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Posthumanist education?

Abstract:

This contribution distinguishes between different varieties of posthumanism. It promotes a 'critical posthumanism' which engages with an emerging new world picture at the level of ethics, ecology, politics, technology and epistemology. On this basis, it explores the question of a posthumanist and postanthropocentric education both from a philosophical, theoretical and practical, curricular point of view. By way of a critically engagement with the discussion about digital media, globalization and the notion of new literacies it highlights some of the practical implications that a posthumanist education might have on educational policy. It concludes by emphasising the risks but also benefits that new subjectivities and reading practices based on digital media convergence might have for posthumanist education.

1. The posthumanization of the education system

One might be very tempted to dismiss posthumanism as another Anglo-American theory fashion and to simply wait for this latest 'postism' to go the way of all the previous ones. If there was no globalization with its tangible effects both at an economic as well as a media and cultural level this might be possible or even a sensible thing to do. But the fact is that, even in disciplines that have always been predominantly focused on their respective national spaces, cultures and institutions such as the humanities and social sciences – which includes education, of course – global flows nowadays increasingly provide the main political and institutional impulses. This occurs through global competition via mechanisms of international 'transparency' and 'accountability' (cf. university league tables, or international studies of education systems like the OECD's PISA studies), which connect comparative educational standards with business location and correlate local training standards with an increasingly global competitive and mobile workforce. This puts national education systems under pressure to open themselves up to international and global benchmarking. Education, as a still predominantly national institution is forced, due to more flexible tax legislation under the conditions of global neoliberalism, to make major investments to convince mobile international and global corporations and elites that the right political decisions are being taken to provide attractive educational opportunities and business locations including a flexible and skilled workforce ready for the so-called 'knowledge society' (cf. Zajda, Davies & Majhanovick 2008; Novelli & Altinyelken 2012; Meyer & Benavot 2013; Zajda 2015; Zajda & Rust 2015; Lingard, Martino & Rezai-Rashti 2015).

International comparison is thus regularly used to break up apparently too rigid or obsolete local structures within educational systems and to create greater transparency, accountability, flexibility and competitiveness (all classic ideologemes of neoliberalism). The aim is to prevent or maybe reverse the culturally and financially disastrous losses to educational investment through so-called 'brain drain'. The pressure on education systems under these conditions of competition and free market ideology as well as fashionable notions like for example 'transferable skills', which are aimed at streamlining and adjusting national workforces with regard to global employability and mobility, in my view, already constitute a context which one might wish to call 'posthumanist'. The posthumanist school and university, in this rather reductive economistic sense, together with the accelerating and intensifying digitalization and ubiquity of (new) media technologies, therefore, in a sense, are thus heavily implicated in and are affected by the ongoing process of 'posthumanization'.

Already in 1996, Bill Readings's *The University in Ruins* provided a critique of the neoliberalization of the university. Readings's debunking of the vacuity of neoliberal ideologemes like 'excellence', however, was not enough to prevent the further managerialization and the global reach of the 'corporate university'. In fact, similar trends have been spreading throughout the entire education system ever since, so that the traditional and fundamental link between humanism and education, for better or for worse, has become much more tentative. If universities all over the world are anxious to invest ever more money in marketing to improve their ranking and to attract lucrative international students and establish satellite institutions all over the world, as well as setting up distance learning environments, this is happening in the form of a repackaging of the (humanist) notion of education as 'knowledge transfer', with a view to the proclaimed advent of a global 'information society'. At the same time, mobility, transparency, flexibility and multiliteracy are used to sell an entirely instrumentalized form of education as individual investment and as 'lifelong learning' to the global constituency of 'customers'. This means that the previous humanist consensus that education most importantly serves to help develop some idea of 'personality' has almost entirely disappeared.

This is the historical context in which the phrase 'posthumanist education', in my view, now has to be placed. In my *Posthumanism: A Critical Analysis* (2013; German edition 2009), I introduced some differentiations which I believe are still helpful to understand the emergence and the development of the *discourse* of posthumanism. A distinction should be made between 'posthuman' and 'posthumanist', in which *posthuman* refers to a more or less fictitious *figure*, usually represented as either a specter, a desirable ideal or simply human destiny (cf. also Braidotti 2013); while *posthumanist* refers to something like a current task, namely a questioning or an ongoing deconstruction of the entire intellectual *tradition* and the *set of values* that humanism is based on (cf. Badmington 2000). Posthumanism, in sum, therefore works like a discourse, with its own posthuman objects and its construction of a new social reality. Within this discourse, one should further differentiate between a variety of positions with regard to the changing nature of social reality (i.e. a variety of *posthumanisms*): namely a popular posthumanism and a critical posthumanism, on the one hand, as well as a posthumanism 'with' and 'without' technology, on the other hand. Popular posthumanism is based on the idea of present or future transformation of humans into 'posthumans' and can be seen at work in a number of popular science magazines, television debates, Youtube videos and ubiquitous science fiction scenarios (all of which are increasingly merging into what might be called new 'cultural imaginary'). *Critical* posthumanism means above all a questioning of the current ambient ideas and trends with regard to the process of 'posthumanization', especially its motivations and ideological presuppositions. Critical posthumanism

thus provides a kind of 'psychoanalytic' reading of current desires and fears of human transformation and self-understanding. It understands the prefix 'post' as a symptom of a partially repressed lack of meaning at the core of the human (cf. Herbrechter & Callus 2008). The commonsensical understanding of posthumanism, however, focuses on technological change. This posthumanism 'with' technology usually constitutes an approach based on the idea of an autonomy or autopoiesis of technological development, while a posthumanism 'without' technology is of course not literally to be seen as 'luddite', but intends to divert the emphasis of the discussion away from technocentrism and technological determinism towards a more general anthropological (and postanthropological) trajectory (cf. Herbrechter & Callus 2007).

Another clarification with regard to the meaning of critical posthumanism concerns the historical dynamic of all things posthuman. More specifically, criticial posthumanism problematizes the prefix 'post-' – in analogy with Jean-François Lyotard's notion of the 'post-' in 'postmodern' – in the sense that it questions the very possibility of overcoming or transcending a humanist world picture. In this sense, posthumanism is clearly distinguished from transhumanism. As the prefix 'trans-' indicates, transhumanists like Hans Moravec, Vernon Vinge, or Nick Bostrom argue for a transcendence of the human as such – a kind of transformation of humans into something else (i.e. into a new species, superhumans, artificial intelligence etc.). Popular posthumanism often plays with such transhumanist scenarios. In its critical variety, however, posthumanism places the emphasis on a re-evaluation of humanist tradition and refers back to *proto*-posthumanist approaches, which already exist in various humanist traditions and antihumanist stances. It is therefore necessary to be aware of existing posthumanizing tendencies within humanism itself (and their critique) in order to keep a critical handle on the actual potential of and resistance to the excesses of current posthumanization processes and scenarios.

2. Posthumanism and pedagogy

The academic debate about posthumanism from the start has had an important educational component, even though this might have remained somewhat in the background until more recently. The first academic use of the term, in 1977, by the American literary and cultural theorist Ihab Hassan, occurred in the context and the genre of what he called a "university masque". With regard to what Hassan refers to a nascent posthumanism in the university he says:

> There is nothing supernatural in the process leading us to a posthumanist culture. That process depends mainly on the growing intrusion of the human mind into nature and history, on the dematerialization of life and the conceptualization of existence. (Hassan 1977: 835)

And he continues:

> At present, posthumanism may appear variously as a dubious neologism, the latest slogan, or simply another image of man's recurrent self-hate. Yet posthumanism may also hint at a potential in our culture, hint at a tendency struggling to become more than a trend... We need ... to understand that the human form – including human desire and all its external representations – may be changing radically, and thus must be re-visioned. We need to understand that five hundred years of humanism may be coming to end, as humanism transforms itself into something that we must helplessly call posthumanism. (843)

The essential link between education and humanism lies in education's historical aim of preparing children for majority (*Mündigkeit*; cf. Adorno 1971). And it is by no means a surprise that there are many current attempts to defend humanist objectives within education especially in the face of humanism's demise (see for example, Nussbaum 1997, Nida-Rümelin 2013). However, what seems to be irreversibly broken is the previous social and cultural consensus about humanist ideals and values – even though it has become increasingly obvious that these were in fact never as universalist or universalizable as they were made out to be. Humanism's ambition to be universal in reach, based on the essentialist notion of a common *human nature*, was in fact always underwritten by a very specific *normativity* (i.e. white, male, European, cosmopolitan, enlightened, rational). It is precisely this universalist norm that has become contested and untenable, or has simply lost its implied addressee and thus its appeal, in the age of global migration, multiculturalism and radical pluralism of values. From a sociocultural point of view, posthumanism emerges precisely out of this (postmodern) discussion about pluralism, but, crucially, adds another component to it. This component is based, on the one hand, on technolgical development, and, on the other hand, on environmental change. Both developments lead to, what might be called, the emergence of a *postanthropocentric* world picture, as can be seen in the idea that humans are, from now on (but, in retrospect, have always been) only one group of actors among many other nonhuman forms of agency. Although this has, of course, always been the case, the spreading awareness that humans and 'their' environment (humans and nonhuman animals, humans and machines, objects, etc.) form units and are in fact *networked*, is relatively new. When taken seriously, this has far-reaching consequences for 'our' current and future human self-understanding and thus, of course, for the education of future generations.

This is not to say that the current turn towards the posthuman and posthumanism within the theory and philosophy of education is without precedent. There have been previous attempts – mainly following the poststructuralist 'ends of man' or 'death of the subject' debate, on the one hand, and Donna Haraway's 'cyborg manifesto', on the other hand – to engage with the new figure of the posthuman (without addressing the full implications of posthumanism as such, however). The poststructuralist-deconstructive route is maybe best represented in the interventions by Gert Biesta, while the cyborg-route was pioneered in Noel Gough's and John Weaver's work. However, only now are there volumes or collections appearing that provide an overview of the wider implications of posthumanism for educational theory and practice. The earliest strategic use of posthumanism in relation to educational theory is probably by William Spanos in his *The End of Education: Toward Posthumanism* (1993), whose starting point is the poststructuralist critique of the ideology of 'disinterestedness' that underlies the discourse of humanist education. In a similar vein, Biesta, in 'Pedagogy without Humanism; Foucault and the Subject of Education' (1998), builds on the poststructuralist critique of the liberal humanist subject and the ends of man debate (cf. Derrida 1982; and Jean-Luc Nancy and Philippe Lacoue-Labarthe 1981) as an attack on the 'manipulative' character of humanist pedagogy (see also Biesta, 2006). This philosophical trajectory based on a critique of power and a deconstruction of the liberal humanist subject is supplemented in the work of a number of other education theorists with a discussion of the social implications of 'cyborgization' as introduced by Donna Haraway in the mid-1980s (cf. Haraway 1991). As early as 1995, Noel Gough, in 'Manifesting Cyborgs in Curriculum Enquiry' (1995) proposed to use the figure of the cyborg and the genre of science fiction as a way of opening up new forms of narrativization for science teaching – an approach which in later publications he supplemented with a turn to actor-network-theory, or ANT (see Gough 2004). This line of argument is also taken up by John Weaver in *Educating the Posthuman: Biosciences, Fiction, and Curriculum Studies* (2010), which calls for an

engagement with posthumanism and the challenges posed to the idea of human nature by biotechnology and the new biosciences. In line with the erosion of human exceptionalism and the acknowledgement of nonhuman forms of agency there are also more recent attempts to rethink education from other theoretical positions, which, nevertheless, may be subsumed under the label posthumanism, namely *new feminist materialism*, the already mentioned actor-network-theory (cf. Fenwick & Edwards 2010 and 2011) and object-oriented-ontology (cf. Snaza 2015).

In a special issue of *Gender and Education* (2013) on 'Material feminisms: new directions for education', the editors explain that:

> The radical shifts occurring across the social sciences make this an exciting time for educational research. New material feminisms, post-humanism, actor network theory, complexity theory, science and technology studies, material culture studies and Deleuzian philosophy name just some of the main strands that call us to reappraise what counts as knowledge and to re-examine the purpose of education. Together these strands shift the focus away from individualized acts of cognition and encourage us to view education in terms of change, flows, mobilities, multiplicities, assemblages, materialities and processes. (Taylor & Ivinson, 2013: 665)

Two other recent publications are worth mentioning here to show the extent to which the discussion about posthumanism has entered educational and curriculum theory. In *Education out of Bounds: Reimagining Cultural Studies for a Posthuman Age* (2010), Tyson Lewis and Richard Kahn argue for what they call "exopedagogy" – i.e. a pedagogy that goes beyond the "bounds" of anthropomorphism and which takes into account the entire "bestiary" of "posthuman (zoomorphic) monsters" (10ff). Similarly, and most recently, *Posthumanism and Educational Research*, edited by Nathan Snaza and John Weaver (2015), starts from the premise: "What would a world be that did not insist on human superiority or dominance and that did not disavow the human's ecological entanglements?" (3; see also Snaza et al. 2014).

In the following, I propose to briefly discuss some of these different positions, spell out the stakes and implications of the phrase 'posthumanist education' and relate them to a few curricular aspects. I begin with a discussion of comments made by Peter Sloterdijk – whose importance for education theory in my view has not been sufficiently recognized. I am referring especially to the controversy surrounding his so-called 'Elmau Speech' which takes as its starting point the current crisis of human "technologies of domestication" (*Zähmungstechniken*).

3. Humanism as a technology of domestication

In recent years Peter Sloterdijk's work has increasingly relied on the term "anthropotechnics" (cf. Sloterdijk 2009). In his 'Response to Heidegger's "Letter on Humanism"' (the subtitle to his Elmau speech, entitled 'Rules for the Human Zoo'), Sloterdijk recalls Heidegger's critique of humanist metaphysics. Heidegger chastises humanism's *Seinsvergessenheit* (forgetting of being) in the face of the modern technological challenge. Consequently, Sloterdijk puts forward his own technical or rather media-technological definition of humanism, which he understands as "telecommunication in the medium of print to underwrite friendship" (Sloterdijk 1999: 12) and as a "chain letter through the generations" (12), whose underlying "communitarian fantasy" of "participation through reading the

canon reveals a common love of inspiring messages" (13). At the heart of this media technological illusion lies "a cult or club fantasy: the dream of the portentous solidarity of those who have been chosen to be allowed to read" (13). However, this "reading nation" has been thrown into a deep crisis by the processes of globalization and digitalization. Sloterdijk describes the resulting squeeze in these words:

> If this period [i.e. humanism] seems today to have irredeemably vanished, it is not because people have through decadence become unwilling to follow their national literary curriculum. The epoch of nationalistic humanism has come to an end because the art of writing love-inspiring letters to a nation of friends, however professionally it is practiced, is no longer sufficient to form a telecommunicative bond between members of a modern mass society. (14)

The disintegration of the humanist (phatic) bond is accompanied by growing fears that humanism actually might always have been relying on somewhat negative values as its main motivation, namely on the fear of a people governed by natural *Verwilderungstendenzen* ["a tendency towards the bestialization of humanity" (15)]. Basically, humanism understands itself as a melioristic antidote to humans' inherent barbarity: "Anyone who is asking today about the future of humanity and about the methods of humanization wants to know if there is any hope of mastering the contemporary tendency towards the bestialization of humanity" (15). Humanist education based on reading therefore amounts to what Sloterdijk calls *Zähmungstechnik* [technology of domestication], which is supposed to immunize humans against the spectre of the "unconstrained homo inhumanus" (15).

From this rather provocative analysis Sloterdijk draws two conclusions, which, in my view, have profound effects on any posthumanist educational programme. Behind the opposition between humanism and posthumanism and their respective fantasies or desires, according to Sloterdijk, lies the question of "anthropodicy" – that is "a characterization of man with respect to his biological indeterminacy and his moral ambivalence" (16). This implies the view that humanism is basically a specific media technological communication model, and that it is precisely the technical inadequacy of this model which has provoked the current crisis: "Above all... from now on the question of how a person can become a true or real human being becomes unavoidably a media question, if we understand by media the means of communion and communication by which human beings attain to that which they can and will become" (16). What is at stake in a move towards a posthumanist notion of education relies therefore on a return to the "underdetermination" of the human – the openness and ambivalence of the human – while the specific pedagogical challenge lies in a fundamental change of media technologies. The pedagogical question that arises out of Sloterdijk's analysis is: how does one prepare humans today, i.e. in the age of biopolitics, new media, digitalization and climate change, for the enormous and planetary challenges that lie ahead?

Sloterdijk understands the contemporary crisis of (European) national bourgeois humanism as an opportunity for a transhumanist or posthumanist thinking to emerge, where Heidegger's critique, as well as that of a number of poststructuralist thinkers, such as Derrida, Lyotard, Foucault, Lacan, is giving birth to new posthumanist schools of thought. What distinguishes these emerging posthumanisms from the earlier Heideggerian and poststructuralist critiques of humanism is, on the one hand, the reopening of the question of technology (in following but also going beyond Heidegger, especially as far as interdisciplinary approaches negotiating between the sciences and the humanities are concerned), and, on the other hand, the overcoming of Heideggerian or even

Foucauldian anthropocentrism that remains inscribed even in the most radical antihumanist critique. Once humans begin to take the notion of postanthropocentrism seriously fundamental ontological, ethical and environmental questions necessarily arise – questions that inevitably affect any future-oriented pedagogy. For Sloterdijk, this epochal question should be articulated as follows:

> What can tame man, when the role of humanism as the school for humanity has collapsed? What can tame men, when their previous attempts at self-taming have led primarily to power struggles? What can tame men, when, after all previous experiments to grow the species up, it remains unclear what it is to be a grown-up? Or is it simply no longer possible to pose the question of the constraint and formation of mankind by theories of civilizing and upbringing? (Sloteridjk 1999: 20)

In answer to the last question, Sloterdijk, conscious of writing in a time of what might be called (following Agamben, in his rereading of Foucault) the age of generalized "biopolitics" (cf. Agamben 1998), proposes a rethinking of a humanist "*Zähmungsgeschichte*" [history of taming] as a history of "breeding" (Sloterdijk here alludes to the return of eugenics as a result of biotechnological advances).

Globalization, digitization and biotechnology in the process of a complex media-technological convergence produce an emergence of humans from their previous humanist state of "self-domestication" and lead to a post- (or maybe trans-) humanist form of "self-cultivation":

> With the thesis of men as breeders of men, the humanistic horizons have been pried apart, so that the humanist can no longer only think, but can move on to questions of taming and nurture. The humanist directs himself to the human, and applies to him his taming, training, educational tools, convinced, as he is, of the necessary connection between reading, sitting, and taming. (Sloterdijk 1999: 22)

Posthumanist educationalists would thus necessarily have to start by questioning not only existing humanist taming technologies and adapt them for 'our' time, but they would equally have to query the very idea or necessity of and motivation for "taming" as such. However, if Sloterdijk's analysis is correct, would the very possibility of pedagogical thinking and pedagogical reason not break down altogether? Which minimal consensus about values, what minimal notion of humanity and which minimal idea of education for humans could still be established or presupposed, once the idea of "self-cultivation" through educational reproduction was abandoned? Is the phrase 'posthumanist education', in this sense, not a contradiction in terms?

The current "intellectual discomfort in the human zoo" (Sloterijk 1999: 25) – the (theme) park-like conditions that Sloterdijk refers to as the anthropotechnological "spheres" that humans have been creating to protect themselves and which allow for their "hominization" in the first place – demands a posthumanist thinking in the face of a "zoo-political task" (25). Interestingly, in his interpretation of the crisis of humanism Sloterdijk, almost instinctively, returns to the very beginning of European humanist thought – Plato – and explains that:

> Plato's dangerous sense for dangerous ideas finds the blind spot of all high culture pedagogies and politics – in particular, his admission of the actual inequality of people before the knowledge that power gives. (25; translation modified)

What transpires here, however, is that Sloterdijk turns out to be not so radical a thinker of a progressive posthumanist project for a transformed democratic education, after all, but someone who remains profoundly caught up, rather like Heidegger, in a feeling of late humanist frustration. He seems to place himself, somewhat nostalgically, in the position of a (reluctant) observer of the current "archiving" process of the humanist tradition. It is this nostalgic tone which in the end poses the greatest challenge for a *critical* posthumanism whose aim must be the development of a *positive* educational programme, without this kind of *ressentiment*:

> Everything suggests that archivists have become the successors of the humanists. For the few who still peer around in those archives, the realization is dawning that our lives are the confused answer to questions which were asked in places we have forgotten. (27)

A cynic might be tempted to say Sloterdijk has thus replied to Heidegger's letter in a somewhat melodramatic fashion. Despite its critical disguise, however, this reply has simply performed a continuation of the humanist trajectory while invoking its end. The letter, in this sense, has not failed to arrive at its destination. However, taking Sloterdijk's own analysis seriously, one would have to write very different kinds of 'letters' – on other media platforms, for example. The question would be to what extent these would still afford letter writing. Rhetorical and stylistic consequences necessarily would arise and the very idea of a correspondence would be challenged. It is this new (media) situation which necessarily constitutes one of the main starting points for a *critical* posthumanist education – namely the move from literacy to what might be called *mediacy*.

4. *Critical* posthumanist education

So can there be a posthumanist education at all? This is where I need to come back to the meaning of the term *critical* in the phrase 'critical posthumanism'. One reaction to Sloterdijk's reply to Heidegger would thus need to be performative, so to speak. The humanist founding and legitimating gesture of writing letters – a gesture on which 'men' and 'republics of letters' have been relying and to which they cannot stop 'replying' (which of course includes my own humble response here) – always presupposes a certain ideal of literacy at the core of any humanist understanding of education. Given the requirement of this most important of humanist technological *dispositifs* – i.e. literacy – how, in practical terms, would a *critical* posthumanist education look in terms of curriculum (if, indeed, the notion of curriculum can escape its posthumanist deconstruction)? If we follow the logic of postanthropocentrism I outlined above, a focus on proliferating environmental issues including ethical, political as well as epistemological aspects seems to suggest itself. In the remaining part of this section I would like to briefly turn to each of these aspects (i.e. ethical, political and epistemological).

We can assume that the crisis humanist education finds itself in has been caused by changes both to the (humanist) system as well as to the (humanist) subject that supported this system and in turn was supported by it. In terms of the system, this crisis has been exacerbated by neoliberal globalization and the resulting global competition in educational standards. In terms of the subject, new media technologies have led to a change in the fundamental self-understanding of humans as well as to new forms of subject positionings or interpellations (to extend Louis Althusser's term). How would a critical posthumanist pedagogy support, as well as provide possibilities for a critique of, these emerging new subjectivities and thus enable them to critically and creatively address their new

systemic environments. This requires, in my view, an ethical-ecological, a political-technological and an epistemological-cognitive conceptualization, which need to be associated with their respective appropriate learning contents. To recapitulate, this move is based on the understanding of the 'post-' in 'posthumanism' not as a displacement, an overcoming of or a detachment from the humanist tradition, but as a critical reappropriation, a perlaboration or rewriting of it.

In the biotechnological age and the time of biopolitics, a posthumanist and postanthropocentric ethics must, by definition, be 'organic', in the sense that it should be concerned with life, its affirmation and its survival. A posthumanist ethics is therefore, on the one hand, characterized by the awareness of human-induced climate change with its global impact on the geosphere, biodiversity, resource extraction and the associated problems of sustainability (cf. the emerging geological debate around the Anthropocene (see for example Clark 2015; Malone, Truong & Gray 2017). This aspect is so central – a question of survival, not only for the human species, but for the entire life-supporting environment with its non-human actors (animals, plants, machines, objects, etc.) – that ecology is in fact becoming the new core educational subject. Instead of being just a new subject, however, ecology functions more like a complex of ideas that informs every teaching practice and curriculum, in any school or university from the very outset. Whether natural sciences, social sciences or humanities, at the beginning of any subject-specific training there has to be an engagement with postanthropocentric questionings designed to develop an environmental consciousness. For the humanities in particular, this means a shift towards teaching the history of hominization from a postanthropocentric standpoint that also addresses and critically evaluates the idea of human exceptionalism and incorporates a focus on environmental entanglement as well as the importance of nonhuman forms of agency.

One step in this direction would be creating a responsiveness to the work that has emerged out of (critical) animal studies, and which would address and reverse the literal disappearance of animals from human-centred environments throughout modernity (with the exception of some selected companion species, zoos, nature television programmes and, of course, ever-increasing meat consumption). The affective changes that the *deanimalization* (both material as well as psycho-social) and the segregation of human and nonhuman environments have produced throughout modernity need to be critically addressed and if possible reversed, to create a human self-image that recognizes the entanglement of human and nonhuman animality at both a material (embodiment) and ethical-ecological level (biodiversity as an intrinsic good). As long as animals are primarily seen and dealt with as goods and industrial products, the process of human denaturation cannot even begin to be taught appropriately. The technophantasm of a complete separation between spirit and matter, as promised by transhumanists for example (which merely continues in the tradition of two millennia of Christianity and dualist metaphysics), will have to be detracted and its cruelty and exclusionary character exposed as a part of a long history of the displacement of physicality and the devastating effects this has had on our fellow animals as well as on our human self-image. An ethical-ecological education therefore has to critically respond to the positive *and* negative aspects of posthumanization, especially with regard to issues of sustainability, redistribution and an idea of social justice, in which the interest of humans may not be considered as *a priori* central. As an example, let me refer at this point to the extremely valuable work by Helena Pedersen which engages with educational theory and animals in the classroom (Pedersen 2010a).

The presence of nonhuman animals in education, according to Pedersen, "makes visible the coercive and exclusionary implications" of current education policy, and "requires education to seriously

scrutinize its own embeddedness in reproductive practices and thought patterns and take effective measures toward its transformation" (Pedersen 2010b: 693). The benefit of engaging with posthumanist theory, for Pedersen, lies in the fact that it "complicates many assumptions surrounding the relations between education and democracy and provides new perspectives on the notion of 'voice' in a context where individual and collective voices of disadvantaged or subordinate groups (human or animal) are marginalized or silenced" (687). In this context, the decisive challenge that posthumanism poses is: "What would it mean for democracy education to respond to the 'voices' and lived experiences of nonhuman animals?" (ibid.). Posthumanist approaches to animals in education, on the other hand, should address the implications for formal education if approached as a web of socio-material relations where humans, animals, scientific knowledge, technologies, and artifacts interact under shared conditions in a biosocial space (cf. Pedersen 2015). Practically, for a truly posthumanist education this means that the constitutive speciesism at work in existing pedagogy does not only have to be addressed as such but would need to be actively undone, deconstructed, in order to jam, so to speak, what Agamben (1998) refers to as "the anthropological machine". This only would begin to tackle humanist education's implication within the (re)production of human self-understanding based on exceptionalism (cf. also Pedersen 2010c).

In connection with this ecological trajectory of postanthropocentrism the question of the distribution of and access to resources – material, biological, as well as cognitive and media technological – also needs rearticulation. This entails the second aspect, namely the political-technological dimension of any posthumanist pedagogy worthy of its name. For our current situation, this means a reorientation not only as far as the accessibility of the latest technologies are concerned (for the purpose of communication, commerce, mobility, health, leisure), but it requires a kind of second ecological shift towards postanthropocentrism with its new understanding of humans and nonhumans in relation to an emerging global media technological environment. The most advanced approach in this respect, in my view, can be found in Bernard Stiegler's work (2009 ff.), in which he refers to the "originary technicity" of the human (not unsimilar to Sloterdijk's "anthropotechnics"), and in which he insists on the co-evolution of humans and technology.

The question of technology – as it was so insistently formulated by Heidegger – today returns with a vengeance and with increased urgency (i.e. in the context of global bio-media-politics). It returns as the increasingly urgent question of human self-understanding, in the face of ever greater disappearance and ambient extinction threats. So, while all human being is "technical" (Stiegler) – in the sense that it was the technical supplement or prosthesis that made us human in the first place, and that, today, in the "fourth age of technology", promises to make us posthuman – the "essence" of technology is still nothing technical but instead stubbornly remains "poietic" (i.e. transformative, creative, "challenging forth"). It is important, however, when speaking of technology, technicity or the technical not to forget the processes of mediation which is their *raison d'être*. It is more than plausible that early techniques developed in the Stone Age may have started the hominizing process. The techniques that have been developed since then through trial and error and steady perfecting, however, beyond their simple instrumental character have had an ontological and medial side effect: ontological, in terms of developing a specific human self-understanding (e.g. in the sense of a modern *homo faber*) and medial, in that they allow the development of externalized media of communication. Marshall McLuhan (1994) referred to this media-technological understanding of technicity as "extensions of man". However, as indicated above, even though technicity and mediality might overlap, they are not quite identical. During the course of modernity the relationship between technicity and mediality, for example, can be said to have 'flipped'. The development of

technics and technology is basically congruent with the development of modernity – namely with industrialization, rationalization and globalization. Three aspects that play a special role in this process are language, culture and embodiment, which thus render an identification of this process with technicity problematic and instead are better understood as changes in mediality.

This is even more relevant since, for Stiegler (following Heidegger), "*every technical object is pharmacological*: it is both poison and remedy at the same time" (Stiegler, 2013: 421). A "pharmacology" (for example the understanding of what Stiegler refers to as "*épistémè* numérique [the episteme of the digital]" as *pharmakon*) thus involves a critical analysis of the socio-political use of technologies in view of their fundamental ambiguity (as remedy, poison, scapegoat, and, as I would add, as *media*). The digital, for Stiegler, is precisely such a challenge which concerns "la vie de l'esprit" [the life of the mind], which is essentially based on "exteriorization", that is to say, based on "the conditions of its expression, which are also those of its impressions" (Stiegler, 2014: 14): "we claim that digital evolution of technical exteriority and the processes of interiorization that it produces in return constitute a new age of the mind, a new mind that would be made possible by this new form of writing that we believe the digital to be, and which forces us to rethink the mind itself in its totality" (14; my translation). This digital (r)evolution and the constitution of a "knowledge society", according to Julien Gautier and Guillaume Vergne, "with their promises and above all, for the moment, with their dangers, put the educational system into a new central and at the same time problematic situation":

> In particular, the new technologies whose development oscillates between stultifying mass industry and unprecedented democratization of access to knowledge, seem to spell the end of a school whose aims seem to have become obsolete and whose methods are deemed archaic. However, does a solid formation of judgment and of culture not appear so much more primordial since we have entered an age that leaves us more and more to our own devices, with our minds weighed down by a constant flow of information and incessant solicitations. (Gautier and Vergne, in Kambouchner, Meirieu and Stiegler 2012: 13-14; my translation)

The question of what teaching might mean in the digital age, for Stiegler, is the question of education's "pharmacological" desire to "*prendre soin* [take care]" of the mind, to control and form the mind's capacity for attention and taste. This means that it is essential to address the "toxic" effects of digital technologies and to place them within the service of a "knowledge society" and exploit their potential of new forms of "transindividuation" for positive political ends (Gilbert Simondon's term, see Gautier and Vergne 2012: 17).

It follows, therefore, that the third aspect of a posthumanist pedagogy is aimed at the development of a new aesthetic. This includes the above-mentioned ethical-ecological and political-technological aspects. It arises out of the changing forms of mediality and the new methodological issues raised by them. As indicated, Sloterdijk's insistence on the centrality of changing media, through digitalization and globalization, from a literary to a posthumanist, i.e. post-literary, value system, does not necessarily lead to nostalgia or a sense of loss, but may as well constitute a chance or even a necessity. This is, for example, Michel Serres' attitude in *Petite Poucette* (2012). In this short educational treatise addressed to "Thumbelina" – the name he gives to the generation growing up with the new haptic environment of keyboards, screens and mobile media – Serres states that:

> Without us noticing a new human was born within the brief interval that separates us from the 1970s. He or she does no longer have the same body, the same life span, no longer

communicates in the same way, no longer perceives the world in the same way, no longer lives in the same nature, no longer inhabits the same space… . Since they no longer have the same head as their parents, he or she knows otherwise. (Serres 2012: 13; my translation)

For Serres, the move away from the "format-page" (the format of the page but also the formatting page – of which screens are the latest but also possibly the last remainder) opens up the possibility of new forms of intelligence based on invention, which, for Serres is measured by its opposition to and distance from knowledge *per se*.

In the same measure as the global media system converges in new media, a new from of media literacy thus becomes a central educational demand, both for the purposes of the system itself, as well as for its critical observation and thus for a creative intervention within it. Mostly this new skill-set is still referred to as 'literacy', or as 'new literacies' and 'multiliteracies' (Buckingham 2003; Cope & Kalantzis 2000). The demand for new literacies for new media-technological environments, with their new forms of sociality, cooperation and participation, whether they serve to improve the use of stationary media (e.g. computer terminals), or the rapidly increasing number of mobile media (smart phones, tablets, etc.), is closely related to media convergence, i.e. the transition from mass to open and p2p media. Henri Jenkins, one of the pioneers of media convergence, was asked to translate the challenges of this new participatory media culture into a rationale for a media education for the 21st century. Jenkins's intervention was designed to lead to a reorientation within the debate between traditionalists and skeptics about how a future-proof media education would have to proceed. The goal, as Jenkins writes, was to "shift the focus of the digital-divide discourse from questions of technological access to those of opportunities for participation and the development of cultural competencies and social skills needed for full involvement" (2009: xiii). To this end, Jenkins focused on:

> *new media literacies*: a set of cultural competencies and social skills that young people need in the new media landscape. Participatory culture shifts the focus of literacy from individual expression to community involvement. The new literacies almost all involve social skills developed through collaboration and networking. These skills build on the foundation of traditional literacy and research, technical, and critical-analysis skills learned in the classroom. (xiii).

What at first glance looks like a radical change in Jenkins's approach, however, is largely taken back at the end of this passage and relinked to traditional *literacies* developed through humanist educational practice. Even the pioneer of virtual reality and of the notion of virtual communities, Howard Rheingold, in his latest book on the subject, *Net Smart* (2012), bases his argument on an expansion of current literacies and advocates their "supplementation" by skills that optimize the usage of the internet: "attention, participation, collaboration, the critical consumption of information (aka, 'crap detection'), and network smarts" (Rheingold 2012: 5).

Thus, whether we are dealing with arguments for developing new forms of literacy (e.g. 'ludoliteracy', i.e. enhancing literacy through gaming practices and strategies) or for integrating new participatory forms of media skills into the educational programme (see e.g. 'peeragogy'), these conceptualizations all have one thing in common: they present themselves in terms of continuity with the idea of the literate. In my view, all these varieties of new literacy remain caught up in the dynamic of Sloterdijk's notion of (humanist) domestication. Even if this taming process might no longer affect humans exclusively it nevertheless remains an attempt at taming the potential for

change in digital and new social media. These attempts might thus all be described as weak defenses in that they stress the idea that traditional literacy skills are more in demand than ever as people move into the digital age, in which we apparently do not read less, but indeed more – even though we have less and less time for more and more reading material. Of course, this does not only have stylistic, grammatical and pragmatic effects on language use, but also on cognition and the attitude towards media more generally. These effects are fundamentally _aesthetic_ in nature and concern the existing linguistic and cultural ecology more generally (think for example of the dominance of English in the emerging new social media world or the spreading of a global popular culture by global media).

The positive argument that lies behind the drive towards an adequate integration of digital media within current pedagogical theory and practice (cf. Buckingham 2007) is thus merely the reverse side of the often quite grotesque attacks on the 'dumbing down' potential of new and, by implication, all screen media (a thesis that is well known at least since the advent of commercial television). The dumbing down argument usually refers back to the idea of an assault on the reading culture of humanism (cf. for example Mark Bauerlein's _The Dumbest Generation: How the Digital Age Stupefies Young Americans and Jeopardizes Our Future_ (2009)).

In my view the potential benefit of a _critical_ posthumanist education lies entirely elsewhere. If one takes the potential for change contained in new media and digitalization seriously (keeping in mind the context of globalization in which these new media are functioning), there are indeed high risks but also great benefits. And this is where the political task for a posthumanist education lies: namely in taking the potential seriously and thinking it through so to speak before negating or stressing any continuities. This is also the way I understand Gautier and Vergne in their preface to Kambouchner, Meirieu and Stiegler's discussion of the "digital school", in _L'Ecole, le numérique et la société qui vient_ (2012):

> There is no time any more to ask ourselves whether standards are 'going down' or 'rising', nor whether we need to place the child, the teacher or knowledge at the centre of the system, nor whether we should introduce new technologies in school or not. (2012: 12; my translation)

In the face of the "digital revolution" which leaves the new "pharmacological" exploitation of technologies of memory ("hypomnemata"), described by Stiegler, to the economy, a posthumanist education would have to reclaim the critical and creative potential contained in new media technologies for pedagogical purposes. Some early attempts of this were already made in the 1980s, and can be found for example in Gregory Ulmer's work, which argued for a shift from literacy to "electracy" (cf. Ulmer 1989; and Holmvik 2012).

Katherine Hayles, whose _How We Became Posthuman_ (1999) is usually seen as the beginning of a critical engagement with the cybernetic vision of posthumanism, in her more recent work deals with the cognitive changes and their (amongst other aspects, pedagogical) potential of digitalization. In _How We Think_ she starts from the assumption that "we think through, with, and alongside media" (2012: 1) and shows how this has already affected the current educational programme, especially in the humanities. Her starting point corresponds to the posthumanist self-understanding and positioning laid out above: "The ability to access and retrieve information on a global scale has a significant impact on how one thinks about one's place in the world" (2). In the intensified interaction between human and computer and the new subjectivities and forms of embodiment that arise from this process, Hayles claims that we are witnessing a shift towards "extended" and

"distributed cognition" (3). Consequently, she argues for establishing 'comparative media studies' as a new and central subject for schools and universities, which helps investigate the mentioned co-evolution of humans, technology and media (or, as Hayles calls it, "technogenesis").

Even though Hayles also still relies on the metaphor of expanding *literacies* to designate new competencies, she nevertheless focuses on the cognitive changes that are produced by new forms of reading behaviour. She proposes a three-tiered system of reading: traditional (humanist) "close reading", "hyper reading" and "machine reading" (Hayles 2012: 11):

> Hyper reading, which includes skimming, scanning, fragmenting, and juxtaposing texts, is a strategic response to an information-intensive environment, aiming to conserve attention by quickly identifying relevant information, so that only relatively few portions of a given text are actually read. (12)

This form of reading behaviour if formalized and pedagogically supported correlates with "hyper attention, a cognitive mode that has a low threshold for boredom, alternates quickly between different information streams, and prefers a high level of stimulation" (12). This is virtually the opposite of what is going on in "close reading". While "hyper attention" is often (mis)interpreted as a deficit (if not a pathology, cf. ADHS), it would be preferable for educational purposes to focus on hyper reading as a cognitive (and possibly evolutionary) survival technique in the age of "information overload", because "attention as a focus for inquiry opens onto a complex and urgent set of issues, including the relation of human to machine cognition and the cycles of epigenetic changes catalyzed by our increasing exposure to and engagement with digital media" (Hayles 2012: 12).

Bernard Stiegler sums up what is at stake in a more enlightened educational engagement with the "post-literary" potential of new digital media and the "new attentional forms" they produce (for better or for worse):

> If in fact an appropriate therapeutic response to this pharmacology of attention is conceivable and able to be transindividuated, then the question would be 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 underway since the beginning of grammatisation; new forms that make this network society arrive at a new stage in the individuation of this plural unity of the *logos* where the attentional forms we recognize as our culture abound? (Stiegler, 2012: 8; see also Stiegler's latest work on the very ambivalent effects of digitalization on the ideas and practices of work in an increasingly "automated" society, cf. Stiegler 2015a and b)

5. Conclusion

The either feared or anxiously awaited pharmacological and neuronal 'rewiring' of humans through digital media technology is necessarily related to changes within our human self-understanding. A critical posthumanism should of course not start from the purely 'neurocentric' or cognitive assumption, that this change might be fully explained by a correlation of neurological adaption and media-technological change, but instead should also emphasize the cultural, contextual and aesthetic

aspects of current transformations. The main task remains to learn to critically and fairly assess the potential for change in order to draw the right conclusions for posthumanist education policy. As Hayles proposes:

> The trouble, as I see it, lies not in hyper attention and hyper reading as examined but rather in the challenges the situation presents for parents and educators to ensure that deep attention and close reading continue to be vibrant components of our reading cultures and interact synergistically with the kind of web and hyper reading in which our young people are increasingly immersed. (2012: 69)

But what if it is exactly this rational attitude of compromise that is stopping us from seeing and understanding the true transformational (i.e. critical-creative) potential of the digital, and what if it was exactly this critical-creative potential that was needed to solve the massively complex and entangled problems that our future and the survival of the planet holds? One cannot help but think that it might be our inveterate humanist reflexes themselves that have led us into the current situation, and that it could be precisely the concealed, posthumanist, potential of an entirely other form of reason, hiding behind the dynamics of new media technology, that we need to do justice to if we want to even begin to tackle the entirely new breed and dimension that future crises may have. Herein lies, in my opinion, the urgency of the posthumanist challenge to rethinking education – namely, in developing a new impartiality outside anthropocentrism, wary of our most strongly and invisibly ingrained humanist reflexes.

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