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On the hidden curriculum of the mouse click: An anthropologically drama

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Abstract

Any process of education is media based. But the advent of computer based media in the classroom caused a qualitative change. This new type of media serves as a bodily and cognitive extension of man. The aim of the article is to demonstrate educational consequences of these new anthropologically premises. The article discusses the structure and concept of digital communication culture as it denies the existence of spatial distance. The click option of the mouse will be framed as digital communications hidden curriculum. In order to navigate in the digital world of education the texts concludes with that man has to develop sign-literacy to be able to master the iconic turn in education.

Keywords: Anthropology, computer mouse, ICT, man-machine-interaction, iconic turn, Bildung

1 Prologue

Who wouldn't recognize it? The lights are our, the screen descends, the computer is turned on, the projector is running properly, and the presentation begins. But wait! Is everything in place? Yes. Okay, we may continue then. A new American software application shows it muscle. Letters, symbols, and icons scroll, fall, and vanish. Everything works and Murphy's Law has been suspended. Even the audience is enthused. Perhaps the scene resembles a theatrical performance, but the director and the teacher are absent. The person concerned isn't even a part of the picture. But that's not the only thing missing. The message is as well. It appears as though the visualization of communication has replaced the content.

This example is a simplified account, but nevertheless conveys the sense of the modern classroom. It is similar to the struggle for media attention and causes social change in as far as web based information and communication technology (ICT) "internationalize" the world society. The electronic interdependence creates the "global village" (McLuhan 1964). The perception of information or the educational content is thereby changed. A major reason for this seems to be that the formal qualities of most media are in the process of replacing message and content due to the effects of the media involved. One must wonder whether the expansion of the body by media serves to optimize or replace human actions by use of technology and media. These suggestions are based on a broad understanding of media. In principle, any objects may be

considered a medium, because anything can alter a person's situation; books, the internet all have this effect.

This article develops the anthropological foundations for and implications of ICT based education. The first and second parts, analyzing the anthropological principles of the culture of digital communication, explore the consequences of a society based on nonlinear and asynchronous possibilities of communication and the consequences of the mouse click as one of the basal control options of man-machine interactions. Section three establishes that man is in need of real (and not virtual) interaction to be human. The threat of fragmentation of society and the double-edged nature of technology are also shown. Finally, this section concludes with some essential educational requirements when establishing ICT based relationships between learners and teachers. The fourth section highlights the mouse click as a realization of man's will and intention in the interaction with machines. A second precondition for educational use of ICT in education seems to be "something to click on": the picture or icon. Web based technology is not possible without it. Thus, it is necessary to understand educational consequences of the "iconic turn" (Flusser 1991, 1999, Boehm 2007). It comprises the recognition of the structural nature of the picture which is based in a pictorial representation of reality. So, one might speak of the "return of pictures". The last and final section illustrates some implications for the concepts of *Bildung* when the educational sphere not only has to create meaning with language, but with pictures as well.

Before beginning the analysis, the importance of any kind of educational media should be underlined. Our starting point is that man is able to create a relationship with himself, with the world, and with others via the use and support of media. However, man is not able to achieve this from the outset. The anthropological basis of man–media is best understood as the product of the processes of teaching and learning. Both a person's life history and cultural milieu shape that result as well. A necessary foundation for media use – from language to digital media – is the ability to make use of signs, icons, and symbols. Man has to use them if he is to communicate with others in order to survive (in the long run). Therefore, it is necessary to clarify some fundamental principles of education for media literacy. First, the acquisition of media literacy can take place in the efficacy in processes of teaching and learning. Since the new media possess the power to change the structure of education, teaching, and learning, they require a new definition of the guiding concepts of cultivation of the self.

Two aspects are important. Any kind of media "transports" meanings, implications as well as units of meanings. They all consist of a combination of simple signs. It is possible to call these units of meanings text, irrespective of whether they consist of a combination of signs or a combination of sign symbols (scripture, pictures, music, etc.). As we are confronted today much more frequently with audiovisual texts or hypertexts, students are challenged by these new texts. They have to develop a broad ability to adopt what here is referred to as *media-reading competency*. As media-based presentations grow more complex and the symbolic worlds we inhabit become more differentiated, we have greater need of a common understanding of media created meaning. To reach that goal *sign-literacy*, understood here as the ability to make decisions and envision their scope and relevance, seems to be necessary as a form of meta-communication.

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The invention of the printing press and the ensuing proliferation of books led to a general growth in literacy. Latin as the European *lingua franca* was gradually replaced by national languages. However, there was more to the

printing press than this: aligning letters in a row in order to form words implies linear thinking. One letter follows another, line for line. Similar delineation can also be seen in the assembly line. Such linearity leads to classification and introduces order to the world. Since knowledge and emotions can be expressed by means of lead pressed letters, mass communication becomes possible. This new form of communication involves the human capacity to perceive themselves as subjects. The object is thus the world; the world can be displayed and even performed through printed letters. Media is thus the source for our creation of the world (Wulf 2004: 183), the mimetic link between our perspective on the world and understanding ourselves. Media represents therefore a form of historical grammar; it defines potential contact with that which is distant from us. Media brings the distant within the grasp of our senses, literally the distant room. Media are phenomenological; they serve to make things and ideas apprehensible. All media is framed esthetically (Aristotle 1982). As recent studies have shown, that older media are not replaced by new media (Ericsen 2005). Old media become an integrated part of new media. This means that media, in addition to framing communication, also provide content, thereby shaping human experience. This means also that the new media change mankind. Generally speaking, one might state that also new media will change our selves.

2 The culture of digital communication

Most of senior readers know the old life world, one grew up in it without computers and web based communication. Humanity has always observed the world with the assistance of media. When considering language as a medium, the same rule also applies. Through out history technical aids were developed which allowed us to view the world; books, microscopes, and even television may be included here. These media come in an incorporeal form. They exist (almost) entirely outside of the body and are not innately connected to man. However, this scenario changed with the onset of computers and internet. In an accelerated world, where it is simultaneously the source and tool, computer technology – seen from an educationalist perspective – must be considered an extension of the brain because of its calculative capacity and unlimited storage potential. Technology and even so computer technology serves as the body's externalization (extension), it extends not only the limbs but also the cognitive apparatus. It is primarily due to data technology that man is able to move about and orient oneself in the net-modern world. We have reached the point where technology defines human existence. Let us imagine a blind man using his blind mans`stick. Without the aid of his cane he would be unable to orient himself in his environment. His cane became inseparable from his existence (Bateson 1972: 459).

2.1 Tele society

Martin Heidegger rightly noted that all of the elements of postmodern society which have the prefix tele (distant) deny distance. The original meaning of tele disappeared: "All forms for the acceleration which we more or less are forced into dealing with relate to the conquering of distance." (Heidegger 1979: 105) Broadcasting creates distance by expanding our shared world. (ibid) Television, telephone, and telecommunication produce the illusion of intimacy and closeness. The same applies to learning. Since new media change everyday life, they also change learning. The media for learning are not only lectures and books; it is also the machine and the web.

This dissolves Gutenburg's universe of print and engenders even faster changes than before. Thought and cognition accelerate, leaving the one dimensional nature of the book behind. The construction concept is applied

instead of the reality concept in relation to new media. Reality is considered a construction in today's everyday life and this a result of the new media, thus replacing the criteria for truth. It is replaced by viability (to fit). Knowledge either fits or it does not. Indeed, causal explanations come to be replaced by looped concepts (Hofstader 1992). Instead of linearity configuration and constellation are used to explain the contemporary world. The linear word for word structure is replaced by the hypertext. It is now possible to use *simultaneously* several levels of meaning, several dimensions, and media! Non-linearity is dissolved: video presentations, animations, photos, and text may be applied simultaneously (to the extent that human physical and cognitive abilities allow). This non-linearity does not destroy the concept of the narrative but it helps recreating and reinforcing the narrative in a new, multi-faceted form. The hypertext enables the potential access to an unlimited quantity of data. The network structure allows us to sift through this data: one need not start at the beginning and finish there. It is possible to exit the two dimensional room and make use of other levels of understanding. If these developments code for e-learning's foundation, then we at present become human through our interactions with our electronic environment. There are at least two distinctive traits of this new culture: the click options possible with the mouse (as alternatives) and visualized information containing compressed content.

2.2 The hidden curriculum: the mouse click

The foundation for all e-learning is the click of the mouse. As a cognitive function of choice it translates intentions to actions. These actions are digital skills that link the click option to symbols (links). The combination of these abilities may be considered a language (click / no click) based on the classic symbolic triad: icon, index, and symbol (Peirce 1990). It is only by means of these basic languages that interaction with the computer and with the worldwide web is possible.

Data technology's global breakthrough into educational sector was possible because its foundation is found in a universal mental condition. The mind is capable of making conscious choices. The ability to produce change in a system can be considered a click option. The precondition for making a choice may vary greatly and be complex, but the result will always be the same. It entails affecting purposeful change on a technical (artificial) system through individual decision making (on/off; yes/no). In order to take part in the global digital world we need to acquire the ability to orient ourselves and navigate a network. People must be able to organize their behavior within culturally specific defined contexts. As with other human skills, click options are developed through interaction with other humans beings. The elementary skill of clicking the mouse key is the basic element for becoming a member of the digital culture. That's not all. The click option (or an equivalent function) is a basic element for the digital skills it is a necessary condition for the skill. Those who desire to participate in digital society must, of course, acquire typing skills. In contrast to the mouse click, these skills are already widely employed in our society. In school children learn to write letters by hand in order to understand their meaning. Other institutions are responsible for acclimating people comfortable to the keyboard. Irrespective of whether one presses a button, a key, or touches an icon on the screen every single person has the capacity to change their environment in some way. With a simple click people can send off an e-mail, print a drawing, listen to music, or watch a movie. Herein is one of the great advantages in the application of computer technology to an educational setting. The digital revolution allows for new observations and actions. The new computer and web based technology enhances perception, motor skills, and cognitive skills. Therefore modern education's central task seems to be to empower learners with the ability to

handle contingent situations. The learner should be empowered to make choices.

2.3 Click or not to click

Perhaps one of the most important inventions in the computer age is the mouse. The dual border line translates analogue signals (motion) into digital information. People can move the mouse arrow in order to point to something, to draw, or to follow links. When one releases the mouse key, the decision becomes digital. The intention of the mind was not only translated into a binary concept. It is possible to compute the decision made. It is here that the initial crossover of analogue action into the digital world occurs. Within the click of the mouse lay the potential for corporeal (motor) mental control over the digital world.

The computer world allows people to interact simultaneously at various levels. Many links can be simultaneously pursued, which is also the case for texts, graphics, and symbols. Fundamental to all of this is: the analogue and the digital, the corporeal and the technical become intertwined. Every single click of the mouse opens up a new virtual room. This option is artier: two options are binary, three options are ternary, etc. In mathematics these n-functions are termed Boolean. Already when one has to choose between clicking on icon a or b, six possible options arise; three choices – clicking on a, b or c – generate 256 alternatives. In the computer world one begins with a single choice and, upon consideration of the whole, one discovers an incomprehensible number of possible choices. This means that one simple choice might engender a myriad of potential outcomes or paths and causes confusion. This realization may explain why the feeling of being "lost in cyberspace" occasionally arises. In any case, the elementary click operation opens a network of new options, challenging humans to develop abilities and skills through to integrate the digital and real worlds.

The new language of the computerized world relates to icons, indexes, and symbols. These symbols and links only exist in digital environments and have remarkable consequences. Digital links engender several alternative choices and these numbers grow exponentially in accordance with the Boolean network of a click operation. When we point to a symbol, icon, or link (= index), we are translating our intentions into actions. At its very core the digital world is the click option and the necessity of choice. Education's hidden mandate lay here. Education needs to promote mastery of both: clicking on the right place and understanding of such a click.

3 Humans and electronic caves

When students use software programming (Powerpoint, MS Word, Open Office, etc.) and computer technology (internet, e-mail, chat) in order to present something or write a paper, they are not only researching a given subject. Students must also learn to organize their experiences. They learn what it means to know and understand. Digital technology thus influences cognition and emotions, and plays an integral role in forming the practices and cultural traits of a new generation. The computer world not only entails instrumental skills (the power to get things done), it also entails powerful ideas that contribute to changing personal, social, and political realities. First, technology makes possible another form of personality modification (Jörissen 2003: 129). People may represent themselves on the net as various persons; they may change age, gender, or political affiliation. A quiet and peaceful pupil can come across as magnificent and self aware because of the net's ability to create distance (Der Spiegel 29/2006). However, what we are seeing here is only the dimmest outline of reality; the presence of the other or of virtual

objects is more than an illusion of spontaneity and presence. In order to see, in order to illuminate the anthropological consequences, we need to visit the bon fire; we must visit the caves.

[Cave 1] The human dilemma is the cave's dilemma. A solitary individual could live very well in it because it offers protection and demarcation. Still, life depends on the individual leaving the cave (Werler 2005). Thus the challenge becomes mastering the exchange of personae in the cyber world and developing an authentic personality in the real world. Even though identity games play a decisive role in personality development (Erikson 1963) these entail multiple choice narratives which can lead to loneliness and the fear of intimacy. This is especially apparent when pupils are expected to behave like critical customers while at the simultaneously seeking guidance in choosing their individual paths. It is easy to make demands in the anonymous situation in front of a screen, but sooner or later one is forced to come out of the electronic cave and come out into the open.

[Cave 2] The power of technology to foster individual development is not apparent, but it does play a role in fostering ideas. In addition to technology's functionality, one also learns these ideas when using the search engines, social networking software, and productivity software as means of presentation, writing, or calculation. When we stress the utilization of these technologies we are also emphasizing a *new epistemology*: presentation and digital reproduction may be interpreted as new and powerful (therefore also disciplinary) concepts. The software entails an embodied manner of thinking (see Postman 1985). Because of its programmed structure it allows only predefined actions. It can cause us to think in fragments and therefore lead to cognitive overload. The problem with such software is that it primarily focuses on the speaker. It neither takes the content nor the audience into account (Tufte 2003:4). Presentation software such as Powerpoint promotes exactly that - the presentation in stead of the conversation. If one learns through a series of points one then learns isolated (and partially hierarchical) statements. In this respect one does not learn argumentation in the form of coherent connections since the presentation lacks a clear train of thought. The interaction and the debate shut down before they can get started. This aspect of the technology functions as an obstacle rather than a bridge.

[Cave 3] The third cave is perhaps the best hidden. The computer's popularity increased as it became more and more user-friendly. This led to the demand for greater transparency. This resulted in "easy to understand" icons on the screen and in documents. This bears on the ability to get things done without necessarily understanding what is going on behind the scenes. Thus we have an implied paradox. The demand for transparency resulted in the screen's obscurity. This resulted then in a new understanding of transparency--one understands the way in which to get something accomplished, but not necessarily the way in which it actually happens. Today transparency, shown on the screen, is epistemologically obscure. One is using open office, but a majority of users does not know how it (technically) works. Computer technology has the potential of empowering its user by making it possible to command refined and advanced functionality. At the same time these tools teach us that our world is becoming more opaque and sketchy. The world seems more incomprehensible. And the message of technology is that our efforts to comprehend it do not pay off. And so we abandons the path we've been following the renaissance. We learn that it is not expedient to make political, social, and economic enquiries. Thus we risk losing what we desire to establish: the informed and critical individual in a culture of imitation.

Interim Consideration

If, by development of media the basal anthropological conditions of man are changed, then society's educational concepts must be changed according to education of sign-literacy. By teaching and popularizing sign-literacy, media are capable of unfolding their efficacy in the framework of the humanity's anthropological foundations. At the same time teaching and learning are not possible without the use of signs and are both changed by their use. As new media inevitably change the structure of education, they force a new definition of educational tasks and purposes. A central topic for any kind of media based education is to ascertain, before the implementation of any educational measures, how far media can alter the anthropological conditions of and for teaching and learning.

Because of man's ability to employ signs, he is forced to develop, *independently,* competencies which allow him to make use of the new possibilities for media (and to see its limitations) in order to achieve a new humanity. It is education's task to foster awareness of the idea that all educational processes are media based. In conceiving new pedagogical and learning methods, we must grapple with the question: when media change the anthropological foundations of man, in what ways is the basis of educational action transformed?

4 Icons & Symbols

In order to navigate in the digital world man needs more than just the mouse. Since an understanding of the machine is not required for navigational purposes, we need boundaries which allow for this navigation. First, a visual representation of the machine-human boundary makes this possible. An equivalent representational system should be based on icons and symbols, or in more general terms, on pictures. Their structural similarity to an object defines their relationship to it. If one clicks with the mouse on the icon, the entry into the digital world commences. A parallel development can be seen in everyday life. Man meets everywhere symbols indicating various intensions. The world then, as defined by these images, becomes textual. In order to live in the real and in the virtual world, one is required to read and interpret the text. From an pedagogical perspective it is essential that we understand the function and form of the pictures which we encounter. Which of these pictures meet? It is obvious to any viewer that the world is skewed, having consulted with the picture.

4.1 Iconic turn

No one can deny that pictures exercise power over body and soul. A picture opens our eyes and directs our attention. A picture is visible. Pictures can only be seen. It is impossible to understand them by touching after or lecturing them. In contrast to every other visible real or virtual thing, they represent something they are not. Irrespective of whether we see a a painted or a virtual bonfire, it does not warm us. The technical systems make pictures available to us simultaneously (almost) everywhere. Pictures are eternal. Even if one's conversational partner is on another continent, he/she can view the same picture and the same text. Still, there is no bodily experience of space; one is not required to move about in space in order to make contact with someone on the other side of the planet. The experience of space in the post-industrial world can be characterized by signs and symbols. My colleague is only a mouse click away. So these pictures function as codes which transcend the bounds of time and space in the struggle between the nearby and the far away. The pictures discussed here have an epistemic consequence: they are either mimetic (Aristotle 1982; Wulf 2004: 236) or scientific (Wiebel 2004: 226).

They indicate something or make recognition possible since they represent the world. The latter practice can be traced back to the Renaissance.

The first mentioned is present already in the antiquity and relates in contrast to this to internal and external images. The internal image forms through the apprehension of external images produced by the culture. Media create the potential to transmit these images. This holds true for cave paintings as well as computer graphics. These pictures are inconceivable without corresponding media. Media are constitutive for them. Without media there would be no pictures which humans could apprehend and therefore no pictures which could be translated into internal images. It is for this reason that these media define the human experience of images (se McLuhan 1964). There still remains a qualitative difference between pictures experienced as paintings, photographs, or as digital (virtual) images.

In contrast to photographs or television images, digital graphics do not have a matrix for the actual picture (Mirzoeff 1998). Still, that is not all. Mathematical and electronic processes produce a virtually imagery. Very few individuals understand these principles (and this provides the opportunity for manipulations). It might be more problematic that the traditional relationship between the picture, subject, and object is dissolved. Even though this happens to be the case, synthetic images refer to whatever the screens displays. Images require a screen in order to become a picture and this entails an illusion. These pictures suggest its availability within a manageable space. As the expansive use of synthetic imagery challenges faith in the image's representative character, it in turn promotes change in its cultural utility and in attitudes towards pictures.

4.2 Graphic texts

Virtual images are mimetic-technical imitations. They pretend to create reality. Moreover, the computer age has perpetuated the tendency to define everything in terms of pictures. Even abstract processes can be derived from pictures and symbols. The reason for this would the modern need for instant distribution and transmission. Underlying this is the idea that these images must be recognizable (and can) be understood more readily than before. These images allow "reality" to vanish.

If texts in earlier times relied more heavily on the imagination of pictures then this reliance is undergoing a profound transformation with the production of "graphic texts." In particular presentational software applies here. In the same respect, there are fewer producers than consumers. The electronic characteristic of synthetic imagery potentiates acceleration; transmission from point A to point B can be accomplished at the speed of light. This instantaneous interaction contributes to the notion of a shrinking world and that the world can be experienced through imagery. Moreover, these graphic texts create a new form of product that falls short in the battle of marketing principles. While it is possible to sell these graphic texts, it is impossible to purchase what they refer to. These graphic texts fascinate and scare us; they conceal and express aesthetically the political and social. But these images are much more: as a signal they make it possible to observe, as a sign they create cognitive relations, and as social form they create opportunities for contact. In short, synthetic imagery educates man.

The educational challenge is this: can we manage to instill more than reading competence? As new media convey interpretations and meanings via a combination of graphic texts and from hypertexts, then we need receptor skills to make the utilization of them feasible. If the medially constructed and medially conveyed cultural elements receive a distinctive context dependent meaning, then education must foster a common set of values and interests in

culture increasingly defined by one's own individualized tastes. As a media person, or *homo medialis*, one should be informed of (new) media's productive, functional, and application capacities. This is the only means by which humans realize new media's potential. Creation responds to the interplay with images. The image must be "bent," "rotated," and "flipped.". Man must tolerate graphic text's uncertainty, its plurality, and its complexity. Finally, *Bildung* demands work with the internal picture; it must be able to develop their *Gehalt*.

5 Epilogue

With the social realization of computer technology, changes in communicative and interactive structures in society began. This realization changes organizational structures, teaching and knowledge practices, and teaching cultures. Similarly, our self-awareness and all visions of the future have been altered. It is without a doubt and obvious that the data and net structure has taken on a greater role in educational and learning processes. The same holds true for lifelong learning as well. Media, from the cave painting to synthetic imagery, influence mankind and its culture. Not only do they place demands on the human senses; they demand economic, social, and political change.

In paying attention to the outlined drama, educators and politicians must understand limitations of software. Digital technology has always been valued for its economic potential rather than its pedagogical function. It is true that computer technology was brought into the educational realm because it promised to deliver content more efficiently than before. But this is only one side of the janus face: students receive a bonus to their purchase. Computer technology changes their mode of thought. Perhaps this is the story's irony: learning institutions are controlled by computer products' possibilities and limitations.

In light of the iconic turn, viewing, recognizing, and seeing are to be understood as active, self-designed, and intentional actions. However, as these activities are dependent on something to look at, this object and its features will guide the beholder. This leads to acknowledgment of the structure and texture of any picture. Consequentially one has to see a shift of meaning: from linguistic to visual information, from words to pictures, from arguments to videos. In contrast to manual technologies of visual representation by art such as technology-based techniques like photography or film, computers are able to create pictures without a reference to visible physical forms. Thus, one might see in this a "return of pictures." Accordingly, ICT's heavy use of pictures seems to be a method to "store" knowledge in pictures to the extent that these pictures code for a spatial "where" and not for a content-related "what."

Therein the topic of the picture was placed in a prominent social position. By the picture, the borderlines to symbolic systems like language, which are traditionally viewed as central to the creation of meaning in the processes of teaching and learning, was moved. Any current *didactic*-process is challenged by the question of how these modern pictures generate meaning. Education without means and mediator (teacher) – *so as to say im-mediate* – is not imaginable. If a modern concept of *Bildung* does not want to appear fragmented, it must acknowledge that the relationship between the individual and society is based on media and its technology.

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