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A song of teaching with free software in the Anthropocene

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ABSTRACT

Bernard Stiegler highlights many of the problems faced by education with respect to the 'bringing forth' of knowledge on an individual, collective, and technical level in the Anthropocene. These problems include the short-circuiting of dreams, automatization of thought, and toxic digital networks. Stiegler's φάρμακον (pharmakon) seeks to treat the toxicity of the Anthropocene with a care-ful hermeneutic approach that is directed towards the disautomatized, inventive, co-individuating knowledge act. This paper first explores Stiegler's Anthropocene and his development of Heideggerian ποιησις (poiesis) in terms of the challenge of the 'bringing forth' of knowledge acts, which are illustrated by free software. It then explores, through the additional example of free radio, of Félix Guattari's work in free radio, the problem and possibility of creative co-individuating ex-pression in the Anthropocene by expanding on Stiegler's emphasis on the importance of hermeneutics. This raises the question of how to read Stiegler's own ex-pression of the future of knowledge. Next, the paper reviews Stiegler's educational project involving a dis-automatizable hermeneutic web. Finally, the paper gives an autoethnographic account of an attempt to 'bring forth' learning through the implementation of free software in local, online classrooms. The free software example does not solve the problem of the Anthropocene but does raise the question of our responsibility to choose our digital tools care-fully and the importance of maintaining the possibility of co-individuating ex-pression like the kind that is remembered in song and which online education should remind us of.

KEYWORDS Negentropy; co-individuation; digital humanities; critical pedagogy; mythopoiesis; hermeneutics

Bernard Stiegler's (2018) definition of the Anthropocene centers on the toxic character of contemporary physiological, artificial, and social (but also psychic) tools and organizations. This raises Heideggerian questions – as well as questions of how to act; which tools are being used in education, and what course is to be taken by social and psychic organization. The danger posed by the Anthropocene through knowledge loss – where computational capitalism automatizes and short-circuits individual and collective organization by impeding 'dreaming, wanting, reflect-

ing, and deciding' (p. 46), calls for educational organization and tools that support networks of associated milieus, like the kind made possible through free software. This paper will first briefly outline these ideas and how they are related to Heideggerian ποιήσις (poeisis) and the problem of 'bringing forth' creative knowledge acts. This will be followed by the problem and possibility of Stieglerian disautomatized co-individuating ex-expression, citing Stiegler's illustrations of free software and Guattari's (in Prince & Videcoq, 2005) illustration of free radio as productive examples. This section will expand on Stiegler's hermeneutics (via Gadamer, 2001; Ricoeur, 1997) as a question of the future of care-ful ex-expression. Next, the theory and practice of the disautomatizable hermeneutic web Stiegler used in his massive online open courses (MOOCs) will be outlined. The paper will conclude with an autoethnographic account of the value of free software and its implementation in the hermeneutic web site design used in local, online learning.

The importance of learning today is highlighted by the knowledge loss that Stiegler (2018) points to as characteristic of the Anthropocene. He asks how it is that the 'common [anticipation] that is potentially but massively negative on a worldwide scale', involving realities such as climate warnings that bring about 'expectations and protentions of the worst, that is, of collapse ... of humanity itself and in totality', fails to raise the question of our survival (pp. 34–5). Stiegler's Platonian notion of φάρμακον (pharmakon, which points to how technical objects are at once potentially toxic and curative) seeks to treat the toxicity of the Anthropocene with a care-ful, hermeneutic therapeutics.

Stiegler (2018) notes that while a new pharmakon has the potential to promote new forms of psychic and collective individuation, the question of our survival in the Anthropocene is met by Heideggerian 'chatter', closing off questioning regarding 'our responsibility and our ability to respond to the challenge of being put into question' (p. 36). Automatically generated protentions – i.e. anticipations of the future such as through behavioral prescriptions (p. 181) – impede 'the collective realization of dreams' and automatic performativity short-circuits individual and collective protentions (p. 46). This strips us of the possibility to interpret our psychic, collective memories (retentions), as the data industry overtakes our experience through tailored, prefabricated retentions and protentions that operate at the speed of nerves and fiber optics (pp. 44–52).

Stiegler (2018) traces this problem – as we are now being traced when we enter terms in a search engine or send messages (p. 176) – to the Anthropocenic threshold of 1993, when the World Wide Web connected half of the world's population through the disruptive installation of 'computational capitalism'. He sees this to 'systemically short-circuit any theoretical elaboration, any social appropriation, any collective individuation, any legal framework and any political deliberation' (pp. 204–5). This is possible because the 'technology of digital tertiary [i.e. technical] retention outstrips and overtakes thinking, whatever forms it takes', creating theoretical and legal vacuums, raising the question 'of how it might still be possible to think in the Anthropocene' (pp. 433–4), or to question or be questioned in a destitution of thinking (p. 38; cf. Heidegger, 2001 [1971]). Stiegler describes the loss of knowledge emerging through capitalism through the updated Marxist term, proletarianization:

After its destructive effect on savoir-faire, on knowledge of how to do, proletarianization began to destroy savoir-vivre, knowledge of how to live, shared culture, when consumer capitalism replaced this knowledge with the behavioural prescriptions produced by marketing (Stiegler, 2018, p. 181).

Stiegler (2018) traces the history of knowledge loss from the hyper-divided labor of Adam Smith, through Taylorist automation, depriving workers of savoir faire, to its apotheosis in the short-circuiting of knowledge in Alan Greenspan's claim that 'economic knowledge had been transferred to machines and automatons' (p. 181, emphasis added).

The Anthropocenic problem Stiegler presents can also be illustrated through the popular trend to uncritically download and use ‘prefabricated’ (cf. Stiegler, 2018, p. 47) software applications that involve dark or manipulative design (Zuboff, 2019). The question should be raised as to why, during the pandemic, so many educational institutions required the use of software that at least one expert deems malware (Balkan, 2020), without debate or thoughtful questioning. Stiegler (2018) notes the emergence of a ‘soft totalitarianism’ (p. 201) and his concern regarding ‘algorithmic governmentality’ (p. 46) can be illustrated by digital design that not only exploits and controls human nature, but then allows bets to be made by third parties on ‘what drivers will do now, soon, and later’ in newly convened behavioral futures markets using ‘prediction products that rank and sort driver behavior’ (Zuboff, 2019, p. 87).

Stiegler thus calls for the re-establishment of the ‘true process of transindividuation’ (signification shared through co-individuation) using digital tools ‘to bring about a digital age of psychic and collective individuation’ (Stiegler, 2018, p. 49). This can be achieved through thoughtful technosymbolic milieus that seek to promote all individuals as the producers who emit the symbols that others consume (cf. Petit, 2013; Stiegler et al., 2014, p. 78). In other words, the technical objects that support social sharing and meaning (cf. Stiegler, 2018, p. 87) need to serve, not liquidate, knowledge through a new process of production that is not subsumed to the computations of capitalism (cf. Stiegler, 2018, pp. 100–101).

Such ‘transindividuating’ productions, achieved between and through individuals and technological tools (Petit, 2013), can be understood as ‘hermeneutic play of the improbable and of the singularity involved in the protentions that are woven between psychic and collective retentions’ (Stiegler, 2018, p. 49). An illustration of this could be the decision to implement free software in digital coursework, as it respects users’ freedoms to run, study, and change the software as well as redistribute copies with or without changes, involving an interplay between the creative production of the original programmers and the program’s implementers. Free software can be understood as a community of creators who are working in the time of the Anthropocene – a time of digital automatization – towards co-individuation. Its creators use digital retentions in a productive way and are motivated by ideals over capital.

Heidegger (1977 [1949]) had understood that man’s higher essence is in danger as man is regulated, even subordinated, by processes brought about by technology, which calls man into presence. This is because it is man who should control the mode of unconcealment, ‘bringing forth’, revealing truth, i.e. ποιήσις (poeisis). While in Plato, poeisis is a creative act, Heidegger (2001 [1971]) proposes the poet for a destitute time. This poet is to make his whole being and vocation a poetic question and ‘lead thinking into a dialogue with poetry’ and what poetry means (pp. 92–3) for there is a danger that chatter will lead to a groundless floating (Heidegger, 1962, p. 221) that denies the freedom towards death (Heidegger, 1962, p. 311). Along these lines, Stiegler (2018) warns of capitalist denial, which is ungrounded through its flights into fantasy, and takes issue with it not only for being denialist of freedom towards death, as per Heidegger’s concern – but denialist of being-for-life:

This denial ... becoming with digital tertiary retention thoroughly computational, constitutes a ‘smart’ capitalism based on a permanent and planetary totalization itself constituting a ‘soft’ totalitarianism, industrially and mathematically exploiting the drives and the mimetic archaisms that underlie them. This vast industry of lies, addiction and flights into compensatory fantasy prospers by exploiting the inherently destructive denialist tendencies that constitute the arche-protention of being-towards-the dead, which is not just

being-towards-death but neganthropological différance, and as being-for-life (Stiegler, 2018, pp. 201–2).

As Heidegger could not care for the possibility of being-for-life (Stiegler, 2018, pp. 214, 250), Stiegler's (2018) response is to emphasize the 'future of knowledge' (p. 200; cf. p. 259), defining his pharmacology of the future as the concern of how to measure or evaluate the energy that can replace that which has been lost (p. 54). This is to say that 'future' means continued care and guidance from the entropic passivity of becoming (e.g. c.f. pp. 43, 53). Therefore, he focuses on our responsibility to respond through the continued care-ful act of inventive production (p. 36) of différance (cf. p. 200). Stiegler is the poet Heidegger 'could not' dream of (cf. p. 250): where Stiegler considers Heidegger took 'detours' in his thought on the art of making and doing (p. 211), he returns to humankind the pharmacological act. Any Heideggerian poeisis in Stiegler is related to the problem of knowledge and the possibility for its continued shared creative ex-pression (i.e. 'in the future', cf. p. 78). This, he considers, requires an 'improbable' leap over the common stupidity 'that is the most widely shared thing in the world in the epoch of post-truth' of the Anthropocene (p. 200).

Co-individuating ex-pression for the Anthropocene

To overcome the Anthropocene, Stiegler (2018) envisions a neganthropic leap (p. 53) into a 'curative, care-ful epoch' (p. 45) involving inventive (p. 254) 'bifurcations' (p. 141), which is to say, diversification and novelty through the disautomatization of knowledge (p. 178). This is a neganthropic opportunity through the human ability (p. 34) to create with, not just calculate or analyze with, devices of artificial memory (p. 252). But as Stiegler emphasizes the relevance of hermeneia to the Anthropocene (pp. 231–2, 234), and as the problem of how to care-fully appropriate and ex-press knowledge is a hermeneutic problem (e.g. in Gadamerian applicatio, cf. Ricoeur, 1991, pp. 135, 150–3; Ricoeur, 1997, p. 138; Stiegler, 2018, p. 98), this section will also draw on hermeneutics. The purpose of this elaboration is to put this Stieglerian (2018) neganthropic possibility 'back into play' (p. 227), given that a 'new age of knowledge' (p. 63) 'presents itself firstly' as impossible (p. 226).

As outlined above, Stiegler (2018) sought to return to all people knowledge of how to live (e.g. p.181). One way in which to achieve this is through the creation of associated milieus, in which all participants, not just some, can emit and create symbols (cf. Petit, 2013; Stiegler et al., 2014, p. 78). Stiegler (2018) explicitly mentions free software as harboring the possibility of 'constituting networks of associated milieus' as a creative alternative to the proletarianization or automatization of knowledge effected both by the division of labor and by the functions of consumption and production (p. 100). In addition to the example of free software, the Internet could potentially cultivate networks of associated milieus (cf. Petit, 2013), as could Félix Guattari's interest in the Free Radio movement, which is a significant precedent considering that Stiegler's formulation of 'transindividuation' is based on Guattari's work (cf. Stiegler, 2016, pp. 24, 34).

Guattari (in Prince & Videcoq, 2005) saw Free Radio as a form and mode of social organization 'likely to generate innovative assemblings' (p. 23). Guattari's work (in Prince & Videcoq, 2005, p. 29) also pointed to the complexity of tools of communication, which don't prohibit all change or point to a single mode of utilization but allow complexity to be used for change. The goals of these projects can be contrasted with the problems Stiegler (2018) identified such as the destruction of knowledge through behavioral prescriptions (p. 181) and the rise of the data economy that aggregates people into crowds in which they lose their anticipatory capabilities and their faculty of dreaming in the Anthropocene (p. 100). Stiegler seeks to overcome these problems through the function of the imagination that can be shared socially through the

marks of memory (p. 97) that must always be exteriorized anew, mediated by hermeneutic application (p. 98). Stiegler identifies ἐρμηνεία (hermeneia, i.e. ex-pression, not just hermeneutics) as a way to overcome the proletarianization of knowledge (pp. 231–2) and the gravity (pp. 234–5) of the impossible critique of the Anthropocene through the ‘improbable possibility’ to engender bifurcation (p. 234) – i.e. novelty and diversity. This also involves synthetic (not just analytical) thinking and the hermeneutical shock of the ‘dreadfully ancient’ that ‘puts back into play’ questions of humility and justice (p. 227). Although earlier forms of care have always existed (p. 231), we must always ‘interpret anew’ (p. 232).

The novelty of Stiegler’s own thought, of his pharmakon, is based on his interpretation of the (‘ancient’) myths in Plato’s Protagoras (Plato, 1967, 320–322; Stiegler, 2018, p. 227) echoed in the Phaedrus (Plato, 1925, 9.275; Stiegler, 2018, p. 249). The Protagoras (Plato, 1967) conveys to us the ‘shock’ of the difficulty of creating care-ful social organization and the loss of knowledge that can be effected by claims of knowledge. Protagoras invokes the Promethean myth in his claim to show how simply technological progress can be made right in society through imparting civic values. But this prompts Socrates to lead him into a dialogue about the difficulty of virtue (320–322), which reveals the difficulty inherent to making claims on knowing and knowing how to use technology. The question today is, shouldn’t we be concerned about virtuous use of technology in our work, or have we lost knowledge of this as a concern, passively adopting the latest tools?

The loss of knowledge effected by claims of knowledge is further supported by Paul Ricoeur’s hermeneutic commentary on Plato’s Phaedrus. Ricoeur (1991) notes that creative works produced through ‘external marks’, if not ‘expressing the entropic tendency towards the equalization and effacement of energetic differences towards the world’, have the potential to be ‘negentropic’ insofar as they ‘fight against the tendency to annul contrasts and differences in the universe’ (pp. 130–1). The ‘exteriorization of marks’ can thus either convey (entropic) shadow images or (negentropic) new models for perceiving the world (p. 131). Stiegler (2018) observes that the external marks projected onto the screen (of cave walls, cinemas, computer screens) can reveal or conceal as they signify (p. 175) the meaning of our age (p. 97) and its neganthropic potential for the possibility of displacing analytical impossibility (p. 234). This can be co-individuating where the exteriorization on screens is mutually shared.

‘Bringing forth’ is not often considered ‘worth’ it in terms of the larger computational accounting of capitalism. But Stiegler (2018) writes that the construction site of the future is only available to those who can think for themselves ‘rather than vainly repeat received ideas’ (p. 185). An example of the former is Guattari’s (in Prince & Videcoq, 2005) appeal to a post-media era through his work with free radio, which promotes subjective, creative agency (p. 30). Creative agency is important as possibility because the play of imagination and understanding can exceed comprehension and analysis (Stiegler, 2018, p. 98).

Stiegler (2018) describes ‘unhoped-for neganthropological possibility’ as the ‘bifurcation which Heidegger could not carefully think’ because he saw ‘calculation and meditation [which is to say dreaming, cf. p. 100] as an opposition’ (p. 250), failing to see that understanding, analysis, and dreaming are interwoven. Stiegler writes that oppositions are to be met through ‘indissociable’ (p. 49) synthetic thinking as the ‘matter of the status of the pharmakon’ takes the form of the snake (p. 250). The problem of negative entropy today thus involves ‘taking a step beyond dialectics’ (p. 85) and analytical thinking (p. 234). Our task is to think directionally from the past in order to dream into dreaming (pp. 249–50), as the problem is ‘not the automated abstraction of the protentions’ provoked by digital technology but ‘us, insofar as we are incapable – after Heidegger ... of thinking these processes’ (p. 101). One process that needs thinking is whether we care about the digital tools that we use: whether we dream of technical co-creation,

or are used by technology as a source of data.

Stiegler (2018) points to the hermeneutic importance of meeting the immediacy of a situation that is always in the midst of being understood (cf. Gadamer, 2001, p. 319 and Montari in Stiegler, 2018, p. 98, fn. 176). Similarly, Plato teaches us to work through what we do not know by bringing something new into being through the mediation between where we are and where we strive to be (cf. Randall, 1967). The latter always surpasses where we initially find ourselves.

There is a temptation to eradicate indeterminate spaces, such as of unpredictability or of human fallibility, even though organizational studies have shown this to create toxic environments for human beings (e. g. Hormann & Vivian, 2013). Stephen Nachmanovitch's masterpiece on play (1990) suggests the value of leaving space for indeterminacy in the context of education: 'Planning an agenda of learning without knowing who is going to be there, what their strengths and weaknesses are, how they interact, prevents surprises and prevents learning' (p. 38). Collaborative and learning processes today further need to consider what (which digital tools) is 'going to be there'.

Remaining open to the possibility of what we can 'bring forth' requires work that exceeds analysis by meeting the immediacy of an ongoing situation through the play of imagination and understanding. This is illustrated through Stiegler's definition of a 'work' (oeuvre), which:

... bifurcates from every expectation: it is the application of the unfulfilled or incomplete noetic dreams that it realizes while surprising them. This surprise, this sur-prehension, which is also the question of reflective judgment, or, in other words, of the play of imagination and understanding, is what works by bifurcating, that is, by ... exceeding the understanding, and as a synthesis beyond any possible analysis, which is to say as... neganthropy (Stiegler, 2018, p. 98).

For this Stieglerian possibility to be realized, we need to understand something of the hermeneutics of how possible worlds transcend the limits of the actual world – which is a lesson of the mythopoetic (Ricoeur, 1991, pp. 489–90). As a thought experiment, mythopoesis makes possible the resignification of the world to the extent that 'recounting or narrating remakes action' after a text's invitation (Ricoeur, 1991, pp. 150–1, 489–90). The relevance of the mythopoetic character of writing is its ability to put into question (cf. Stiegler, 2018, p. 196) so that we 'become aware of our basic capacities and reasons for surviving, for being and continuing to be what we are' (Ricoeur, 1991, p. 484). Ex-expression at this level does not re-present or make present anew what is accidental to action but what is essential to life (Ricoeur, 1991, pp. 150–1), such as why it is worth living (cf. Stiegler, 2013 [2010], pp. 55–6). Is it worth living if we thoughtlessly, unknowingly, and passively consume the world around us as it consumes us through dark patterns (cf. Zuboff, 2019)?

In some ways, Stiegler's answer to the Anthropocene (in the Neganthropocene), considering that it does not yet and might never exist, could be considered a reverse mythopoesis: singing the future of knowledge instead of the past, surprising us by a temporal account that has not yet happened but could if we discern it to be valuable enough (e.g. Plato, 1967, 2.377–8 or 10.597e-10.600; Stiegler, 2018, p. 227). Thence the title of this paper, to keep an open space for mythopoetic dreaming: dreaming through the mediated action that is revealed or concealed in song – though remembering Stiegler's (2018) lesson of the snake and his reminder that dreams can turn into nightmares (p. 227). The Stieglerian act for the destitute time (cf. Heidegger, 2001 [1971]) of the Anthropocene, while wary of the pharmacological nature of knowledge, has the courage to re-present the present (cf. Stiegler, 2018, p. 178) as an ex-expression of caring for

the future of knowledge (Stiegler, 2018, p. 200) through the care-ful play of co-individuation as a creative act. For, it is only where new meaning is knowingly adopted and shared by individuals through the act of co-individuation that a new conceptual shift can take place (Stiegler, 2018, p. 178) – but merely letting these interrelations become can be a form of entropy (e.g. Stiegler, 2018, pp. 43, 53). Education has a duty to critique contemporary physiological, artificial, and social (but also psychic) tools and organizations and to attempt to bring co-individuating digital practice into being, even if this work seems impossible.

Disautomatized education – from theory to practice

Stiegler put his care for relationships and shared relations into practice through an associated milieu that assembled thinkers in his online school, *pharmakon.fr*. Through a series of MOOCs, Stiegler et al. (2014) [narrative] sought to cultivate collective individuation. The experience is described in ‘The writing screen’ (Stiegler, 2018, pp. 172–9). Given the capitalist ‘threat, enacted through the mediation of the fully computational and automated system that is set up on the basis of the traces sent and received by these screens’, Stiegler (2018) proposes the ‘chance’ of the ‘becoming-screen of writing’ which brings ‘an opportunity to renew commentary, to reconnect with the ‘gloss’, through a completely rethought hermeneutics’ (p. 173). He champions a teaching of dignity that upholds the good life and that reveals the question of meaning as trans-individuation (p. 174–5). He writes that the screen ‘conceals at the same time that it lures us and makes us dream – which is perhaps what is most essential’ (p. 175). By constructing a disautomatized hermeneutic web, he seeks an alternative to Tim Berners-Lee’s Semantic Web – which cannot produce knowledge as it enables the ‘automated pre-treatment of the informational hyper-material that digital tertiary retentions constitute’. Automatic knowledge is a dogma of anti-knowledge: it is dogmatic by concealing from itself its dogmatic – which is to say automatic – character (p. 178). We remember that this is an ‘ancient’ problem (cf. Plato, 1967), indicative of a need for the generation of bifurcating knowledge (Stiegler, 2018, p. 178).

As such, his hermeneutic web is founded on a new conception of social networks, a standardized annotation language, and hermeneutic communities emerging from various domains of knowledge (Stiegler, 2018, p. 179). Regarding annotation, Stiegler et al. (2014, p. 10) [narrative] explains that students participating in the MOOCs he led were to annotate their course notes using graphic language and then transfer them to a digital platform. This enabled ‘the creation of a common space of interpretation and engagement with works, leading to processes of transindividuation’ and can be understood as a ‘dis-automatization that produces negentropy’ (Stiegler, 2018, p. 52) as it ‘fights against’ (cf. Ricoeur, 1991, p. 130) the tendency to annul contrasts by bringing together students’ potentially different interpretations as the subject of discussion.

Stiegler et al. (2014) [narrative] employed an algorithm for analyzing convergences and divergences, similarities and differences to be used as discussion points, as well as social networking software to allow groups to form and debate, and consolidate similarities, differences etc. into collective secondary retentions, giving ‘definition to interpretative groups and [producing] processes of contributory categorization in relation to annotated materials – texts, documents, and so on’ (p. 11). Pre-categorization was hermeneutically related to how the ‘life of understanding’ allows one to understand and be understood as well as reformulate that which is understood in a different analytical form (p. 11). It was also related to the surprise of ‘sur-prehension’, and thus transindividuation, creating new circuits of shared meaning.

An autoethnographic account of creating with free software in the Anthropocene

As stated above, transindividuation requires creative work that can lead to resignification of the technosymbolic milieu. I have noted elsewhere (Goetz, 2020, 2021) that the attempt to care-fully embrace this milieu (cf. Stiegler, 2018, pp. 96–7) requires continual ‘extra’ learning – which in turn enables participation in and thus reconfiguration of the milieu. The sheer number of classrooms adopting what some digital experts call malware (e.g. Balkan, 2020) [narrative] without adequately debated or informed decision this past year demonstrates a dearth of such knowledge and the prevalence of automatic thinking.

The Stieglerian question for taking care of and caring for the future of knowledge is, how can we use our tools and organizations to continue to ‘bring forth’ care-ful and inventive co-individuating knowledge acts? The ‘shock’ of the Socratic challenge of how to be a midwife to co-individuating learning leaves me with no final answer, as the context of the present – where the applicatio of midwifery takes place – keeps changing.

While I would describe myself as an early(ish) adopter of technology in the classroom – at first using pre-fabricated microblogging and collaborative knowledge management services, I gradually became concerned about vendor lock-in, data ownership, walled gardens, and third-party tracking. As Stiegler (2018) writes, ‘we must profoundly rethink the architectonics of digital networks’ (p. 135). This summer, in 2020 – a historical time of digital transition, I asked myself: what would negentropic, inventive, and dis-automatized websites for online courses look like? This matters as an attempt to model for students a disuatomatized pharmacological approach to the tools and organization of learning.

As my students are English majors, they are already required to be critics, also of the Internet: demonstrating the Freirean meaning of literacy in being able to step back from the trends of the present (Freire, 2005, p. 75). A co-individuating, negentropic approach would further encourage them to see themselves not only as critics but also as co-creators, interlinking their own ideas and others’ writing. As learners, they should be able to remain anonymous if they prefer.

The software used in this context should also draw attention to the tool itself, which should be a subject of critique if we are serious about critical pedagogy, and should contain no pre-fabricated boxes. But if that means eschewing pre-existing software applications, what does a teacher do?

Until recently, I did not know about free software. I only know that the problems listed above led me to look for an alternative. It is perhaps because free software is currently less visible than other software that coming to learn of it and how to switch to using it can come with a learning curve. However, this learning curve ultimately enables users of the software to become contributors which is to say creators in the free software community. This can mean anything from learning enough to program a hack to make a program do what is desired of it to writing instructions for future users. But I should also stress the time-investment involved: to do it well obviously requires a knowledge of the documentation (cf. Raymond & Moen, 2001–2014); it is noted that, officially, for beginners, professional hand-holding is recommended (Stallman, 2002, p. 37).

As noted above, free software can be considered a form of Stieglerian co-individuation that is characteristic of an associated milieu (cf. Petit, 2013; Stiegler et al., 2014, p. 78). Further, free software ‘is a matter of liberty, not price. To understand the concept, you should think of ‘free’ as in ‘free speech,’ not as in ‘free beer’” (Stallman, 2002, p. 43). Permission for users to create with the software that others have created is central to the free software ethos. To quote the mock-dialogue in the foundational work on free software:

Don't people have a right to control how their creativity is used?
Control over the use of one's ideas really constitutes control over other people's lives; and it is usually used to make their lives more difficult. (Stallman, 2002, p. 39)

Included in the foundational work on free software (Stallman, 2002) are the dilemmas of the 'right to read' – which is poetically presented as a creative, illustrative story – and of copyright, regarding concern for sharing. The Stieglerian value of the social sharing of work (Stiegler, 2018, p. 87) is also shared by a founder of computer usage as we know it, Douglas Engelbart (2002). These values have also been confirmed by work that came out of the Xerox PARC-adjacent Institute for Research on Learning, specifically, Jean Lave and Étienne Wenger's (Lave & Wenger, 1991) research on the construction of knowledge through communities of practice (CoP). More recently, these values have been confirmed by The manifesto for teaching online, through how 'Remixing digital content redefines authorship' and provides new compositional possibilities for student authors (Bayne et al., 2020).

Knowledge cannot be augmented where copyright restricts it, and teachers, as those responsible for safeguarding the future of knowledge, should be particularly care-ful of this, such as in how they organize their teaching environments. To rework an idea from earlier in the paper, there is a kind of knowing that thrives on the surprises of relational freedom, and this freedom can be inspired and supported by the tools we use. Not only can free software be understood but it can be experienced (cf. Stiegler, 2018, p. 178) as the means by which social freedoms can be attained (Stallman, 2002, p. 57).

Richard Stallman, the founder and thought leader of the free software movement, has developed a concept of 'user-subjugating' software which is particularly illuminating. This describes the situation where proprietary software has power over users – such as where developers, not users, decide what the software will do (cf. Good, 2006) [narrative]. In line with the hard line that Stallman (2002) has drawn for clarity, there is also a section in his book on free software on 'Words to avoid'. Particularly thought- provoking are his definitions of 'content' and 'creator' (pp. 191–2).

The experience of using free software gives critical, practical experience in personal computing and how to evaluate the software landscape. For example, configuring GNU Emacs Org-mode to tailored uses will introduce users to basic Lisp and activating the GNU JavaScript-blocking app will reveal just how much of the Internet is riddled with data-mining non-free code. If a person cares about side-stepping that code, half of the Internet breaks, even with a non-free browser plug-in like the Electronic Freedom Frontier's NoScript.

To care about the online milieu is to be willing do the extra learning involved in strategies to move past this (cf. Stiegler, 2013 [2010], pp. 55–6). We have become accustomed to consuming it without bearing the burden of responsibility for this shared space; accustomed to not paying for the product and so becoming the product (Zuboff, 2019). Such passive consumption does not contribute to the future of knowledge because it is not an act of inventive production (Stiegler, 2018, p. 36), creating something new through *différance* (Stiegler, 2018, p. 200).

I therefore believe (cf. Stiegler, 2018, p. 67) in the merit of learning something about software – which free software supports by including pedagogy in its ideology, and believe that it will move me to a new *επιστήμη* (episteme) of how to interpret this *τέχνη* (techne), or art of making and doing, to better inform my actions as I progress. Stiegler (2018) notes that the Neganthropocene 'will require a complete redefinition of the notions of episteme and techne on the basis of a pharmacological understanding of the latter' (p. 141). I do not see how this will be possible without interdisciplinary engagement, which has to start somewhere; if teachers

do not understand the value of growth in stages, then we have truly entered an Anthropocene of knowledge loss. Therefore, the singular implementation of free software that I will now describe may hardly appear as an answer to artificial intelligence, but, as Julia Cameron (2002) has written in her popular work *The artist's way*, 'As I create and listen, I will be led'.

My sites were built on the Zero template provided by Textpattern, a free software content management system (CMS) which has a very welcoming and helpful forum. Thanks to the forum, I was able to create a tailored working template (temene, 2020). It is noted that it is shared under a pseudonym chosen in part to reference an explicit step away from online toxicity (cf. Wu, 2016, epilogue). Also worthy of note is that while there have been times I have had my heart sink when my incorrect use of commands has led to time-intensive problems that never would have existed had I followed automatic usage patterns, I remain enamored at how even non-programmers can make their digital environment their own. I am amazed at how, by embarking on this endeavor, I have entered a CoP: comprising not just students but supportive programmers and general fans.

The small oeuvre of the website template for the courses I teach bifurcates from the expectation of the already-harried teacher, bringing into existence 'the application of the unfulfilled or incomplete noetic dreams that [the oeuvre] realizes while surprising them' (Stiegler, 2018, p. 98). The template does not look like a typical digital environment for a class – which was part of the point. Students are too accustomed to user interfaces (UXs) they can use without thinking, therefore I wanted their online interaction to include a moment of sur-prehension. And I myself have never been more surprised by student work as it fills up the site, creating a miniature hermeneutic community. Some students, through minimal prompting, even chose to learn basic coding to make their work more visually compelling. And there is value in student work not merely being something to be handed in but becoming 'live' on the Internet.

The possibilities this new workflow opened up were visible in the diversity of student comments on peer and course work posted to the sites and their satellite free-software forums – which I set up on subdomains, and in how students interlinked to each other's work. Interlinking was supported through site design which correlates categories, tags, author pages, and related posts and includes a prominent search button. As I only learned of Stiegler's MOOCs later, I came up with my own Vygotskyian scaffolding that provided hermeneutic pre-categorization for students.

These categories are permanently posted to the top of the sites, on all of the pages, in two columns, to which students post their work. Listed among the hermeneutic approaches are: assaying, interpreting (related to weekly topics to prompt exploration of the care-ful, well-lived life), and action cards (with original illustrations to serve as visual reminders of ways to manage workflow: representing, for example, a checklist, brainstorming, questions, communication, note-taking, etc). In this way, the site template only partly resembles a wiki: I created a static section on the homepage where I would bring structure to the courses through links to the About, Resources, and FAQ pages followed by a more flexible section where I could feature a selection of student work. Students were able to log in as freelancers and save their work directly to the sites. I also used a minimal and eco-friendly layout, free of bloat – mindful of Stiegler's question of our survival due to global warming. The sites also hosted short videos, replaced weekly, and links to virtual video conference rooms using the free software Jitsi Meet application.

While Textpattern does offer out-of-the-box templates, true to the nature of free software, it also offers the option for them to be as personalized as users want. Such interfaces are not possible in platform services with automatized and non-co-individuating UXs. That said, teachers looking for an already-crafted web conferencing system have a free software option in Big Blue Button.

In the courses that I teach, I attempt to promote co-creation and thus attempt to design an environment that will nurture reflections and insights, provide opportunities for the practice of care-ful ex-pression, and showcase the creativity that is brought forth. This is why I was motivated to explore the possibility of making a crafted online space that would reflect my teaching values. This would make it harder, though never impossible, for students to nurture Protagorian fantasies about the downloadability of knowledge. It would allow all participants, including myself, as teacher, to marvel at what we can do and make together and hopefully inspire continued thoughtful work in the future. As a co-created space, it illustrates the future of knowledge as its continuation depends on active contribution.

The potential of free software and self-hosting beyond locked-in walled gardens and pre-fabricated software services has yet to gain more visibility. It will certainly not be realized if we do not seek to exercise our creative ex-pression and instead remain passive consumers of automatized technology.

The golden path to virtue has always been the hardest and most elusive. Not even Aristotle (1944) left us with a final word on it. After all, it is partly provisional. But if we believe in the validity of Stieglerian mythopoetic direction, teachers in the Internet information age can trust that we will not be drained but energized by our effort to create a safe space for disautomatized co-individuating learning in the Anthropocene. We may find ourselves surprised by the extent of student growth when we least expect it. This is the possibility afforded by the imaginative work of dreaming a Neganthropocene, then finding the courage to act, care-fully – always aware that any ‘realization’ of dreams is never complete, so calls for active engagement with the future of knowledge (cf. Stiegler, 2018, pp. 97–8).

I want to sing for Stiegler because he brings out these good ideas. He also reminded me of a poetic form I created when I was in my early 20 s called the en(do)gram, meaning, where there is an ending, there must be a new beginning and insofar as we are capable of receiving the telegrams we send to ourselves every day we will understand what we are called to do (cf. Goetz, 2004). We are called to make things, even after we grow out of youthful folly. While this takes courage, Stiegler reminds us that this is a matter of interpretation and the care-ful, hermeneutic application of knowledge to ex-pression. We can. So we can. The future of knowledge depends on it.

Conclusion

This paper explored the threat of the erasure of knowledge, which Stiegler (2018) sees as characteristic of the Anthropocene, and which is understood in this paper as an educational concern with respect to our shared understanding and use of digital tools. The problem of the ‘bringing forth’ of knowledge was related to Heideggerian (1977 [1949]) poeisis. But where Heidegger lacked the courage to act, Stiegler raised the question of how to act and live care-fully, through neganthropic pharmakon as provisional treatment in the disautomatization of individual and collective production and consumption. The latter was illustrated through the popular trend to unquestioningly download and use ‘prefabricated’ (cf. Stiegler, 2018) software that seeks to automatize individuating protentions (cf. Zuboff, 2019). The paper then considered the possibility and problem of ex-pressions of creative co-individuation in the Anthropocene by exploring the examples of free software (Stiegler, 2018) and free radio (Guattari in Prince & Videcoq, 2005) and by expanding on Stiegler’s hermeneutics (Gadamer, 2001) as a question of how to put the negentropic ‘fight against the tendency to annul contrasts and differences in the universe’ (Ricoeur, 1991) ‘back into play’ (Stiegler, 2018). A practical example of Stiegler’s theory on dis-automatized education was explored through an outline of his MOOC. The paper ends with an

autoethnographic account that both explores and describes the ‘putting into play’ of free software. The resulting CMS made creative use of digitization and presented hermeneutic prompts to which students responded and interlinked ideas, sometimes sharing the expression of their knowledge through presentations enhanced by basic coding. The choice and use of digital tools can teach a success or failure to think through the Anthropocene. The point of thinking through this for ourselves is to find possibilities for co-individuation where this might otherwise appear impossible in a digital landscape that could effect ‘soft totalitarianism’ (Stiegler, 2018) if we do not take care.

Notes on contributor

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