Survival of the mediated

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ABSTRACT

Departing from a perspective of life as lived in rather than with media, this paper articulates the evolutionary context for people's near-complete immersion in media. Using examples such as the appropriation of the movie "Avatar" by activists around the world it is argued how our orientation to media provides adaptive advantage in contemporary postgeographical society.
People do not spend more time with media because (or since) internet, but the technology of internet connects the time we spend with all media. Internet research therefore inevitably takes place in a context where social practices and cultural meanings continuously spill over and bleed into each other. Established categories - such as sending and receiving, producing and consuming, being online or offline - liquefy. Media devices, what people do with them, and how all of this fits in the organization of our everyday life disrupt and unsettle well-established views of the role media play in society. Instead of continuing to wrestle with a distinction between media and society, this contribution proposes that contemporary media studies should take as its point of departure a view of life not lived with media, but in media (Deuze, 2007: 49ff). The media life perspective starts from the realization that the whole of the world and our lived experience in it can be seen as framed by, mitigated through, and made immediate by (immersive, integrated, ubiquitous and pervasive) media.

On the one hand, it is tempting to treat this situation, our situation, as more or less unique, particular to the times we live in and therefore to the media we immerse ourselves in. On the other hand, perhaps a media life is just another evolutionary consequence, something that is a natural part of adapting to our immediate local environment - an environment that today is instantly global, always on, and intrinsically interconnected. In evolutionary terms, a key research question becomes how we adapt to survive in a media life, and to what extent a life as lived in media provides us with adaptive cues or advantages in the struggle for survival and procreation. Living a media life can, and perhaps should, be seen as essential for survival.

**Machines and Man, Media and Life**

British philosopher Herbert Spencer must be credited not just with coining the phrase "survival of the fittest" (in 1862, inspired by Charles Darwin's work), but also with applying the principles of evolution to all aspects of organic and inorganic life - an ambitious approach he described as a 'synthetic' philosophy. Like different species of animals and plants, culture and society evolve towards increasing complexity and diversity, Spencer argued. The key to understanding this entire process is Darwin's concept of natural selection, which in subsequent editions of his "On the Origin of Species" (originally published in 1859) was replaced with Spencer's notion of survival of the fittest. Of course, for Darwin and Spencer being 'fit' does not refer to any prescriptive or physical principle - it just means to be adapted to survive in one's immediate, local environment. Although contemporary theorists would (and should) reject Spencer's rather simplistic progressive take on cultural evolution, his influence on Darwin's discourse stimulated much of evolution's take-up among those contemplating the impact on society of technology in general and media in particular (Mesoudi, 2010).

Shortly after the publication of Darwin's book British novelist Samuel Butler responded with a satirical op-ed piece for the New Zealand newspaper The Press, titled "Darwin among the Machines" (published on 13 June 1863). In this piece, Butler wonders out aloud about the direction of mechanical evolution - or what he calls 'mechanical life' - awestruck as he is "at the gigantic strides with which it has advanced in comparison with the slow progress of the animal and vegetable kingdom." Applying the principle of natural selection to machines, Butler notes how their ongoing diminution in size attends their
development and progress towards ever-increasing independence from humans. To Butler, the emergence of wristwatches is an example of how smaller technologies may replace larger ones - clocks - and thus render them extinct. If technologies have the potential to render each other obsolete, and their evolution moves at a pace far beyond that of nature, Butler proceeds, "[w]e refer to the question: what sort of creature man’s next successor in the supremacy of the earth is likely to be." Ultimately, "man will have become to the machine what the horse and the dog are to man. He will continue to exist, nay even to improve, and will probably better off in his state of domestication under the beneficent rule of the machines than he is in his present wild state." The solution to this evolutionary conundrum, according to Butler, is to wage "war to the death" with machines.

Butler’s analysis and solution - further explored in his 1872 novel "Erewhon" (an anagram of ‘nowhere’) about a fictional society that successfully destroyed its machines - provide an early example of what is essentially the logical end-point of any debate on the continuum from humans to machines: the moment when a technologically created 'superhuman' intelligence will end the human era, as US mathematician Vernon Vinge predicted in a 1993 speech at NASA. British science fiction author Arthur C. Clarke, famous for "2001: A Space Odyssey" (1968), similarly predicted the future as belonging to "the realm of the machine, not of flesh and blood" (1964 [1961]: 223). Butler, Clarke, and Vinge consider the gradual takeover by machines inevitable, as does US futurist Ray Kurzweil. Kurzweil (2005), extends this expectation to cover just about all aspects of human-based life, basing this prediction on a combination of accelerating developments in genetics, nanotechnology, and robotics. Behind such a futuristic premise lies a rather conventional and everyday reality, namely that of 'biomedia', as writer and artist Eugene Thacker defines it. Thacker explains how contemporary biology and computing - such as for example when mapping and manipulating DNA - are based on a common assumption: "that there exists some fundamental equivalency between genetic 'codes' and computer 'codes, or between the biological and digital domains, such that they can be rendered interchangeable" (2004: 5).

As with Butler's take on Darwin, the notion of (increasing and ongoing) interchangeability and interdependence of technology and humans - between media and life - is a relatively old one. This insight was for example voiced quite literally by the French physician Julien Offray de La Mettrie in his essay "L’homme machine" (translated as "Man A Machine"), published in 1748, where he argued against Descartes' distinction between matter and soul, instead suggesting that our bodies are like machines in that they influence the way we think and express ourselves. In his essay, La Mettrie suggests that our expressions in (and use of) media not only set us apart from primates, but also introduce an element of plasticity into our lives:

Words, languages, laws, sciences, and the fine arts have come, and by them finally the rough diamond of our mind has been polished. Man [...] has become an author [...] All has been accomplished through signs [...] and in this way men have acquired symbolic knowledge [...] Who invented the means of utilizing the plasticity of our organism? I cannot answer [...] I think that everything is the work of imagination, and that all the faculties of the soul can be correctly reduced to pure imagination in which they all consist. Thus judgment, reason, and memory are not absolute parts of the soul, but merely modifications of this kind of
medullary screen upon which images of the objects painted in the eye are projected as by a magic lantern.

These amazing words allow us to consider what media do on a symbolical as well as biological level. Symbolically, they introduce, amplify and extend a distinct sense of malleability into our lives: we become, and are considered or expected to be, authors of ourselves. As Samuel Butler similarly stated: "we are ourselves creating our own successors; we are daily adding to the beauty and delicacy of their physical organisation; we are daily giving them greater power and supplying by all sorts of ingenious contrivances that self-regulating, self-acting power which will be to them what intellect has been to the human race." Biologically, media produce and are produced by their materiality: the codes, protocols, conventions, wiring, programs, and constituent parts that make up our media allow us to tell specific stories about ourselves.

I would like to argue that at the start of the 21st century speculations about a time when machines finally take over seems pointless if we want to make sense of the role media play in people's everyday lives. Eric Rothenbuhler summarizes what must be the starting point for any discussion on media life today: "media are something we live inside as much as they are technologies we use for expression, information, influence, and entertainment" (2009: 280). What is relevant about the trajectory of debates from Offray de la Mettrie in the 1740s, Butler in the 1860s to today's polemics about nanotechnology and biomedia, must be the relevance of evolutionary approaches to understanding the role of media in everyday life.

**Media Life as Survival Strategy**

Central to the claims made about media and (quality of) life are three considerations that can be considered to imply a view on living in media as a necessary survival strategy. First, a sense that for today's young people in particular a life in media is not so much a choice, but a given. As Margaret Weigel and Celka Straughn of The Developing Minds and Digital Media Project at Harvard University write, "today's youth are the first generation to have lived their entire lives in a world rich with new digital media [...] ripe with the potential to transform young people's experiences" (2009: 3). Key to managing these transformations is what researchers of the British Digital Lives Research project refer to as our ability to safely, authentically and ethically keep track of our lives in media: "Life tracking, life caching, personalised medicine, personalised usability, biometric and individualised security, context aware ubiquitous computing and digital portfolios and learning: all rely to a significant extent on personal information [...] It is more than conceivable therefore that personal digital archives [...] will underlie digital life in a fundamental and universal way" (John et al., 2010: ix-x).

A second insight is that our engagement with media today cannot be restricted to the identity of a consumer, but must include what John Hartley (2007) describes as a literacy that includes 'read-write' uses of multimedia. As commonly defined, contemporary media competencies tend to include critical and self-reflective understanding of how media work, how to use different media devices effectively, and how to make your own media. To this list one could add Danish media theorist Stig Hjarvard's (2004) contention, that as
a steadily growing share of human communication takes place via media, people increasingly have to come to terms with what he calls ‘medialects’: new and emerging forms of language that are specific to media (e.g. using emoticons, Netspeak and Twitter slang, leet speak, and so on). Third, our media life must specifically be seen through a more or less co-creative and participatory lens, thus adding a distinct social element to media literacy. Summarizing findings of a large-scale project identifying new media literacies, Henry Jenkins and colleagues define these as:

- 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 one of individual expression to community involvement. The new literacies almost all involve social skills developed through collaboration and networking. (2006: 4)

The assumption grounding normative approaches to life in the 21st century is that media are not only central to people’s lives, but that the specific qualities of contemporary media require a set of skills and competencies that we cannot do without anymore. Apparently, using media skillfully, as consumer and producer, in a more or less collaborative context presumably becomes just as necessary to survive in today’s redactional society as finding food and shelter (and a mate) does. Linking media and survival more explicitly, education scholars Norm Friesen and Theo Hug find our immediate and at once local and global environment to be inseparable from media, because “[j]ust as water constitutes an a priori condition for the fish, so do media for humans” (2009: 66). Indeed, “we swim in an ocean of media,” as a headline in The Christian Science Monitor (of 28 September 2005) reads in a report on the media use of people in the US. The ecological metaphor of swimming in an ocean of media and metaphysical claim that we, like fish in water, tend not to question our media have evolutionary consequences: apparently, our adaptability for survival today cannot be considered outside of media, and can even be seen as constituted through media.

Before we, with Butler and the assistance of either Arnold Schwarzenegger or Christian Bale (in the “Terminator” movie franchise) wage war on our machines, a perhaps wiser first step in considering media life as a survival strategy is figuring out the extent to which our orientation to media provides us with adaptive advantage.

Living a media life is not just having access to all kinds of devices we use to mediate our lives. Nor is it just about knowing how and when to use such equipment. A media life is just as much about our orientation to media as it is about media and what we do with them. It is consequently possible to argue, as media literacy scholars implicitly do, that without orienting ourselves to media, we are not fit for survival. According to German social theorist Niklas Luhmann (2000 [1996]), throughout the 20th century social systems (such as the political, economic, scientific, and so on) in society have increasingly taken seriously the way media depict them. There is not a political party, corporate entity, or non-governmental organization without a dedicated office for media and public relations, or without some kind of media strategy. Luhmann explains how society orients itself to its description in the media, whereas the function of the media as a social institution primarily is to generate descriptions of society. Such circular permanent activity of generating and interpreting information follows a biological pattern of self-organization. Seen in this way, the institutions that make up society through their actions produce information about what society is, and by doing so increasingly rely on (observation and publication in) media for their continued existence and success. Reality as experienced by society’s institutions and the (mass) media is thus best understood as mutually constructed,
not subject to consensus or falsification. Hjarvard takes up this paramount media orientation as evidence of an ongoing 'mediatization' of society:

By the mediatization of society, we understand the process whereby society to an increasing degree is submitted to, or becomes dependent on, the media and their logic. This process is characterized by a duality in that the media have become integrated into the operations of other social institutions, while they also have acquired the status of social institutions in their own right. As a consequence, social interaction – within the respective institutions, between institutions, and in society at large – takes place via the media. (2008: 113)

All institutions are dependent on societal representation, and media are increasingly indispensable as platforms for the publication of their affairs. This means that an institution’s success in the media becomes necessary for exertion of influence in other areas of society - in other words: necessary for its successful reproduction and survival. As a result, all functional areas within society have learned to look at themselves through media glasses. Society’s institutions - which include the family, the temple, the state, and the workplace - have due to the rapid expansion and extension of media undergone a shift towards self-reflective commentary and positioning vis-à-vis the media.

**Avatar Activism**

Not just formal institutions are more or less exclusively oriented towards media - all kinds of groups, networks and communities are, too. Consider for example the inhabitants of Bil'in, a Palestinian village located west of the city of Ramallah in the central West Bank. Part of the village farm lands are cut off from the community as a result of expanding Israeli settlements and efforts by the Israeli Defense Force (since 2004) to build a wall around its territory. Starting in January 2005, the village community organizes weekly protests against the construction of the barrier. These protests take the form of marches from the village to the site of the barrier with the aim of halting construction and dismantling already constructed portions. Israeli forces typically intervene to prevent protesters from approaching the barrier, and violence often erupts in which both protesters and soldiers have been injured. From a media life point of view, the otherwise tragic plight of the people in this town is fascinating because of the way the community orients itself towards media in order to get support for its cause. Not only does the village operate a professional multi-lingual and multimedia website (www.bilin-village.org), the protests themselves are often staged in mediatized ways. On 12 February 2010 five protesters painted themselves blue and wore bright blue clothes inspired by the Na'vi people in James Cameron’s highly successful film “Avatar” (2009). In the movie (and its sequels), the Na'vi are a ten-foot-tall, blue-skinned non-technological species inhabiting the planet Pandora. On this planet, an Earth-based corporation mines for a valuable mineral called 'unobtainium', employing a mercenary army to displace the Na'vi who resist the company. A statement on Bil'in’s website explained the villager’s choice to dress like the Na'vi people: “[l]ike Palestinians, the Avatars fight imperialism, although the colonizers have different origins. The Avatars' presence in Bil'in today symbolizes the united resistance to imperialism of all kinds” (Bil'in Popular Committee, 2010). This demonstration in particular garnered worldwide attention and outrage, as pictures and video of blue protestors sprayed with tear gas canisters spread the globe - both by the town's own efforts to upload material to YouTube, and through international news
coverage. Writing about the protests in Bil’in for French monthly newspaper Le Monde Diplomatique (of September 15, 2010), Henry Jenkins considers the event “a reminder of how people around the world are mobilising icons and myths from popular culture as resources for political speech, which we can call Avatar activism.”

The film and themes of ”Avatar” are used as a reference in several community initiatives around the world. The Dongria Kondh tribe in the eastern state Orissa in India, represented by advocacy groups such as Survival International, took out an ad in the Hollywood entertainment magazine Variety magazine (of February 2009), stating: 

Appeal to James Cameron. Avatar is fantasy … and real. The Dongria Kondh tribe in India is struggling to defend their land against a mining company hell-bent on destroying their sacred mountain. Please help the Dongria.

At issue were the plans of British mining company Vedanta Resources to dig up mineral resources around a mountain the tribe considers its homeland. Although Cameron reported did not directly respond to this appeal, news organizations around the world reported in August 2010 that the tribe won its case as the Indian government rejected the mining company’s proposals. Reporting for CNN, Harmeet Shah Singh and Sumnima Udas wrote about the case under the headline ”Indian tribe’s ’Avatar’ victory over UK mining giant” (on 24 August 2010), stating: ”It has been dubbed India’s version of the Hollywood blockbuster ‘Avatar.’ And just like the movie, the indigenous group fighting to save its sacred homeland has won a major fight.” The successful movie director did recognize another call for his assistance: this time from a Washington, D.C.-based non-governmental organization called Amazon Watch, which coordinated a trip for him to visit the Xingu river in the Amazon rainforest, where he met the Kayapo Indians (in April 2010). The livelihoods of these indigenous people are threatened by the construction of a dam planned by the Brazilian government. As Alexei Barrionuevo reported for the New York Times (on 10 April 2010), Cameron ”encountered the cause […] after being presented with a letter from advocacy organizations and Native American groups saying they wanted Mr. Cameron to highlight ‘the real Pandoras in the world,’ referring to the lush world under assault in his movie.” Discussing his experience with author Nikolas Kozloff, Cameron referred to the Kayapo indians as ”real life Na’vi,” and to their plight as a ”quintessential example of the type of thing we are showing in ‘Avatar’ - the collision of a technological civilization’s vision for progress at the expense of the natural world and the cultures of the indigenous people that live there” (Kozloff, 2010). He followed up with the campaign by producing a documentary on the dam and its consequences for the indians, titled ”A Message From Pandora.” The short feature debuted in August 2010 to coincide with the cinematic release of an extended version of the ”Avatar” film (and was included as bonus material on a subsequent DVD release of the film).

The Bil’in, Dongria Kondh, and Kayapo examples are not just instances where media orientation contributes to successful survival. These cases are also relevant because of the various ’reality’ and ’real’ life claims that are made in reference to (and using physical re-enactments of) mediated properties. The ostensibly real experiences of the communities involved become real in the eyes of others - people who use media - because of the references they can make to a mediated real. Without Cameron’s fiction (and global financial success thereof), their predicaments would quite possibly have gone relatively unnoticed.
It is not just society’s institutions, ‘glocal’ communities, groups and networks that need to be in media in order to survive - individual human beings face the same adaptive thrust. Perhaps I can elaborate this point best with a personal example. On May 1, 2008, in the middle of the campaign for the Presidential primaries, then-Senator Barack Obama visited the campus of Indiana University in Bloomington, Indiana. He spoke in front of a completely packed Assembly Hall. When we walked up to the venue to catch a glimpse of the Senator, one of his aides approached and asked whether we would like to be on stage with him. This was an offer we could not refuse, and together with about fifty other visitors we were quickly guided to a scaffold in the sports arena. Everyone was outfitted with signs - half of them official "Change We Can Believe" placards, the rest consisting of fake (equally professional) make-shift yard signs painted with various slogans: "Barack Rocks", "Fired Up", and "Obama Oh Yeah." When the Senator finally climbed on stage, the stadium erupted with cheers. Caught in the moment, I could not help myself but cheer along - and take photographs. As we were standing directly behind Obama, the pictures I took showed his back and the upturned faces of the crowd in front of him. Looking back at these pictures, I suddenly realized that not a single person in that audience did not carry some sort of (digital) camera. In effect I was taking pictures of other people taking pictures of me. As publics, we were all confirming each other’s existence (as in: being there) in the specific terms of how the media would signal our presence. The function of these pictures (and the countless amateur videos of the event on YouTube and other sites) to a significant extent can be ascribed to being recognized for being authentically part of this otherwise highly stylized and ritualized event. This example for me shows how the individual also needs to orient herself to media in order to succeed. Our incessant recording and redacting (and archiving, editing, sharing, forwarding, distributing) of lived experience makes us part of a larger media system that produces reality in terms of the reality it records, redacts, selects, and thereby constructs.

It is as Juan Miguel Aguado (2009) asserts, building on the work of Luhmann: in a media life people, groups, networks and institutions observe themselves in the selection terms of media - that is, whether they are relevant and of interest (i.e. deserving attention) to media. In the process, the media’s system of reference and criteria for selection gradually come to structure the way we live our lives. Stephen Duncombe (2007) is among those who argues in favor of such an orientation, suggesting that appealing to the ‘fantasy’ of mediated spectacle allows both (political) institutions as well as engaged citizens to get their points more effectively across than puristically sticking to factual, rationalist discourse. Referencing the media’s qualities of interactivity, malleability and participation, Duncombe sees opportunities for a ‘Dreampolitik’: a politics that finds expression in media, and does not play out "on the well-ordered fields of reason and rationality. Perhaps it never was" (176).

As mentioned earlier, Friesen and Hug make a compelling case for considering media as a precondition - what they call the ‘mediatic a priori’ - for "the perception of time, space, and the shaping of attention and communication" (2009: 73). They argue how mediatic competencies have come to define different life stages, following work in the field of multiple media literacies (Meyrowitz, 1998) in the US, and a broad conceptualization of media competencies (i.e. "Medienkompetenz") in the German literature. Government research agencies around the world similarly produce regular reports on what tends to be considered as the ongoing digitization of the lifeworld, suggesting that in order to keep up with today’s knowledge society people need to be skillful in using and navigating...
information and communication technologies. In the conclusion of the research done from 2000 to 2003 by the European Media and Technology in Everyday Life (EMTEL) network, media are seen as directly impacting people's quality of life, emphasizing the necessity to develop and improve people's competences to freely and effectively use media, "to bring new technologies and services into their culture, to make them their own" (Punie et al., 2003: 9). The influential theories of Indian economist Amartya Sen are a key point of reference here, where he emphasizes the responsibility of political and education systems to recognize and advance the capabilities of people to act according to what they value and thus facilitate their quality of life. Nicholas Garnham applies Sen's normative approach directly to the field of media and communication, suggesting that in all modern societies the functioning of social communication is a part of well-being, and that acquiring or using media must to some extent be seen as indices to that effect:

Just as Sen argues that people have different capacities to translate a given food bundle into nutrition and also have different nutritional requirements to reach the same level of functioning, so too in the field of communication it is the real availability of opportunities and the real achievement of functionings that matters (1997: 32).

It must be clear, then, that a media orientation is much more than maintaining an online social network profile or have a professional PR firm represent your point of view. It tends to be seen as essential to one's quality of life, a sense of well-being and belonging, to one's success in being recognized and achieving one's goals. In short: by mediating ourselves we apparently enhance our fitness with our environment.

Discussion

The orientation of society, its institutions as well individuals, to media is but one way in which a media life plays itself out today, and in the process provides cues to adaptive advantage. Other areas of fruitful investigation to this effect would be the practice of social grooming at a distance engendered by people's activities at online social networks (see the work of Robin Dunbar), the significance of the human desire to be known (originally conceptualized in the ancient Greek philosophy and literature of Plato and Homer) as an indicator of our tendency to share our most intimate details in media, and the extent to which a media life provides some sense of belonging in an increasingly mobile, diasporic, and perhaps postgeographical (Robins and Webster, 1999: 235) world. Beyond these promising fields of study, what remains is perhaps to ask the question, following Samuel Butler, what the direction is of research that increasingly seeks to combine and integrate theories, methods, subjects and objects from the realms of biology and technology. To me, the answer seems to be one of two: one, that we accept the inevitability of man-machine integration and have begun the work to tame our concerns about such fusion by solidifying them into the jargon of cultural science; or two, that there never was a man-machine dichotomy to begin with.

The feedback loop between today's worldwide diaspora, cultural complexity, and our obsessive orientation to all kinds of media can perhaps be seen as not necessarily new, nor all that different from how humans adapted to the earliest forms of living together in large groups: by expressing themselves in language, by monitoring each other's communication,
and by forming mental archives of behaviors to be used as compasses and roadmaps, providing a sense of belonging in an otherwise increasingly bewildering social context. In other words: perhaps we have always lived a media life.

References

Aguado, J.M. (2009). Self-observation, self-reference and operational coupling in social systems: steps towards a coherent epistemology of mass media. *Empedocles* 1(1), 59-74. Available: http://www.atypon-link.com/INT/doi/abs/10.1386/epjc.1.1.59/1.

Bil’in Popular Committee (12 February 2010). *Bil’in weekly demonstration reenacts the Avatar film*. Available: http://www.bilin-village.org/english/articles/testimonies/Bilin-weekly-demonstration-reenacts-the-Avatarfilm.

Butler, S. (13 June 1863). *Darwin among the Machines - To the Editor of the Press, Christchurch, New Zealand*. Available: http://www.nzetc.org/tm/scholarly/tei-ButFir-t1-g1-t1-g1-t4-body.html.

Clarke, A.C. (1964). *Profiles of the future*. New York: Bantam.

Deuze, M. (2007). *Media Work*. Cambridge: Polity Press.

Duncombe, S. (2007). *Dream: Re-imagining Progressive Politics in an Age of Fantasy*. New York: New Press.

Friesen, N., Hug, T. (2009). The Mediatic Turn: Exploring Consequences for Media Pedagogy. In: K. Lundby (Ed.). *Mediatization: Concept, Changes, Consequences*, pp. 64-81. New York: Peter Lang. Available: http://learningspaces.org/n/papers/Media_Pedagogy_Mediatic_Turn.pdf

Garnham, N. (1997). Amartya Sen’s Capabilities Approach to the Evaluation of Welfare: Its Application to Communications. *Javnost/The Public* 4(4), 25-34.

Hartley, John (2007) ‘There are other ways of being in the truth’: The uses of multimedia literacy. *International Journal of Cultural Studies* 10(1), 135-144.

Hjarvard, S. (2004). The Globalization of Language: How the Media Contribute to the Spread of English and the Emergence of Medialects. *Nordicom Review* 25(1-2), 75-97.

Hjardvard, S. (2008). The Mediatization of Society: A Theory of the Media as Agents of Social and Cultural Change. *Nordicom Review* 29(2), 105-134.

Jenkins, H. (2010). Avatar Activism. *Le Monde Diplomatique*, September 2010. Available: http://mondediplo.com/2010/09/15avatar.

Jenkins, H., Clinton, K., Purushotma, R., Robison, A., Weigel, M. (2006). *Confronting the Challenges of Participatory Culture: Media Education for the 21st Century*. Chicago: MacArthur Foundation. Available: http://digitallearning.macfound.org/atf/cf/%7E45C7E0-A3E0-4B89-AC9C-E807E180AE4E/JENKINS_WHITE_PAPER.PDF.

John, J.L., Rowlands, I., Williams, P., Dean, K. (2010). Digital lives: personal digital archives for the 21st century - an initial synthesis. *Digital Lives Research Paper*, Beta version 0.2. Available: http://britishlibrary.typepad.co.uk/digital_lives/2010/02/digital-lives-synthesis.html.

Kozloff, N. (11 May 2010). Talking the Amazon rainforest with Avatar’s James Cameron. *Mongabay.com*. Available: http://news.mongabay.com/2010/0511-kozloff_avatar.html.
Kurzweil, R. (2005). *The Singularity Is Near: When Humans Transcend Biology*. New York: Viking.

Luhmann, N. (2000 [1996]) *The reality of the mass media*. Cambridge: Polity Press.

Mesoudi, A. (2010). Evolutionary Synthesis in the Social Sciences and Humanities. *Cultural Science* 3(1), 1–13. Available: http://cultural-science.org/journal/index.php/culturalscience/article/view/35/109.

Meyrowitz, J. (1998). Multiple media literacies. *Journal of Communication* 48(1), 96–108.

Offray de La Mettrie, J. (1748). *Man a machine*. Available: http://www.cscs.umich.edu/~crshalizi/LaMettrie/Machine.

Punie, Y., Bogdanowicz, M., Berg, A., Pauwels, C., Burgelman, J. (2003). *Living and Working in the Information Society: Quality of Life in a Digital World*. EMTEL Final Deliverable. Available: http://fiste.jrc.ec.europa.eu/pages/detail.cfm?prs=1125.

Robins, K., Webster, F. (1999). *Times of the Technoculture: from the Information Society to the Virtual Life*. London (etc.): Routledge.

Rothenbuhler, E. (2009). Continuities: Communicative form and institutionalization. In K. Lundby (Ed.), *Mediatization: Concept, changes, consequences*, pp. 277–292. New York: Peter Lang.

Spencer, H. (1851). *Social Statics*. London: John Chapman, 1851. Available: http://files.libertyfund.org/files/273/0331_Bk.pdf.

Thacker, E. (2004). *Biomedia*. Minneapolis: University of Minnesota Press.

Weigel, M., Straughn, C. (2009). Multiple Worlds: Adolescents, New Digital Media, and Shifts in Habits of Mind. *GoodWork® Project Report Series*, Number 63. Cambridge: Harvard University. Available: http://pzpublications.com/417pdf.html.