The rise of the avatar: Virtual dimensions of ‘the human’ in nursing science

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Abstract
In this theory article, we discuss the virtual dimensions of the human, the avatar, in relation to ontological assumptions within nursing science. Assumptions in nursing science promote a ‘wholistic’ perspective of the human in terms of body, mind and spirit in relation to the environment. However, due to the enhanced technological development and the invention of cyberspace, we pose the critical question of whether the virtual dimension of identity really implicates a ‘wholistic’ view of human kindness or if this has been neglected. Furthermore, we suggest an ontological understanding that grasps new dimensions of humanity. In the article, we discuss the virtual dimensions of the human in relation to ontological assumptions within nursing science under the three headings of The techno-self and virtual identities, Techno-therapy and cyber nursing, and Becoming homo technicus. Due to these reflections, this article contributes to the debate on a postmodern understanding of human living conditions in society. We suggest further theoretical discussions to explore the conceptual and theoretical levels of nursing knowledge as new realities of human existence are introduced in the field. The transition into the digital age of the Internet, with the existence of cyborgs and avatars, is an ontological and epistemological challenge for nursing science that needs to be further investigated.

Keywords
big data, cyberspace, nursing science, online, postmodernism, web-based platforms

Accepted: 10 May 2015

Introduction: Nursing science – points of departure and the road ahead
In this article, we discuss the virtual dimensions of the human in relation to ontological assumptions within nursing science under the three headings of The techno-self and virtual identities, Techno-therapy and cyber nursing, and Becoming homo technicus. In order to follow our discussion, we would like to go back in time and highlight some points of departure. During the nineteenth century, Auguste Comte popularized the term positivism to distinguish speculative knowledge from knowledge derived from experiments using empiricist methods.¹ Positivists rejected metaphysics and the fundamental assumption that there is a true reality to be studied through objective observations by an independent and replaceable researcher. According to positivist methods, researchers sought evidence of truth through disciplined and systematic procedures of logic and deductive reasoning.²,³ Positivism is inherent in much of the occidental world-view and thinking.⁴ Not least, positivism as a philosophy of science has dominated the scientific community, especially throughout the twentieth century as statistical methods were developed. Several areas of science, such as Physics, Mathematics, Meteorology, Statistics and Psychology, to mention but a few, were early adopters of the positivist premises of atomism, reductionism, and logical empiricism. In Computer Science, binary thinking in terms of 0 and 1 is central,⁵ and a similar logic can be found in Psychiatry where a dichotomous presence or absence of symptoms is used to diagnose patients,⁶ as in medical science. During most of the twentieth century, nursing research was dominated by medical models and positivism.⁷ Weaver and Olson,⁸ along with Monti and Tingen,⁹ emphasize that such positivist influences were imminent in nursing theories developed in the mid-twentieth century. Even in contemporary nursing science and nursing practice, positivism has a central position. Some examples are the use of evidence-based nursing,⁴ use of practical standards,¹⁰ and nursing diagnoses.¹¹ Nevertheless, critique has also been raised against the positivist assumptions found in nursing science. The naturalistic paradigm claims that subjectivism is a contradictory ontology as it posits that there is no external reality. Rather, reality is perceived to be relative, multiple, changeable, and subjectively constructed by humans.¹²¹³ Following the reasoning of Playle,¹⁸ new scientific

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disciplines such as nursing science have had to adhere and subordinate to the dominant position that positivism has in an attempt to heighten their scientific status – at the expense of adopting an alternative ontology and epistemology. Just as there was a need in nursing science to challenge positivist assumptions, we argue there are reasons to challenge ‘old’ beliefs within the field of nursing science that have been enshrined as interdisciplinary norms of what is regarded to be ‘human nature’.

**Background**

In recent years, post-modern scientists have engaged in a growing debate that challenges both positivist and subjectivist research assumptions about the way forward for civilization. For example, Haraway\(^\text{19}\) criticizes both positions for being a residual of Western dialectic thinking that gave rise to the modern project. She criticizes both positions for acting as ‘god tricks’, seeing everything from everywhere without taking moral responsibility for the knowledge produced. Instead, she suggests using the term ‘situated knowledge’ as an alternative position beyond the positivist and subjectivist assumptions. Situated knowledge emphasizes that knowledge is local, historical and culturally dependent. It further underscores that scientists must also take moral responsibility for producing knowledge from a specific location and under specific circumstances. Haraway refers to the scientist as being within a web of context, and refers to this web as a semiotic production apparatus. With semiotic, she refers to characters, including those found in language, but also implies something broader than this. With the term production apparatus, she emphasizes that what is perceived as biologically created, is socially (and digitally) created in and through these characters. According to the concept of production system, there is no distinction between on the one hand, biology as something given, and on the other, the social as something created.\(^\text{19}\)

**Wholism and humanism in nursing science**

As nursing science developed during the 20th Century, its philosophic underpinnings were advocated by nursing leaders in an attempt to differentialize the science from medical discourse, by promoting a ‘wholistic’ perspective of the human in terms of body, mind and spirit in relation to the environment.\(^\text{20}\) Two nursing theorists who explicitly expanded thinking in terms of the wholeness of the human being are the American nursing professor Jean Watson,\(^\text{21}\) and the Finnish professor Katie Eriksson,\(^\text{22}\) both of whom explored nursing and nursing care with a starting point in ‘nature’ and a vision of primates caring for one another. Eriksson implores researchers to seek out caring that has been profoundly lost as a result of the industrialization of modern society and human nature due to a loss of contact with nature and our ‘natural way of being’ as humans. However, the rapid and enhanced technological development and the invention of cyberspace in recent decades – in combination with mobile applications – and integrated technological systems of body functions have moved us closer to a cyborg mythology than ever before.\(^\text{19}\) The postmodern world is populated by a variety of hybrids that move between virtual and non-virtual environments. In this cyberspace, new types of lifestyles are created that are not tied to the dividing lines between natural and artificial, healthy and ill, national and local arenas. Cyberspace carries with it influences from around the world, and the fact that these communities are maintained in the virtual world also has implications for the identification of the community outside cyberspace. Margret Sandelowski\(^\text{23,24}\) predicted this paradigm shift already in the late 1980s. She advocated the use of the cyborg metaphor as a point of departure for ontologically understanding how health and technology are inexorably linked and intertwined in nursing, health and human history. In line with Haraway, she incorporates a position that embraces future caring and nursing, rather than a search for the ‘origin’ of its nature.

**Humans and their lives in online and offline environments**

In the digital era, people tend to spend increasingly more time online. During the first decade of the new millennium, Internet usage expanded by nearly 500%, and on some continents (such as Africa) usage expanded by as much as 3000%.\(^\text{25}\) With this rapid expansion, people have come to use the Internet for different purposes; for example, shopping,\(^\text{26}\) gaming\(^\text{27}\) and dating.\(^\text{28}\) Use of the web and other forms of computer-mediated communications (CMC), like sending e-mails, using chat platforms and other forms of instant messaging, are now commonly used on a daily basis.\(^\text{29}\) With frequent Internet usage, it is possible, regardless of geographical distances, to find people with similar interests, values and goals. When people interact over web-based platforms, they use what is often referred to as an avatar, that is, an electronic image or an on-screen representation of the user. As people use their avatars more and more frequent, we stress that it is of utmost importance to monitor, investigate and take part in the discourse on what impact these new arenas are having on the lives of human beings as situated knowledge is being produced constantly.\(^\text{39}\) Social interaction is no longer restricted to geographic boundaries as online existence becomes meaningful to people in everyday life. Furthermore, this calls for a scientific debate that considers the conditions of our lives as human beings, given that the arenas where our lives are played out are continuously expanding. Research interests within nursing science are wide-ranged and extend from abstracted ontological issues to very practically-oriented problems. Examples include the study of what it is to be human and the study of human life-worlds, human health and suffering. Also, nursing research investigates issues related to the nurse-as-professional; asking how-questions. Regardless of whether the research question is more philosophic or practical, it is often from the standpoint of the nurse or patient as a human being. According to Ridings and
Gefen, people use virtual communities differently depending on the community type, but the main reasons are to exchange information, friendship and social support. As people use web-based platforms in a variety of ways, enormous amounts of data are being produced on a daily basis, the exact amount of which is unmeasurable. Big Data is human-generated data from unstructured and semi-structured data sources that are produced on the Web. Since people use web-based platforms for different purposes, these are stored in large databases. For example, when engaging in a discussion on social media, writing or commenting on a blog, uploading video clips to YouTube or retweeting on Twitter, people contribute to Big Data.

Big Data are discussed as valuable in order to predict and foresee societal events as well as to reduce costs. As Big Data is discussed as valuable in order to predict and foresee societal events as well as to reduce costs. As Big Data are discussed as valuable in order to predict and foresee societal events as well as to reduce costs. As Big Data are discussed as valuable in order to predict and foresee societal events as well as to reduce costs. As Big Data are discussed as valuable in order to predict and foresee societal events as well as to reduce costs. As Big Data are discussed as valuable in order to predict and foresee societal events as well as to reduce costs. As Big Data are discussed as valuable in order to predict and foresee societal events as well as to reduce costs. As Big Data are discussed as valuable in order to predict and foresee societal events as well as to reduce costs. As Big Data are discussed as valuable in order to predict and foresee societal events as well as to reduce costs. As Big Data are discussed as valuable in order to predict and foresee societal events as well as to reduce costs. As Big Data are discussed as valuable in order to predict and foresee societal events as well as to reduce costs. As Big Data are discussed as valuable in order to predict and foresee societal events as well as to reduce costs. As Big Data are discussed as valuable in order to predict and foresee societal events as well as to reduce costs. As Big Data are discussed as valuable in order to predict and foresee societal events as well as to reduce costs.

Within nursing science, there has been a long tradition of promoting face-to-face interactions as a means of interacting with other humans, and from this are derived the concepts of presence and interconnectivity via subjective connections, interactions and engagements. Research demonstrates that presence is no longer limited to face-to-face interactions. As Chen and Yen argue, presence exists through the interactivity taking place over the Internet. Just as Finfgeld-Connet held for the semantic connection between caring and intimacy, Rau, Gao and Ding hold that verbal as well as affective intimacy exist in social networks online as the posters interact frequently. While, one might point out that research regarding interactivities in virtual arenas is predominantly directed towards what Tapscott called the ‘Net generation’. Zimic questioned the stereotypic images of this generation as being ‘techno-savvy’, as her findings demonstrated that far more nuances exist in Internet usage within several cohorts. Previous studies have revealed how identities in virtual worlds are correlated with offline identities. We pose the critical question of whether the virtual dimension of identity really implicates a ‘wholistic’ view of human kindness or if this has been neglected.

The techno-self and virtual identities

Our self and identity as human beings is a key subject of investigation in many academic fields. In the mid-twentieth century, the theorist Erik H. Erikson was influential with his theory of the psychosocial development of personality over the entire lifespan, as divided in eight stages in a sequential order. Erikson is a good example of the linear thinking that was expressed in the modernist era. When dealing with cognitive concepts such as self and identity in virtual arenas, the self and identity are primarily manifested through the performance of our techno-selves and virtual identities. We argue for a more complex understanding of the creativity and creation of merging online/offline identities. The boundaries of the self are constantly dissolved and re-established. As such, virtual identities must be viewed as more plastic and fluctuating than the sequential and dichotomous (in terms of having an ending and a beginning) approach of earlier times. By living also in virtual arenas, people are provided with an outlet for virtual identities and performing with plasticism. Just as nursing theorists argue for the inseparability of the human and environment, Haraway opposes such a dualism. We can understand situated virtual identities through their performance in technological arenas. We argue that our virtual identities challenge the notion of humans as body-mind-soul. The flexibility and performativity of humans dissolves boundaries and extends our understanding of the avatar as integral, interdependent and interrelated. The avatar is relativistic, fluid and separated from its social and historic context. At the same time, the avatar incorporates the body and vice versa. The performance of virtual identities using an avatar allows us to challenge the necessity of a static body and identity. Interconnected virtual identities that are accessible to Big Data, communication and language, dissipate power structures that traditionally were allocated to a hierarchic and superior power order. Big Data and language may forge equality within what have traditionally been hierarchic power-relationships and yield a steady-state in the relationship between ‘patient’ and ‘caregivers’. The steady-state is constructed from information and language that are accessible to all avatars and encounters become less unequal. Such a reallocation of knowledge and power structures becomes relevant in the next area that we will discuss, namely techno-therapy and cyber nursing.

Techno-therapy and cyber-nursing

Health-related knowledge and nursing expertise has previously been directed at educated personnel in various professional roles, such as nurses and therapists. The boundaries between health care expertise and home remedies have been clear; authoritative power structures, such as language and culture, within the medical sciences have produced and reproduced dominant position of professional medical knowledge. However, in the contemporary age of the Internet, knowledge related to medical subject areas has increasingly been repositioned from strictly professional to public domains due to official web-based sites, as well as blogs, web-based discussion forums, online lectures, and so forth. Knowledge has become decentralized and dispersed in a way that makes control by authoritative structures and hierarchies impossible, not least of which with respect to issues outside the mainstream. The information available has been reshuffled. The Internet creates a possibility for people to become their own nurse and health expert. In a previous article, we argued that cyber nursing directs resources towards areas of healthcare that are given low priority by public health care systems. The introduction and use of the web-based platforms in daily support and education activities has meant new dimensions in self-care systems for both those individuals requiring self-care and for institutions that provide information to those who are seeking it. For example, the vast growth in information nurses distribute as part of self-directed
educational programs for patients and relatives over the net represents a new means of providing opportunities for self-care.38-50 However, the development of complimentary self-care systems does not fill all the gaps in self-care in Western societies. Self-care agencies such as municipalities, hospitals and health care centres tend to prioritize what can be considered ‘major’ health issues, such as cancer treatment, HIV/AIDS awareness, heart disease, and diabetes care. Other issues, such as reconstructive and cosmetic surgery, are given lower priority when offering support and educational systems online. Given the rapid expansion of the Internet and the known deficits in self-care support, online forums are easily accessible from participants’ own homes and provide a medium for interpersonal communication about self-care in relation to online caring and people’s decision-making concerning their own health. The authors of this article has studied and elaborated upon dimensions in self-care in areas such as plastic surgery,51 self-care and health care questions related to infant care and parenthood52 and ‘expertise’ in online nursing.53 The studies we conducted suggest that experts not only co-exist in such forums, but more importantly they reinforce each other’s positions. This effect is central; alongside one another, the posts of the three types of experts we identify constitute a whole for those seeking the forum for advice and support. Users are provided with strong opinions and advice, support and Socratic reasoning, and a problem-oriented approach. Together, the ‘flow’ of information available to those individuals seeking self-care via the Internet (through a torrenting activity) becomes a specific competence – cyber nursing. Self-care and online care will continually develop since the web-based platforms are now an integral part of everyday life. The greater use of cyber arenas to actively take part in health-care-related activities contributes to a vast expansion of information that is available. It is of great importance that we position the human living condition in relation to what can be accomplished from analysing information from Big Data. Below we will discuss the notion of becoming homo technicus in the interest of discerning a nursing science ontology.

**Becoming homo technicus**

The positivistic tradition rejects metaphysics in order to study a ‘truth reality’. In the postmodern era, such objectivism has become an ‘old school’ ontology. Rather, it may not be relevant to debate upon the possibility of differentiating between the virtual and the real world, as such binary thinking is no more than a residual line of thinking that follows old school assumptions. According to Haraway,18 and Sandelowski,23,24 the question is irrelevant as it neither generates nor answers questions. Technology has fundamentally restructured our life-world. Beyond and between the soul, body and the spirit, the avatar is diffuse in cyberspace. As such, it is meaningful to elaborate on the way avatars intersect and exchange information and, as such, add information to Big Data. The avatar is free from deterministic bodies and histories and therefore more plastic ‘in living’. Politically, the avatar moves beyond boundaries related to soul, body and spirit – homo erectus is rapidly transforming into homo technicus; not only in relation to avatars in cyberspace but also in relation to cybernetic possibilities and the re-organization of the relationship between human and machine. The Internet includes wearable enhancements like smart watches, smart eyeglasses and smartphones, but also self-driving cars, all of which are constantly adding information to Big Data. Furthermore, x-ray, ultrasound and magnetic resonance imaging that penetrates the skin is available online to anyone with access to a computer. Detailed visual images of the inside of one’s own body and the opportunity to read and own one’s own medical records to the same extent that physicians and other health professionals can is a privilege and also a point of departure for homo technicus. One example where technology has crawled ‘under the skin’ is the possibility to place a lens in the eye and measure glucose levels continuously each second. By adding technology as part of the body, becoming homo technicus may facilitate everyday living and ease suffering. Homo technicus can carry out self-examinations, review test results, consultant reports, view x-rays, and compare one own self-care plan with other options on the basis of information and knowledge available in cyberspace. In the future, it is likely that homo technicus will be equipped with technical objects running on superfast quantum processors with the abilities to analyse the information in Big Data in situ so that the information may be used to enhance our experiences and perceptions of ‘reality’. Homo technicus is the product as well as an integral part of Big Data; the two are inseparable. Herein lies the hyper-reality of the inseparability of human and environment.45,54 The fusion of these semiotic entities reduces boundaries between information, just as space and time merge. Upon detecting the first signs and symptoms of disease, homo technicus has likely visited an online forum (or several) about these symptoms, and looked at pictures of both the inside and outside of the body. Before seeking professional care, homo technicus has a clear picture of treatment options, prognosis, causes, and expected quality of life. Those who are in need of care are as well-informed and knowledgeable as those offering care. Furthermore, social media, smartphones and wireless computers allow care professionals to reach into people’s lives through cyberspace. Messages adapted to individual health concerns, conditions, and problems can be constantly delivered to patients via automated text messages or e-mail messages. Through social media patients can be daily, or even hourly, encouraged to exercise a little more, avoid alcohol or smoking, or eat healthy food. Applications and program can not only remind patients to take their medication, but also to get in touch with the responsible nurse if the medication is not taken properly. To this, one can add a GPS system that can locate individuals wherever they are and for whatever purpose might be necessary, for example spatial reasons. GPS systems can also provide information on exercise opportunities in local surroundings, perhaps proximity to
Implications for nursing: The self-caring homo technicus through cyber nursing

In this article, we have discussed the virtual dimensions of the human in relation to ontological assumptions within nursing science under the three headings of The techno-self and virtual identities, Techno-therapy and cyber nursing, and Becoming homo technicus. Even if postmodernism and the digital shift addressed in this article can be regarded still as in an embryonic stage, we are surprised at how rapidly changes are occurring in our research about these topics. Nursing science has a role to play in monitoring and influencing these ongoing changes, hence the need for this article.

First and foremost what we have observed through our netographic studies is that self-caring activities in virtual self-care systems are modelled and based on the nurse. The nurse’s role and achievements in society and in relation to patients have been copied and pasted into a virtual reality and become a human counterpart in a digital world – a cyber nurse. When virtual reality is transcended and ‘becomes’ integrated with Big Data using real-time analyses, the cyber nurse will eventually outgrow its origin. The cyber nurse will become the mother and origin of all nursing – even for the ‘real time’ nurses who were once the model for its creation. By having instant access to analytic algorithms that make sense of all the information stored in Big Data, the digital copy of the nurse will begin to live its own life, develop and improve itself far beyond what is possible for today’s nurses. So the development of the cyber nurse evolves in a serial relation of copies; a copy of the copy of the copy becomes more and more real in this postmodern-digital reality. The more removed the copies are from the original source, the less distinguishable they are from the original and constitute what the French postmodern-digital reality. The more removed the copies are from the original source, the less distinguishable they are from the original and constitute what the French postmodern-digital reality. The more removed the copies are from the original source, the less distinguishable they are from the original and constitute what the French postmodern-digital reality. The more removed the copies are from the original source, the less distinguishable they are from the original and constitute what the French postmodern-digital reality.


