

The final publication is available at Springer via <http://dx.doi.org/10.1007/s11217-016-9519-2>

Inventing the Educational Subject in the ‘Information Age’

Alongside questions of how digital pedagogy changes how and what we learn, there is a question of how digital pedagogy and the broader context of what is called the ‘information age’ changes the learner. What are we learning to become? Is our identity prescribed by our technological context or does our context allow us freedoms in inventing ourselves as subjects that other contexts have not? Informed by a reading of Jacques Derrida’s *Of Grammatology*, this paper presents an argument for understanding our educational subjectivity as always having been technological. But it goes further than Derrida was able to in his historical context by suggesting that our age, the ‘information age’, might actually make us more attuned to this problem of the technological construction of the educational subject. As such, this paper asks the question of how the educational subject is invented and situated in what Luciano Floridi has recently defined as an ‘informational ontology’ (2011a: 316), where existence is only definable with and through information. While illustrating how, unlike Derrida’s, Floridi’s conception of the subject is insufficient to the demands of his otherwise useful ontology, it will suggest that Derrida and one of his foremost readers, Bernard Stiegler, offer paths toward inventing the educational subject that lend themselves to an ‘information age’, as well as speculating on how, with this knowledge, we can educate to best equip ourselves and others for the effects of our increasingly digital world.

Jacques Derrida thought the concept of the subject was ‘indispensable’ (1970: 272) as a function but did not subscribe to or accept any particular theory of how a subject could be defined or developed because it was always situated in and as a context. Following Derrida, Bernard Stiegler explains in *Technics and Time I* that ‘the relation binding the “who” and the “what” is invention’ (1998: 134). As such, any idea of the ‘who’ of the individual subject is already situated in the ‘what’ of historically contingent technological context and therefore the distinctions we make are inventive rather than empirical. This means nothing less than that identity and subjectivity are invented in and as context. Who we are is created out of what our context is and our context is also created by who we are at a given moment. Invention is not about starting from scratch or coming up with something entirely new, it is rather something which happens with what is already in our context. To invent ourselves might simply be to understand ourselves and our context differently to how we already do, so as to be better informed about the decisions we cannot avoid making. The relationship between classical conceptions of

self and context, who and what, can no longer subsist, partly because philosophy has proved them false but also because the technological conditions of existence have become so apparent in everyday life that these classical conceptions have become practically as well as philosophically useless. For Derrida and Stiegler, as well as for Floridi, education cannot avoid the question of technology. While, for Floridi, this is primarily the consequence of our contemporary informational condition, Derrida and Stiegler perceive the technological relationship to education as being at least as old as the birth of language. For them, technology has always played a part in the education of the subject because our very conceptions of the subject are themselves technologies. Even though contemporary digital conditions have more clearly illuminated the relationship between technology and identity, this relationship has always existed. The technologies we utilise to understand ourselves (written, spoken and digital language, as well as physical activities and visual and oral languages) also become who we are. As such, these technological contexts play an important part in the invention of the subject.

Derrida and Stiegler show the human subject to be always already technological, thus their thinking is particularly important at a time when the use and influence of technology is growing at astounding rates. They help to highlight both the danger of thinking that technology is separable from humans and therefore won't ever change 'who' we are, as well as the danger of thinking that technology is an affront to our humanity. What we call human nature has emerged in an always already technological context. The idea of human nature is itself technological and invented, as is the very idea of a subject. As such, education does not only educate subjects; it also educates us in our subjectivity. Notions of what a subject/subjectivity is in education are often taken as implicit, or, at best, presented as the result of empirical study. Thus the subject is prescribed as learning in different modes, developing at certain rates, capable of certain forms of activity and receptivity. Not only is this prescription of the educational subject unable to account for changes of technological context (do the theories of Vygotsky and Piaget apply as readily to subjects in the 'information age'?) it is itself only educational in an extremely prescriptive sense: 'this is how you learn.' This dictum can be applied to even some of the most radical of educational thought. But perhaps how we learn in a digital age is not so easily prescribed or even understood, precisely because our conception of 'who' is learning is not at all clear. What is a subject in the 'information age'? This paper does not attempt to prescribe a new definition of an educational subject for a digital age but rather stresses that *all* prescriptions of an educational subject have always been limited because of the technological construction of subjects that stretches at least as far back as the invention of language. We prescribe ourselves with language and yet language is itself invented. Therefore, instead of prescribing what an

educational subject is in a digital age, this paper asks that we recognise how we might constantly invent and re-invent what an educational subject is in a given technological context.

This paper is particularly concerned with the invention of the *educational* subject, which is to say, not only a subject who is being educated but also an idea of the subject which is itself educational. That is to say: inventions of the subject in our contemporary context which are themselves educational. Contemporary digital technologies of course provide us with an opportunity to engage in inventing digital pedagogies but they also offer an opportunity to think about how ostensibly non-pedagogical aspects of our digital existence might be educational. Education has almost always concerned itself with the education of subjects, however, after Derrida's deconstruction of the subject, philosophy of education also has a different task and must pose new questions. What conceptions of the educational subject can be invented in the context of contemporary technology, especially digital technology? And, which of these conceptions might themselves be the most educational? Which is the same as asking: what are, and what can we learn from, the educational subjects we invent today? I will argue that these two intersecting investigations are necessarily concomitant, therefore posing the question of what we can learn from invented subjects. Which is also to ask, who are we today? And why are we that? Are you and I invented differently and uniquely? Or do we share a prescriptive context that stalls invention and dictates who we are? What can we learn from who we are invented or prescribed to be? And what can we, as these invented or prescribed subjects, learn?

To understand how educational invention can be achieved in these terms, it is first of all important to define the concept of invention in the context of this paper. Invention for Derrida, 'supposes that something or someone comes a *first time*, something or someone comes to someone, to someone else. But for an invention to be an invention, in other words, *unique* (even if that uniqueness has to be repeatable), it is also necessary for this first time to be a last time' (Derrida 2007: 6). As such, the invention of the educational subject presupposes the uniqueness of each contextual invention of a subject: if the subject is not unique it is not invented but, instead, prescribed. Therefore there can be no invention of the subject *in general*. You do not invent yourself and then continue to stay the same; you must continue to invent yourself, or else you are simply prescribing yourself *to yourself*: allowing yourself to be prescribed. A change of context calls for another invention. If Derrida is correct and the subject exists only *in and as* a context, contemporary technological contexts are already prescribing subjects. This is not good or bad in and of itself, particularly for Derrida: it is simply the case. However, because in the contemporary context digital and informational worlds of individuals are becoming

more similar in terms of technological interfaces (games, social media, dating apps, online newspaper content, browser and search engine formats and so on) there is a risk that the opportunity for invention might become reduced and instead be taken over by prescription. How this unique invention of the educational subject can be negotiated in the digital age is therefore one of the many philosophical tasks for digital pedagogy, which I, alongside Floridi, argue must be thought under the broader conditions of informational ontology. The constitution or affirmation of 'our' informational ontology is already educating. Computer games, social media networks, comments sections for online newspapers, dating apps are all technological means by which our identities can be educated and invented. Equally, there is less of an excuse for the educator *not teaching* and the educational subject *not knowing* something which might be essential to their flourishing or their informed judgment. As such, our contemporary context might provoke an enhanced or at least different sense of responsibility. This responsibility would be directed towards information generally, as well as the invention of the subject. Educators would share this responsibility with educational subjects. With so much information readily accessible, the responsibility towards individual-specific knowledge also increases: what do *you* need to know? And, of course, *who* is the *you* that needs to know and what can *you* learn from thinking about *who* that *you* are invented as? As such, what is needed most of all in digital pedagogy or the pedagogy of the digital are the philosophical tools with which to be able to understand, and therefore be better educated in, the subjectivities we are inventing and the actions we are taking.

Informational Ontology and Arche-Writing

Because this paper argues that the difference between who and what, or subject and context, is invented and/or prescribed, the conditions which facilitate the overlapping of those distinctions will be outlined before going on to define them. These conditions will be understood as being the conditions of informational ontology (Floridi 2011a) and arche-writing (Derrida 1997). Informational ontology implies that existence is comprehensible only through and with information. As such, everything that we know about ourselves and our world is the product of information and that knowledge is itself information. This is distinct from explicitly empirical or metaphysical approaches to philosophy in that it treats the information of the world and the information of the mind as fundamentally subject to the same conditions. The conception of ontology as informational allows for a thinking of subject and context as being separable only through invention or prescription. That is to say, there is no 'natural' separation of subject and context or of the 'who' and the 'what.' Because that separation is not an ontological given, it must either be invented or prescribed.

Floridi's view that existence is comprehensible fundamentally as information is broadly compatible with Derrida's concept of arche-writing. For Derrida, arche-writing is any form of language, written or spoken, and perhaps could also be extended to name any form of technology, including the language and technology of the subject as well as, of course, digital languages and technology. Arche-writing 'would be at work not only in the form and substance of graphic expression but also in those of nongraphic expression. It would constitute not only the pattern uniting form to all substance, graphic or otherwise, but the movement of the *sign-function* linking a content to an expression, whether it be graphic or not'(Derrida 1997: 60). Reading Floridi and Derrida together it is possible to suggest that sign-function would be at work in all information and, therefore - in an informational ontology - throughout our entire existence. Floridi's 'informational ontology' constitutes the conditions of possibility for the existence of experience. In Floridi's terms, digital, spoken or written languages would all exist at levels of abstraction within that broader ontology, while for Derrida arche-writing 'cannot, as the condition of all linguistic systems, form a part of the linguistic system itself and be situated as an object in its field. (Which does not mean it has a real field *elsewhere, another* assignable *site*.)' (1997: 60). This means that arche-writing, like the concept of informational ontology, elucidates the conditions of informational or sign-functional existence generally. In this way it might be possible to conceive of what could be called arche-information as being analogous to arche-writing and the conditions of informational ontology.

Of course, existence is not just information or limited to movements of sign-function but because, in a broad sense, it can only be given meaning in terms of their conditions, they hold a particular existential, philosophical and educational significance. Derrida's thinking in *Of Grammatology* sought to erase the absolute distinction between signifier and signified as well as show the technology of the 'supplement' to be at work in all experience. That is to say, no human being can exist without some form of supplementation, even if the supplement in question is only food, drink or oxygen. Education, then, in any form, is also a form of supplementation, and what it supplements us with is various forms of context-creating information (which would include the invention of the subject). Floridi's philosophy of information puts forward an understanding of our experience of existence as being conditioned by information, an infosphere, which would

not be a virtual environment supported by a genuinely 'material' world behind; rather, it will be the world itself that will be increasingly interpreted and understood informationally, as part of the infosphere. At the end of this shift, the infosphere will have moved from being a way to refer to the space of information to being synonymous with reality. (2010: 17)

This 'shift', as Floridi calls it, might step beyond the designation of a quasi-transcendental arche-trace (the places where writing or information still refers to something else, even if it is not conceivable) that Derrida sees as ultimately needing to be erased. For Derrida, this erasure of concepts marks 'the places of that future meditation'. For example, the value of the transcendental arche [*archie*] must make its necessity felt before letting itself be erased. The concept of arche-trace must comply with both that necessity and that erasure. It is in fact contradictory and not acceptable within the logic of identity' (1997: 61). The concept of arche-trace can be seen to be at work in the distinction that Floridi (who never makes any reference to Derrida) draws between the infosphere as something that is referred to and as something which plays a part in constituting reality. In a similar way to how Derrida puts in to question the conceptualisation of language as something foreign to the subject (rather than constitutive of them), Floridi questions the separation of the infosphere from reality. This strange non-place *before* the infosphere becomes synonymous with reality and *before* the erasure of arche-trace is achieved is the place of much of our contemporary condition. It follows from this Derridean reading of Floridi that our relationships with technology are teaching us what was already true: that information is not just what we are subject to, but what invents or prescribes us as subjects.

Nature and Technology

Like the distinction between the real and informational world for Floridi, the absolute distinction between the natural and technological is illusory for Derrida. Although *Of Grammatology* is primarily engaged in deconstructing the opposition between 'natural' speech and 'technological' writing, the argument also holds for other forms of technology. This is because Derrida does not privilege writing but rather removes the privilege of speech and anything pertaining to be natural (and therefore good rather than evil). As such, education, even in its most seemingly natural forms, is always technologized. In Derrida's readings of the *Phaedrus* and *Emile*,

Writing is the dissimulation of the natural, primary, and immediate presence of sense to the soul within the logos. Its violence befalls the soul as unconsciousness. Deconstructing this tradition will therefore not consist of reversing it, of making writing innocent. Rather of showing why the violence of writing does not *befall* an innocent language. There is an originary violence of writing because language is first, in a sense I shall gradually reveal, writing. (1997: 36-37)

There is no natural or innocent language or writing for Derrida and, in terms of education, the violent and technological aspects of both have always been at play. However, this violent, technological and supplementary quality to writing and language also extends to other aspects of our existence, meaning that the conditions of arche-writing and informational ontology are all pervasive. In this sense, the 'nature' of existence is supplementary, which is particularly important when taking account of the educational subject. In a footnote to *Of Grammatology* Derrida comments on Rousseau's analogizing of writing with masks and therefore as an unnatural and supplementary technology:

It is well-known that Rousseau ruthlessly denounced the mask, from the *Letter to M. d'Alembert* to the *Nouvelle Heloise*. One of the tasks of pedagogy consists precisely in neutralizing the effects of masks upon children...The condemnation of writing is also, as if self-evidently, an ambiguous condemnation of the mask. (1997: 353)

However, it is not simply that writing is not a mask but rather that even a mask does not hide 'the truth.' Understanding Derrida's critical reading of Rousseau in terms of education reveals that there is no natural or neutral teaching space. Rousseau's desire to create a form of education which strives to be as natural as possible is, in the very movement of that attempt, already technological. The main contradiction that Derrida uncovers in Rousseau's naturalist pedagogy is in the supplementarity which it at once demands and rejects as inferior to nature. In Derrida's reading of the *Phaedrus* from *Dissemination*, he argues that 'what Plato *dreams* of is a memory with no sign. That is, with no supplement.' (2004: 112), complementing his reading of Rousseau from *Of Grammatology*, wherein he specifically engages with the problem of the supplement in relation to education, where for Rousseau:

Nature does not supplement *itself* at all; Nature's supplement does not proceed from Nature, it is not only inferior to but other than Nature.

Yet all education, the keystone of Rousseauist thought, will be described or presented as a system of substitution [*suppléance*] destined to reconstitute Nature's edifice in the most natural way possible. (1997: 145)

In the same way it is possible to see a hierarchy proposed between a 'natural' lesson, defined by close physical presence between teacher and students, and a 'supplementary' lesson defined by distance and a reliance on

information technology. Superficially at least, the natural lesson would be perceived as better and more authentically educative and the supplementary lesson would therefore ultimately be compromising a more authentic learning experience. This hierarchy depends on the edification of the natural and the vilification of the technological, where 'All the organization of, and all the time spent in, education will be regulated by this necessary evil: "supply [*suppléer*] . . . [what] . . . is lacking" and to replace Nature. It must be done as little and as late as possible' (1997: 146-147).

Rousseau's idea of the necessary evil of supplementation is based on a false formal dichotomy between the natural and the supplement. While Rousseau realizes the necessity (however evil) of supplementarity, it is still seen as second rate, and the more supplemented (technological) education becomes the worse it is. Because Rousseau does not locate, as Derrida does, the supplement's operation in the thinking of nature itself, the binary between the two is only ever mitigated by proximity: the closer the child is to nature the better. But for Derrida, childhood in particular reveals where the natural and its supplement necessarily overlap and invalidate each other's opposition: 'Childhood is the first manifestation of the deficiency which, in Nature, calls for substitution [*suppléance*]. Pedagogy illuminates perhaps more crudely the paradoxes of the supplement. How is a natural weakness possible? How can Nature ask for forces that it does not furnish?' (1997: 146) Childhood could therefore be understood as 'naturally' requiring supplement, as its very strength is to be found in supplementarity; in that which is, superficially at least, other to itself. However, if supplements are to be held off as late as possible in education (when it is clear that childhood is a time of the obvious necessity of supplementarity) then who is to decide what is the hierarchy of supplements (moving from natural/good and unnatural/evil)? What is the most 'natural' supplement when even Rousseau seems implicitly to accept that nature is part of the order of supplementarity? If nothing can be thought of as existing naturally without supplement then there is nothing, in terms of our understanding, which can be even artificially present to itself without technology. The very language we use to understand our world is such a technology. There is no 'natural' language and, as such, pedagogy has to operate as if one were always learning a foreign language. We can only ever conceive of ourselves as technological but to rethink a pedagogy under this technological theme of deconstruction would not be to privilege writing or computers but would be to reconceive of the whole language of education as being subject to the conditions of writing (in all of its forms) in general.

Invention

Interestingly Floridi also draws from the *Phaedrus* in ‘The Informational Nature of Personal Identity’, using Plato’s metaphor of the chariot to introduce and then purportedly solve the problem of how the self can be a coherent unity, writing that ‘The problem of the chariot therefore may be solved only by taking into account all the bonding forces—physical, cognitive, and semantic—that progressively generate the unity of the self. (2011b: 560) The different readings that Floridi and Derrida give of the *Phaedrus* are where their paths most clearly diverge. While Floridi’s informational ontology can be analogised with Derrida’s critique of presence, the emphasis he places on unity of the self is in direct contradiction to Derrida’s critique of self-presence. A generous reading of Floridi might suggest that informational ontology (and/or arche-writing) conditions the unity of the self and that therefore it is never actually present to itself. I would argue that, even if he did not intend it, such a reading is not only possible but necessary in realising the potential of Floridi’s thinking. As Derrida shows in his readings of Rousseau and the *Phaedrus*, any conception of the self is always already supplemented and technologized. Floridi’s conception of humans as inforgs (informational organisms) would seem to be complicit with such an understanding - but only if inforgs were not unities but rather that some of the information existent to inforgs implied unity, inventing or prescribing the fiction of unity (Floridi 2007: 63). If this is the case then the confidence in an illusory unity can be seen as serving a useful personal and social function, while not actually being the fundamental condition of the inforg.

For Derrida the division between an internal self and external world is only ever a useful fiction, wherein the self is invented out of an informational context. In an interview with Bernard Stiegler, Derrida argued that ‘what remains to be invented, no doubt, is “who and what.”’(2002: 46) and in ‘Psyche: Invention of the Other’ he wrote that ‘an invention always presupposes some illegality, the breaking of an implicit contract; it inserts a disorder into the peaceful ordering of things, it disregards the proprieties’ (2007: 1). Invention is therefore ultimately not the job of an agent but an event which occurs in an (informational) context wherein the agent might themselves be invented, or even be invented as inventor. He conceives of invention as writing which is

liable to the other, opened to and by the other, to the work of the other; it works at not letting itself be enclosed or dominated by this economy of the same in its totality, which guarantees both the irrefutable

power and the closure of the classical concept of invention, its politics, its technoscience, its institutions.’ (2007: 46)

The invention of the who and the what is mitigated by the other but this ‘other’ is not necessarily an other person but rather anything that comes from outside the thought of a totality or unity. If the who and the what needs to be invented then a self is conditioned by its own invention (that is to say, the invention of it as a self) and the invention of that which is outside of itself. These somewhat arbitrary and quasi-fictional distinctions are not invented by an inventor but by a context of information or, in Derrida’s terms, signs. Perhaps following on from his conversation with Derrida, Stiegler further explores the role of invention in distinguishing the who from the what in the first volume of *Technics and Time*:

The relation between the “who” and the “what” is invention. Apparently the “who” and the “what” are named respectively: the human, and the technical. Nevertheless, 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*?’ (1998: 134)

Stiegler’s suggestion that the ‘who’ could be considered technical is not far removed from the idea that the self is invented by language and other informational contexts. Conceiving the human as a ‘what’ would mean conceiving it as an informational object which could play a part in invention but does not actually *do* the inventing. In the same way that nature and the supplement/technology/information are entirely interrelated, so are the who and the what. Their distinction from one another, or definition of their overlapping or similitude, is constantly invented.

Stiegler picks up this problem again in the third volume of *Technics and Time*, writing that ‘the growing lack of differentiation between the *who?* and the *what* (where the *who?* is increasingly controlled by machinic retentional devices) is seen as an advanced stage of the entropic *process* and its resultant *situation* brought about by the programming industries in which the *I* is fundamentally confused with the *We*’ (2011: 212), a reading which seems markedly pessimistic when read up against Floridi’s rather more neutral argument that

we are witnessing an epochal, unprecedented migration of humanity from its Umwelt to the infosphere itself, not least because the latter is absorbing the former. As a result, humans will be inforgs among other (possibly artificial) inforgs and agents operating in an environment that is friendlier to digital creatures. As digital immigrants like us are replaced by digital natives like our children, the latter will come to appreciate that there is no ontological difference between infosphere and Umwelt, only a difference of levels of abstractions (2007: 63)

While both Floridi and Stiegler are speaking of the same phenomenon, the latter perceives this situation as a process of disindividuation over which technologies (in the vulgar sense) have too much purchase. Stiegler's approach, which is significantly informed by Derrida's thinking, is much less confident than Floridi's, partly because he does not conceive of subjects as agents who are present to themselves. Floridi defines 'selves' as the 'ultimate negentropic entities,'

through which information temporarily overcomes its own entropy, becomes conscious, and is finally able to recount the story of its own emergence in terms of a progressive detachment from external reality. There are still only informational structures. But some are things, some are organisms, and some are minds, intelligent and self-aware beings. Only minds are able to interpret other informational structures as things or organisms or selves. And this is part of their special position in the universe. (2011b: 564-565)

This progressive, negentropic story of detachment from the external world is complicit in an understanding of the education of self as a linear and unified activity, without interruption, distraction, miseducation, dispossession, or anything else which might undermine its separation from externality. On the other hand, for Stiegler and Derrida, subjective agency is itself an invented product of informational contexts. It follows therefore that if these contexts do not supply or enhance conceptions of identity which are markedly individual or agential then those concepts and their implications will cease to have an effect. Simply put, if we do not teach uniqueness as having significance, or provide the conditions for its appearance, then it might become less and less likely to appear. The irony here is that it is precisely because Stiegler and Derrida do not take the primacy of subjective agency as a given that its perpetuation is so important to them. For them, existence has always been technical and supplementary - 'The fact of becoming is today essentially a technological fact. In the human domain, becoming always has something to do with the technical fact that preceded genetic origins of

humankind, and that is in fact as old as the cosmos' (Stiegler 2011: 176) - meaning that there is no natural self to be protected or perpetuated but rather, at best, an understanding of the workings of the technologies that we are informed by. This is particularly important because, for Derrida and Stiegler, what we are informed by can, to a greater or lesser extent, invent who we are, Stiegler going so far as to suggest that if 'becoming' consists 'of a group of changing states linked by cause/effect relationships, there can hardly be any doubt that the totality of these sensory changes defined as "beings we are ourselves" is today largely and manifestly determined by changing technological states' (2011: 176). Whether this technologized process of becoming is prescribed or invented will depend on how well prepared our subjectivities and their contexts are educated and how well we are educated in them.

Conclusion

While there are many ways of conceiving of the subjective technologies - whether it is through Plato's chariot from the *Phaedrus* or a Cartesian subject who thinks and therefore is - Derrida illustrates how any conception of the subject which is conceived as present to itself is artificial or fictional, even if it serves a function. For Derrida (and for Stiegler, following him), any notion of the subject is conditioned by whatever context it arises from, in and as. The subject is not present to itself because its context (and therefore the conditions and information of its existence) is always arriving and never finalised. This position results in two educational imperatives: first, the technological constitution of the subject must continue to be better understood and taught; second, the increasingly digital and informational context we find ourselves in must invent rather than prescribe subjects who can be responsive to it.

If Derrida and Stiegler are to be believed then these educational imperatives revolve around the polysemous question/statement of *what and who is to be taught(?)*. This is a statement as well as a question because it takes for granted that there are no natural or necessarily obvious understandings of what these words might imply or how they might be distinguished from one another, or overlap. The answer to the question, *what and who is to be taught?*, must both be inventive and understand that invention itself is the means by which it is answered. Education in these terms is then the responsibility of invention in the context of an informational ontology. Even if one was to avoid distinguishing between the philosophical and the practical - instead understanding that philosophy can be practical and practice can be philosophical - there are many practical

means by which these ostensibly philosophical questions can be responded to. One would be to make clear that an 'online identity' is just as real or unreal as an 'offline identity' and therefore equally as bound to ethics and social responsibility. Another would be to teach the basic geography and legislation of the online world, indicating, for example, where one might have more or less rights or privacy than would be expected, in terms of what one publishes. As will be obvious, these more practical lessons are already underway and it is educational philosophy which must catch up. This philosophical catching up is particularly important when it comes to acting on the differentiation between prescription and invention of subjects.

The educational subject is and will be invented no matter what. As conditions change, so will the subject. The roles educators play in this invention can vary significantly. How our individual and shared existence acquires meaning and purpose is a question underpinning all educational experience and practice. If educators do not take responsibility for their part in inventing the educational subject, that invention will be much more likely to take place without reflection. The educational subject needs to know it is being invented; it needs to know it has changed and will continue to change. The more closely it becomes possible to reflect on the invention of the subject in contemporary conditions the more informed the decisions we make will be. If, as Floridi suggests, we live in an informational ontology, being *informed* about how all forms of information operate in relation to our subjectivity becomes a primary educational issue. There are many 'anti-technology' advocates in education who would not accept that digital forms of experience or learning are different to book-learning or classroom-learning only in terms of a stratification and not an absolute distinction. The absolute rejection of technology in education is unhelpful because it is so out of line with the practical and professional requirements and desires of our world. However, a concern for the negative impact of technology is not in itself misguided. Any educator's role in the invention of the educational subject must take into account the effects of certain informational contexts. If certain forms of technology, which must be seen as part of the invention of the subject, are perceived to have potentially negative consequences for an individual and their behaviour then it is not sufficient to avoid them but rather necessary to equip the subject with means to utilise them in such a way that they and others are fortified against those negative consequences. As Derrida points out, 'One of the problems with school is that it occupies only a limited time and space in the experience of the subject, citizen or not, who has access to the image outside school, at home, or anywhere' (Derrida and Stiegler 2002: 60). Therefore school, or another educational context, must provide an education in that which it cannot control. Websites, social media, online chat technology and multiplayer games (especially those with popular chat

functions) can all play a part in inventing a subject. This can either be through benign or even plainly educative conversations and informational transactions, as well as through extremes such as porn addiction, religious or political radicalization, or cyber bullying. Clearly, the invention of a subject that is prone to violence, sexual frustration or depression is not desirable and therefore the means by which that invention might become possible must be understood as thoroughly as possible. The solution of banning certain forms of media has become farcical in the age of the internet, where an education in how to get around restrictions is almost impossible to avoid, and incredibly easy to seek out. Thus, to pretend as if there is still a self-present subject sitting in a classroom, who can be educated in a linear and only partially technologized way is not only misinformed but also potentially damaging.

The ‘subject’ invented in the classroom is – sometimes simultaneously – being invented online and in relation to various forms of media. The limits of classroom education are not new; home life, social groups, hobbies, interests, and really any form of experience not directly engaged with in school, has always evaded the reaches of formal schooling. As such, the invention of the educational subject has always been and will always be multifaceted. The difference between this general situation and our contemporary condition, however, is marked by the *similarity* of non-formal educational experience. In contrast to diverse social, cultural and other experiential conditions – which still persist – the digital and informational technologies that are most commonly used are actually extremely similar in type and effect. So, far from offering an unfathomable problem to the invention of the educational subject, our contemporary condition provides an opportunity for understanding and helping others understand their context in much greater detail than perhaps ever before. While I call this an opportunity, it is also, as Stiegler picks up, a threat. Because experiences all across the world are becoming so similar, this means the technologies with which the subject can be invented are becoming increasingly homogenous. Similarity of subjects is, of course, not necessarily a bad thing. It is, for example, the general similarities between human bodies which make medical diagnosis and treatment possible, if not always successful. On the other hand, if this similarity is produced by arbitrary forms of (often commercial) technology then the subject runs the risk of being prescribed rather than invented. The distinction between prescription and invention can never be absolutely clear because all inventions are conditioned by their context but many forms of media are now not simply providing information within a context, they are creating the context for that information too. What this means is that the subject is not invented at the intersection of various diverse forms

of information but rather that many of those ‘inventive’ connections are prescribed by already existing technologies.

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