* and the practice of translation as aspects of our shared world.

5.4.2. Studio_D

Tyson Lewis and Peter Hyland (2022) analyze the Studio_D[22] project hosted by the University of North Texas, which included participants from diverse international institutions. The main goal of this project is to offer a platform for experimenting with the space and time of online educational life, by attempting to suspend the means-end logic dominantly associated with online e-learning platforms (here previously referred to as the double replication). A primordial distinction underlying such a project is the one between learning and studying.

Drawing on Biesta (2010), Lewis and Hyland (2022) refer to the term learning as the process of instrumentalized transmission of specific chunks of information, knowledge, skills, and competencies. "The learner has a certain intentional aim (such as learning how to play a sport), this intention helps organize a set of experiences, which can be evaluated according to certain success conditions (such as winning an increasing number of matches that convey mastery to peers, teachers, and fans)." (p. 36). Learning has an implicit commitment to "controlling,

[22] https://onstead.cvad.unt.edu/studio-d (Accessed March 20, 2024)

predicting, and ultimately regulating/managing contingencies in the name of efficiency, excellence, and so on." (p. 36).

On the other hand, studying is not oriented towards ends, but rather to the "experience of moving from one text to the next without closure or completion." (p. 40). Studying doesn't have a clear or easily determined sense of progress, but rather a sense. Referring to Vlieghe and Zamojski (2019), studying consists of getting entangled with a thing, taking care of it and potentially being transformed by it. Studio_D experiments with the possibility of online technologies bringing about a particular space for study, or, rather, "e-study" (Lewis & Hyland, 2022, p. 35).

To achieve e-study, Studio_D "had interdisciplinary teams of scholars work together to design protocols or experimental prompts that took up various e-learning platforms and introduced an alternative kind of movement" (p. 44). The protocols covered a variety of disciplines. After creating the protocols, they were published on the Studio_D website and made available for experimentation. One example of such protocol is the "One Sentence Research Paper, Reiterated." by Kim Lesley, Maya Pindyck, and Daniel Tucker:

> 1. Create a one sentence research "paper" stating a topic of interest. Think of the sentence as a distilled and condensed abstract.
>
> 2. Then, do any number of the following prompts, depending on how you see them relating to your particular project:
>
> • Hyperlink each word in your sentence to digital resources constrained by a library's database.
>
> • Hyperlink each word in your sentences to YouTube content only.
>
> • Hyperlink each work to any internet source (website, video, article, image, etc.).
>
> If you do more than one, observe the differences created by each constraint. What do you notice? What has this exercise suggested to you about the power of framing? What about the power of sequencing? What about research practices? How is language used to organize information in the digital contexts you engaged? How do we—or can we—interface with controlled vocabularies in our research processes?
>
> If you only do one, observe differences across peer creations. Take the sentence you wrote and experiment with rewriting it three different ways. Explore informational ways

> of re-iterating the sentence as well as more poetic, surrealist, or literary ways. Hyperlink each word in each of those sentences to any digital resources. Consider where language can take us and how it affects constructions of knowledge. (Lewis & Hyland, 2022, p. 54)

The objective of this protocol is to encourage diverse methods of online investigation that enable the examination and questioning of established methods of classification and identification. It aims to delve into the potential outcomes and pathways that various choices, simplifications, and combinations of words can lead us toward. Additionally, it seeks to actively utilize search constraints as a means of conducting research. Lewis and Hyland (2022) affirm that this protocol "pushes the boundaries of what counts as research by inverting the typical proportionality between text and citation." (p. 55). While citation is generally representative of the potentiality of the text, in the case of this protocol potentiality overtakes the text. Lewis and Hyland argue that in the context of online technologies, such a focus on potentiality is only possible through the structure established by the protocol.

Studio_D in its essence is a platform "that knot together ideas, gestures, speeds, objects [...] into a situation of study" (p. 56). Without any structure, there would be only browsing, that is the causal and incidental movement around the internet given its hyperlink structure. Lewis and Hyland consider browsing to be solipsistic, free wandering, and lacking any exposure to otherness, however, they acknowledge the upsides in its lack of intentional direction. On the one hand, e-learning consists of a rigid structure to evaluate and control online practices that "abruptly halt[s] browsing through means-end directionality" (p. 43). On the other hand, e-study transforms the potentiality of browsing's "endlessness toward a specific end" (p. 39) into a purposefulness without a concrete final objective: purposefulness as the bewilderment upon the meaningfulness of the given thing under question. In the case of the "One Sentence Research Paper", the protocol offers a renewed experience of the potential meaning of communication with respect to its endless references.

From this analysis, it is visible that Lewis and Hyland (2022) emphasize the differences between browsing and e-study. A clear-cut separation of them is, however, problematic. Browsing, for Lewis and Hyland, is devoid of educational meaning, though it can potentially be appropriated by the minimal structure of a platform such as Studio_D. Browsing lacks any sense of risk or tension, as in this unstructured activity the internet is seen as a flat space. E-study, then, is made

possible by a platform that provides a more complex topography to the internet, by adding some kind of "push and pull" (p. 41), a restlessness to the space that "can draw a studier into something only to suddenly be abandoned by an emergent current of thought that intercepts and throws one off course." (p. 41).

Lewis and Hyland's depiction of unstructured activity on the internet is rather a caricature, and not fully capturing the experiences of online life. As discussed by Lagerkvist (2017), to better understand the interaction of human beings with online technologies, one needs to start with a concept of the human as precarious and vulnerable, and thus this interaction as potentially risky. It is precisely this risk of having your life (somewhat) transformed given the unpredictability of the assemblage of hyperlinks containing different spatialities and temporalities given the thing under question that make possible the non-formal online educational practices mentioned above. Thus, if the topography of the internet is already complexly shaped by things, what exactly is happening with the provision of the minimal structure of Studio_D?

Although online technologies *per se* have an educational potentiality, it is not necessarily the case that every involvement with such artifacts is educationally meaningful. As presented through the case studies in the previous section, the experiences analyzed there were partially accidental, as the participant's goal was not necessarily to disclose the thought-provoking aspects of a thing. Therefore, Studio_D does not transform the space and time of the internet from a flat topography, into "various vectors of force" (Lewis & Hyland, 2022, p. 41) pointing towards a thing. Studio_D rather positions the student in an already existing force field in a way that they can be attuned to the things that have been there all along. Such an interpretation of Studio_D fits much more a Stieglerean approach to technology as the rethinking of educational institutions is not supposed to be a top-down change of the relations to time and space articulated by a technological system, but rather based on a "re-top down" of the already existing "bottom-up" potentialities of online technologies.

Starting from Vlieghe and Zamojski's thing-centered pedagogy, examining 3 cases of non-formal online educational practices and supplementing the discussion with Latour writings on things as matters of concern, I develop a conceptual schema to articulate an educational potentiality of online technologies. The developed schema posits that online technologies can transform the engagement with aspects of the world as objects to achieve a certain goal into things of inherent

worth. This transition is possible given the possibility online space and time to create an arrangement where the contact with the initial object is not linear but multifaceted and exploratory. For instance, interactions such as linking disparate concepts like protein, sugar, and pictures of bread, or connecting bone and flowers through the keyword "red," illustrate movement in online spaces. These interactions reshape one's relation to the world by approximating the involved person with the different aspects that make up a thing.

In sum, drawing on both Stiegler and Masschelein and Simons on the conjunction of time, space, technology and education, I indicate an educational potentiality of online technologies as the shaping of online space and time given the peculiarities of the things under question making possible a sustained interaction with a subject matter. Having disclosed such potentiality, I examined bMOOC and Studio_D, two outstanding examples of online educational platforms that take seriously the potential of online technologies. Both illustrate well how the shaping of online space and time given the peculiarities of hyperlinked things can be actually developed into formal educational platforms. This allowed me to highlight the shortcomings of these two formal platforms, although such a potentiality was disclosed starting from non-formal practices. Overall, the findings reported in this chapter point towards a framework for the development of online education, an online education beyond replicative practices, an online education that draws upon the inherent potentiality of online technologies.

Conclusion

This dissertation is built around an attempt to disclose the educational potentiality of online technologies. Such research had the additional objective of tracing theoretical and methodological steps for an educational affirmation of technology that could likely be followed in the study of education involving in various technological systems.

The first step was an overview of the current state of online education and of the Internet in general. From this overview, it was apparent that the discourse of online education is dominated by an instrumental logic. Given this dominance, a necessary step for developing an educational affirmation of technology is the investigation of the conjunction of philosophical approaches to education and to technology. This exploration ultimately attempts to disclose a concept of education that allows for technology to play a constitutive role. A fundamental question becomes "what does it mean for education to be a technologized process?".

While answers drawing from an instrumental and a critical perspective were enumerated, it was the post-critical approach that offered an affirmative alternative. The works of Masschelein and Simons (2013) and Vlieghe (2015) pointed towards a conceptualization of how technical artifacts and systems may constitute educational temporalities and spatialities, thus indicating a post-critical interpretation of education as a technologized phenomenon. In order to articulate the relation between technology, time, space, and education more thoroughly, a turn to Stiegler's philosophy of technology was necessary.

A study of Stiegler's writings provides a rich interpretation of the fundamental relation between humans and technology. A conjunction of Stiegler's writings on education with the post-critical perspective, though problematic, is possible. From such an exercise it is possible to answer the question of education as a technologized process based on an educational affirmation of technology. In sum, the world, to which education is an introduction, is necessarily made up of technical artifacts inherited by past generations. These artifacts frame the kinds of relations possible between the generations by shaping the temporal and spatial dimensions of intergenerational encounters. The emergence of every new technological system (based on a set of technical artifacts) brings about the question of how to build upon the potentialities of such a

system towards human flourishing. At last, an educational affirmation of online technologies can be achieved by understanding the temporal and spatial relations opened up by these intrinsically educational technologies.

Regarding online technologies, Stiegler mostly focuses on criticizing the shortcomings emerging from the appearance of such technologies. The rare occasions that Stiegler articulates the positive potential of online technologies — what he calls therapeutics — focus on the possibilities of starting with non-formal — bottom-up — collaborative practices. Based on the logic articulated in those practices, it is possible to somehow formalize them into activities and programs that could propagate such a therapeutic dimension. A confrontation of Stiegler and Arendt, together with an overview of Husserl's writings on the relation of pre-scientific activities to a formalized science and Lagerkvist's remarks on online life, a direction for further investigation of the educational potential of online technologies is disclosed as the study of non-formal online educational practices.

The identification and analysis of non-formal educational practices is conducted based on Vlieghe and Zamojski's thing-centered pedagogy and Friesen's and van Manen's anecdotes as phenomenological descriptions. Three cases are presented: "The Internet and My First Loaf", "Collaboration, Coding and Forums" and "Sugata Mitra's Self-Organized Learning Environment". The study of these cases leads to the articulation of an educational potentiality of online technologies as the possibility of transforming aspects of the world that are approached as objects embedded in a functional whole into things to be explored. Based on a thing-centered reading of Brügger's and Sandbothe's investigations, I argue that online technologies enable the interaction between things to shape spatial and temporal conditions. Being online, then, implies a vulnerability to being enmeshed in sustained interaction with a subject matter, thus disclosing it as an aspect of the world worth being cared about. The presentation of such an educational potentiality of online technologies is concluded by a confrontation with two formal online educational projects — bMOOC and Studio_D — thus illustrating how an investigation of non-formal practices can potentially help enrich formal education.

On the way to the development of the arguments presenting such achievements, some threads were mentioned but not extensively explored. One of the elements of this list is the study of adult education from a post-critical perspective of education as a technologized phenomenon. Such

research would help illuminate the possibility of the creation of intergenerational relations involving technological systems that appear in less than a lifetime.

I conclude this dissertation with a plea for the educational community to take into consideration the potentialities of the technologies presented here, and emergent technologies such as Large Language Models. Furthermore, I advocate for a closer look at the ways that education is already happening with emerging technologies in non-formal settings. Taking these remarks into account can bring those involved in the educational process one step nearer to the intrinsic educational potential of every technology already existing or yet to come.

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