Philosophical outlook on Avatars as enhanced embodied techniques of self and other in schizophrenia therapy

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1. Introduction: Avatars, Virtual Self and Virtual Self Enhancements

>Human Enhancement< includes any activity that improves, makes better or even >perfects< any activity, ability, capacity (individual or social), life span or general well-being of a human body or mind (Harris 2007; Bostrom & Sandberg 2009; Albers 2014) that in a minimal¹ and open definition of the mechanism of enhancement can be defined as the following: enhancement is “an open process without a telos” (Grunwald 2013). Grunwald² (2008a) proposed to distinguish three semantic dimensions in relation to enhancement (Verbesserung): 1. A point of departure of enhancement, as melioration is only plausible if a point of departure is given in relation to which enhancement appears. In relation to human enhancement Grunwald sees the point of departure in a) the bodily and mental endowment of a specific human individual, individual enhancement b) the standard of an average healthy human, measured in relation to average human performance abilities for example obtained by statistical survey, that I designate as human average enhancement c) the human performance capabilities, that is reached under optimal conditions on the higher end of statistical distribution of performance parameters or trans-human enhancement. d) Collective human enhancement (Grunwald³ 2012), a specific case would be the schooling and university system for cognitive and social enhancement or techniques of socialization, but as well the Enlightenment ideas of general access to knowledge and education for moral progress (moral enhancement) and ideas of education


³ “(…)the collective enhancement of humans is certainly not a new topic either. Even in the early modern period, there were breeding programs for enhancing humans, some referring to Plato’s Republic (after Siep, 2006, p. 309). The frequently lamented deficits of humans from the perspective of morality and civilization (e.g., in the expression Homo homini lupus ) led in the European enlightenment, which embodied a belief in progress even in a moral sense, to approaches that attempt to employ education in a dedicated manner in order to enhance man as a whole , i.e., ultimately enhance man’s and society’s constitution in general. Beginning with the individual, above all in school education, a far-reaching higher development of human culture, civilization, and morality was to be stimulated and supported. For example, the critical theory of the Frankfurt school set on the emancipatory function of education, a few aspects of which — along with many others — can be found in ideas on education for sustainable development (Kastenhofer et al., 2010). In totalitarian regimes, “human enhancement” was at the service of the respective ideology. In Nazi Germany and in the context of its biologically racist ideology, for example, “enhancement” was understood to refer to breeding to strengthen the allegedly Aryan ideals. The ideal was represented by physical features (blond, blue eyed, athletic) in connection with an unconditional subordination under the Nazi regime. “Human breeding” was its declared program with regard to the features that were accessible biologically, while with regard to social qualities the multiple possibilities of indoctrination and propaganda were utilized for what was understood to be “enhancement.” “Grunwald 2012, 257
as sustainable development (Kastenhofer et al. 2010) to overcome – at least in a certain degree-imperfection.

If Enhancement is defined as part of human techniques, which include the development and progress in medicine and not just off label Enhancement Uses of Medical Technology, off label uses of pharmacology, but as well the augmenting of general longevity, individual betterment in >self-formation< (Homöo formatör sui ipsius; Kipke 2011), self-training and a social ethics of exercise (Sloterdijk 2009; Gerner 2014) as well as medical healing, social, personal and bodily wellbeing and quality of life (Lenk 2011, 120), as well as methodological advances and progress in treatment of deficitary states of the embodied mind, then VR change of self and self-other relations could be included in what we conceive as enhancements. The betterment of distinction of self and other-important in schizophrenia, abilities of social relation and the social self as well as bodily techniques that are enhanced by the use of avatars or Virtual Reality (VR) should be treated as Medical Enhancements, that I propose to call Virtual Self enhancements4. Hereby we can speak of “Enhancement” as intrinsic of and not as deviant5 from medicine. At the moment the enhancement debate, however, is strongly leaning towards a problematic dichotomy of enhancement versus treatment, trying to exclude enhancement principally from the field of medicine (e.g. by equaling enhancement with off label use of drugs or medical techniques by healthy subjects). This type of accounts seem to forget not only narrative medicine but person-based accounts of medicine (Danzer 2012) in general, that are not only acting on the bio-molecular shopfloor level of enhancement as in personalized bio-medicine and draw their expertise especially from a certain bio-statistical approach to health of the human species (see: Gerner 20146). Other more integrative or person-based approaches, however, seem more open to the idea of personal betterment that include quantifiable

4 For critical notes on the use of VR technologies see: Blank, 2013, 47-49; 199-228: “For instance, while contact with the world around us is often used as an indicator of mental health and psychological adjustment, VR represents a deliberate manipulation of the senses to produce a hallucinatory state, thus producing a “very fine line” between some kinds of VR experiences and certain schizophrenia-type states (Cartwright 1994,24) VR also produces an environment in which persons can create parallel lives, often with a completely different set of physical, social, and emotional attributes(…) Other areas where VR confuses psychological principles are the deliberate creation of altered states of reality, disembodiment and rematerialization into a virtual body and the prospect of projecting one’s ego-center into a virtual space beyond the real body.”Blank 2013,48-9

5 For enhancement interpreted as necessary “deviation”, see: Gerner 2014

6 “The bio-statistical model by Boorse (1975, 1977): besides claiming to be a naturalistic- functional model of health (cf. Ananth, 2009) seems the standard idea behind a species-typical reference class of humanity in relation to health and the model of restitutio ad integrum, that seems to have just one way of dealing with deviation and that is to make it disappear by reestablishing the normality of “natural” functionality. What else could integrum or integrative medicine mean today in the face of enhancement debates especially triggered by “new medical technologies to change us beyond therapy and in accordance with our own desires” (Gordijn/ Chadwick, 2008: 4)? Should we scrutinize critiques of restitutio ad integrum models when reflecting on future trends in medical activity, research and treatment that include enhancements of a status quo of a given norm? We will try to overcome a classic normative approach to health- in medicine seems important to face the limitations to deal with individual qualitative indicators of wellbeing (cf. Lenk, 2011; WHO, 1948; United Nations, 1966) becoming more and more important in personal integrative medicine (besides personalized medicine). Lenk (2011) realizes that taking up different concepts of health gives us different forms of enhancement and might as well give us different notion of deviation. Thus deviation is seen hereby not necessarily as a state to be overcome as illness or disease states. If we see health in the framework of wellbeing- proposed by the WHO- as individual, psycho-social and as cure then from the point of view of situational and personal enhancement then other standards than natural parameters of bio-physiological models or norms of health have to be looked at which are more open to the idea of deviation as enhancement according to the norm “Melioratio ad optimum”, or the idea of human optimization and self-perfection.” Gerner 2014, 107-8
medical treatment and subjective qualitative wellbeing (cf. Lenk 2011). One of these recent developments is what can be called “Virtual Reality Enhancements” in which we include as well Avatar Therapies in Virtual Clinical Reality and Intelligent Agents in the relation of medical doctor/therapist and client in personalized health care (health+).

“Over the last 15 years, a virtual revolution has taken place in the use of Virtual Reality simulation technology for clinical purposes. Shifts in the social and scientific landscape have now set the stage for the next major movement in Clinical Virtual Reality with the "birth" of intelligent virtual humans.” (Rizzo et al 2011)

Virtual Reality has been already shown enormous potential of medical applications as in Virtual Reality Exposure Therapy, as in Therapy of Phobia in Virtual Reality Exposure Therapy (VRET) as in Fear of Flying, social phobias, panic and agoraphobia, post traumatic stress disorder, virtual reality cue exposure treatment for substance abuse, eating disorders treatment etc. Besides VR in behavioral therapy, VR is important for so called VR analgesia that I have treated elsewhere (Gerner 2013). This paper will now concentrate on how Avatars and their interaction in VR environments could be an interesting enhanced embodied techniques of self and other in schizophrenia therapy (Leff et al 2013).

2. Enhancing health care of schizophrenia by the introduction of Avatars as Virtual mediators and the exbodiment of schizophrenic self

An avatar is usually seen as “medium through which one can inhabit a virtual world” (Lakhmani & Bowers 2011). What if we inhabit our own “Avatar” of self that we permanently “reboot” and as such consider our “permanent” own body image, body ownership and mineness, existential feeling and affective tuning, own internal voice etc.? Avatar and Virtual reality environments are more and more explored within healthcare and as therapeutic medical techniques as well as mediators in between doctors and patients.

Self-objectivation has been shown to be effective by the introduction of avatars according to studies of Jesse Fox et al (2009a, 2009; 2012; 2013): “Previous studies have found that virtual humans who resemble the self, also known as virtual doppelgängers, can be powerful persuasive agents.” (Fox et al. 2011)

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7 see: Parsons, T; Rizzo, A (2008)
9 for an overview in Cognitive behavioral therapy see: Scozzari, S, Gamberini, L. (2011)
10 Cf. e.g. Hänsel et al (2011)
11 The computer assisted VR Avatar therapy of Julian Leff et al (2013) is as well an enhancement given in relation to cases in which schizophrenia patients don’t respond to pharmacologic treatment; cf. Kane 2007
12 Avatar and Virtual environment are being recently more used not only in schizophrenia but for example in autism therapy for Scaffolding social and symbolic Learning processes, cf see: Bellani et al (2011)
13 for Avatar and Intelligent system in health care training for instance see: Gutierrez-Maldonado et al 2008
14 Cf. the research field of Patient-Avatar-Doctor relations. Avatars can function as Personal Mediators in client/doctor relations, see: Jensen (2009); avatars can be used to discover more than the direct patient-doctor relation might provide, salient information about our health (Ford Morie and Kang (2013); for the interactional context through Avatars see: Vasalou & Joinson (2009), for using Avatar for behavioral change see the research of Jesse Fox, e.g.: Fox, J. (2012b); for Avatar-Self relationship in a double “presence” perspective a) being here and now in virtual space and b) being social together (socially present) cf: Schultz and Leahy (2009)
The human factor in Avatar studies is important in difference to autonomous computer-controlled agents, as the „mere perception of humanity in a digital representation can be powerful enough to amplify social responses within virtual environments.” (Fox et al. upcoming).

The question I will be asking is now why do >estranged< doppelgängers such as hallucinating auditive voices that are modeled as human-looking like Avatars and as such are externalized help get rid of or at least delay and retard the re-appearance of such hallucinative episodes of the self?

The disconnected hallucinatory intervention of an schizophrenic self and the method of externalization of this schizophrenic self and re-embodiment of an virtual avatar by the exeroception of the patient as well as the patient’s the altered re-immersion (interoception) after this experience of the contact with this external avatar (that can be altered by the therapist/doctor) is the proposed method of my proposed philosophical research as part of the Lisbon CAST project, as an alteration of relational embodied techniques of the self and their external representations. Already in the classical rubber-hand-illusion (RHI) (Botvinick & Cohen 1998) the reintegration of external artifacts (a rubber hand on the table) as part of the body schema while synchronically stimulating the hand and the visual rubber hand has brought new insights in the plasticity of the body image and the embodiment of self by a strong influence of exeroception. RHI is an illusion in the coordination of vision, touch, and posture (proprioception), another form would be the coordination of touch and proprioception (Ehrsson et al. 2005) and has been linked to schizophrenia research in psychological alteration of ipsity (Takkar et al. 2011). An experiment by Slater et al. (2009) showed strong evidence for the plasticity of the body image. Hereby male participants in a virtual reality situation even perceived the avatar of a young girl as their own body (Slater et al. 2009). This brings us up to the point that these drifts of perceptions, imaginations and affects of the perspective spatially and psychologically are important to be studied by situations of cinematic-like experience including 2D Avatar on the screen, 3D virtual reality immersive avatars that will help us to understand the drifting attribution of a certain body image and its characteristics and meanings to me, to another self/person or character depending on the perspective we are taking or shifting away from. Thereby different degrees of self-loss and its different modes of the suspension/alteration of the self in filmic (2D, 3D) or virtual reality can be thought of. These ideas come close to those of Visch, Tan, and Molenaar (2010) on film immersion (2D, 3D, VR), and from Don Ihde’s proposals on embodied techniques (2002; 2010), where Ihde describes the position of the viewer respect to movies and videogames according to three different typologies: embodied, disembodied, avatar (the relation to which has degrees of immersion or interaction). These proposed triads of cinematic-like experiences (Gerner & Guerra 2014) help us in understanding the different possible modes of the self in altered self-experience such as in schizophrenia and its technical transformationality as a forth mode of a sense of a technically re-doubled self with the help of Avatars of the schizophrenic episodic self. Also, we should wonder how a simulated or enacted form of intersubjectivity assured by the degree of immersion and self-loss of the viewer into the Avatar

CAST stands for Computer Assisted Schizophrenia Therapy and is a research project of the CFCUL proposed for the Portuguese FCT Clinical Medical funding, in which the author is one of its members

“Psychological alterations of ipseity might also increase proneness to the “rubber-hand illusion” in normal subjects, together with changes of hand temperature and “proprioceptive drift”, thus bringing their mental state closer to what is typical of schizophrenia (Thakkar et al., 2011).” Sass 2014
situation and its “extended empathy”\textsuperscript{17} (Fuchs 2014) towards the virtual other - the schizophrenic self, externalized into the Avatar with whom the patient can enter in contact in VR - represented on the screen or in cyberspace. Empathy towards the “virtual other” in Fuchs account is seen as captured “notions of (1) phantomization as a media-based simulation of direct reality which undermines the as-if-consciousness, and (2) disembodied communication which shifts the modes of empathy towards the fictional pole at the risk of merely projecting one’s own feelings onto the other.” (Fuchs 2014)

Even the mentioned possibility of projecting one’s own feeling towards the other could also be seen as an possibility of deferral by temporarily exausting the inner schizophrenic self, by being depleted in this interaction with the externalized schizophrenic Avatar, that can be transformed in the therapeutic sessions by the therapist and thus the recurrence of the schizophrenic episode can be delayed.

According to Thomas Fuchs schizophrenia is best analyzed as the alienation of its own body or as a "disembodiment" (Stanghellini 2004, Fuchs 2005; Fuchs & Schlimme 2009). Disturbances of embodiment may be classified according to Fuchs & Schlimme in two fundamental categories:

"(1) as primarily affecting the subject body or prerrefective embodied sense of self; such is the case, for example, in schizophrenia or depression, or
(2) as being more related to the bodyimage or explicit body awareness. These include, for example, body dysmorphic disorder, hypochondriasis, somatoform disorders or eating disorders such as anorexia nervosa" Fuchs & Schlimme 2009, 571.

The disorder of schizophrenia for Fuchs therefore is apparent at various levels of the self. The basic disorder of schizophrenia implies for Fuchs a) a weakening of the primary basal self experience, b) a disorder of implicit functioning of the body, with the consequence of a feeling of alienation towards the perceptions and actions (on the level of the ecological self) c) a disorder of the intercorporal contact with others (social self) and to this adds up d) a disorder on the level of the personal self that affects the “excentric position” (Plessner 1975) and thus the seperation of “I” and the “other”. All these levels should be addressed in the methodological make-up of the Avatar experience.

For Thomas Fuchs (2012, 2012b, 2013) every encounter is based on the capacity to switch between your own embodied perspective and the perspective of the other and at the same time to distinguish both perspectives that is to assert yourself in front of the other. Hereby Fuchs quotes an interesting point of Blankenburg (1965; 1971) that we will take up here: That is, one has to able to integrate the egocentric and the allocentric perspective without loosing one's own bodily center permanently.

"Or as Blankenburg 1965 says this to the point: Every taking over of perspective implies already a potential self-loss that however is suspended in its status nascendi.” (Fuchs 2012).

According to Fuchs schizophrenia is best analysed as the alienation of its own body or as a "disembodiment" (Stanghellini 2004, Fuchs and Schlimme\textsuperscript{18} 2009). This refers to the concepts embodied subjectivity (Embodiment), as currently used in the cognitive sciences (Varela Thomson, Rosch 1991, Gallagher 2005, Thompson 2007, Fuchs 2012c) and is due to an allencompasing

\textsuperscript{18} “As a result of this disembodiment, the prerrefective, practical immersion of the self in the world is lost.” Fuchs & Schlimme 2009
experience of the person, including an >ecology of the brain< (Fuchs 2012a). In relation to the primary lived bodily self (cf. De Haan & Fuchs 2010) Schizophrenia can be described as (a) weakening of the primary basic lived bodily feeling of self a 1) loss of vital contact with reality (Minkowski 1927) and a 2) Lack of existential feelings of being (Ratclif 2008, 2012). Already in 1927 Minowski interpreted schizophrenia as a basic disorder of the loss of the vital contact with reality. Frequent consequence of this loss is a compulsive self-introspection or hyperreflexivity (Sass 2000), in the endeavor to compensate for the lost primary self-certainty by subsequent reassuring. Thus not is schizophrenia in the tradition of Sass a lack of rationality, but hyper-reflection and rationality are a symptom of the cutting off of embodiment of the self (Fuchs 2012b, 892). Schizophrenia as disembodiment on the level of the (b) Ecological Self shows itself as an disorder of the implicit functioning of the lived body (Leib) causing disturbance and alienation of perception and action (1) Disembodiment in perception in the sense of the loss of the sensorimotor connection between subject and the environment. There is an alienation of self-evident acts of actions and perceptions that can be describe as pathological explication (Fuchs) (2) disturbance of agency in relation to perception as an fragmentation of perceptual and motor Gestalt units, possibly causing pathological explication of implicit functions of the body: Self explications such as “I saw everything I did like a film camera” (Sass 1992) could be usede to transform this cinematic episodic self inthe Avatar construction and from what point of view the avatar is constructed and related to the patient. A third important level in schizophrenia is (3)Disturbance of the intercorporeal contact with others (social self) that proposes a clear interaction of Avatar and patient (taking the interceptive notion of voices towards an socially negotiable relation; this implies instead of schizophrenic social detachment the fostering of social interactions by strengthening natural self evidence in relation to the reality of the episodic schizophrenic self. A forth level can be seen in schizophrenia as a Disturbance of the self-other relation on the level of the personal self. With the Patient Avatar the Disorder on the level of the personal self that affects the excentric position and thus the delimitation of the self and others (and its territories) should be rehearsed to understand the limits of me/mineness and the other.

The self disorder of disembodiment and the increasing of retreat of the self from the mediated sphere of lived corporeality, leaves back alienated perception and action fragments that are no longer "inhabited" by the self. The patients stay outside of their own perceptions and actions, while these increasingly decompose. In the acute psychosis this increases the previously still creeping alienation to experience of a total disempowerment of the self. Exactly this is the point the Avatar therapy fights against: The patient's own strange fragments of perceiving, thinking and acting face them as if being from the outside and with the Avatar are given a form and are incorporated into an distinct other, that is: they are exteriorized. The sensations seemingly caused from anonymous powers, the >alien< controlled movements or >inserted< thoughts are given a concrete and moldable form with the Avatar that can be transformed and modeled with intervention of the doctor.

Embodiment and Perspectivetaking in relation to the Avatar; reembodiment with the Avatar

Schizophrenia thus includes, according to Fuchs & Schlimme the weakening of the basic sense of self. This means a disruption of implicit bodily functioning, disruptive notion sof a) body
ownership and mineness (owning and identifying with a particular body), b) a disconnection from the intercorporality with others: “As a result of this disembodiment, the pre-reflective, practical immersion of the self in the world is lost” (Fuchs & Schlimme 2009). We could call this the natural media immersion of the bodily self in the world in difference to artificial technologically induced immersion as by cinematic experience or virtual reality environments, or in relation to an Avatar (or both avatar in an virtual environment). For Fuchs there is a foundational role of second person interactions for the development of social perspectives (Fuchs 2012). He argues that embodied second person interactions are not only an enabling, but also the constitutive condition for the development of an explicit first and third person perspective. Thus putting schizophrenics in a second person relation to a schizophrenic self-Avatar is a way to ground their schizophrenic experience. Making their experience more “real”- that is perceivable on multiple external levels (audiovisual, haptic, etc.) is a first step of a curative moment or alteration in relation to their episodic schizophrenic doublings. This elevates the possibility of Avatar-identification or disruptive autoscopic phenomena such as Out of Body-Experiences (OBE’s\(^\text{19}\)) and different kinds of perspectives and perspective taking to fundamental importance not only in social cognition, but as well in the proper idea of an embodied embedded self and its technologically mediated existence, one of it foundational part is the switch of perspective.

In the doubling or estrangement of an internal schizophrenic avatar or parts of it (voices/thoughts etc.) in the case of schizophrenia the self got out of self-control: Is this self possible to be influenced by distracting its somatic body image, body-ownership given in its necessary multisensory synchronizations and de-synchronizations (Banakou & Slater 2014)?

In the paradigm of using concepts that can be derived from aesthetic experience from immersive and semi-immersive experiences\(^\text{20}\) such as cinema, gaming, Second Life, (distractive attention, cinematic experience) and body-swap experiences Avatar enhancements of self and other are applied to patients with symptoms of schizophrenia (thought insertion, hearing voices etc.).

**Transformation by Self-Other interaction and Perspective taking**

What seems important to understand is the different modes and types of interaction and Perspective Taking in between patient-patient relations (patient self- schizophrenic self-avatar//doctor-avatar-patient etc.): First we have to ask: Why does perspective matter (Petkova et al 2011)?

How do alteration of perspective introduce change in the schizophrenic 1\(^\text{st}\) Person Perspective (1PP) realized by a) alienation (voices, hallucinations) or b) re-appropriation (avatar identification) (see: Ganesh et al 2011) as well as by the switch in between 2\(^\text{nd}\), 1\(^\text{st}\) and 3\(^\text{rd}\) PP between the patient and the virtual Avatar in order to better understand the enhanced self-other Avatar encounter, its interactive resonance and transformed self- experience in which in the long run the hallucinated voices might be externalized and fixed with the Avatar, and as a consequence be externalized for a longer period of time than without the Avatar/VR enhancement:

How plastic is 1) our orthodox 1PP and egocentric reference frame, and 2) our self-other frontier that can be a) technically transformed or b) technically stabilized by the Avatar experience?

\(^{19}\) On OBE’s and the attentional self see: Gerner (2015)

\(^{20}\) cf. Gerner & Guerra (2014)
Beccio et al (2011) calls the First person perspective "egocentric perspective" while imagining another opposite perspective of our own would be for her a "disembodied perspective taking", while a second person actually sitting in front of someone would be an "embodied perspective taking". For her, perspective taking needs the presence of another person to function plainly. However, we suppose that by our image-consciousness (Husserl 2006) we are enabled to take the embodied perspective of another embodied person also in his artificial presence on a movie screen (in all its degrees of embodiment). If we talk here of perspective taking we have to clarify that we can distinguish at least the following basic forms:

1) Visuospatial perspective taking 2) affective perspective taking (empathy: Fuchs 2014 etc.)
3) kinaesthetic perspective taking 4) motivational or volitional perspective taking.

All four types of perspective-taking should be seen as joint/ coordinated and sometimes segregated as in altered self –experience of schizophrenia. Clearly the doubling of the somatic /virtual self as in autoscopic experiences, in which the virtual body or body image is doubled and the attentional self-location between the constitutional virtual body image (see: Ihde 2002) and the somatic body schema may switch as in an immersive Avatar perspective-taking. The patient’s empathetic relations and social perspective taking with the other on the screen or immersed with the other (avatar) in a virtual world/atmosphere, varying from a fixed body position to a virtually mobile one, could lead to something similar as the feeling of displacement of one’s own body that is technically mediated (as in OBE\(^{21}\), or even a transformation of one’s whole body (OBT\(^{22}\)). This Avatar enhancement of schizophrenia patients proposal is connected to what Don Ihde (2002, 2010) designates as “embodied technics”: our embodied and mediated experience with and through contemporary technologies, in our case mainly Virtual Reality and Avatar derives new forms of cinematic experience (exero- and interoception) and immersiveness (from in front of a computer screen, to frontal, stereo-sound to sensouround-sound to several screens to being immersed in a 3D atmosphere with Oculus Rift, to being not just visually but as well kinesthetically immersed as within the Omni platform).

If we start from the position that our self in its dynamic constitution is actually mediated by and through our body and the technologies we experience our bodies though, we can’t favor a position of media-technologies, imaging, digital-computational or virtual reality and film being responsible for just “disembodying ourselves”. In the proposed experiences the viewer’s body, resonates with the events on screen or in the immersive atmosphere, making the viewer nothing less than a “body transfer” (Slater et al 2010) or even a “surrogate body” for the screen (Voss 2011) or, an idea amplified by the independence view of a doubled self, or an artificial extension of “secondary persons” (Bainbridge 2014), that should be adopted in relation to schizophrenic episodes.

3. Conclusion and questions to be followed in further philosophical investigations on Avatar Self enhancements in schizophrenia therapy
3.1 Who does get in better control by the Avatar/ VR therapy? The schizophrenia patient? The patient navigating between himself/herself (fostering autonomy vs. hallucinative heteronomy in schizophrenic

\(^{21}\) Cf.: Ehrsson (2007); Lenggenhager et al. (2007); Blanke & Metzinger (2009); Bolognini et al (2011); Braithwaite & Dent (2011)

\(^{22}\) Gardner (2013)
patients) and the schizophrenic Avatar? The distinction between self and other? Is the schizophrenic Avatar marked more and more as the other that is not part of the patient’s self, stays to be analyzed in avatar enhanced schizophrenia therapy in follow-up Lisbon CAST studies.

A clear change of approach is that the changes the Avatar introduces in the patients submit not to a certain dualism between hallucination vs. reality or Self vs. schizophrenic voice (episodic schizophrenic self); and Patient/Self vs. Medical Doctor, but: a new ternary relation is introduced: a technically externalized deviation (cf. Gerner 2014) of the exbodied (Mittelberg 2013) schizophrenic self and manipulable schizophrenic/Avatar third/self and a triadic relation between self- doctor and avatar, making the schizophrenic third less important as we can handle him though the avatar by perspective taking and first of all the navigating possibility of the patient self to exbody the hallucinated self. The link between this ternary relation and a Peircean semiotic approach to manipulating and changing habits of diagrammatic minds, has to be developed. Then in another step a clearer distinction between self and other is trained a change in exeroception and interoception of self. Different notions of self should be modeled in the Avatar situation to respond to different levels of exbodiment, disembodiment and transformed re-embodiment in relation to schizophrenia and its (self and social) relation to the artificial Avatar self.

3.2 Methodology: From Avatar representations to immersive gaming with the avatar

Providing different levels and methods of immersion one parameter has to be the degree of visuo-spatial similitude of the Avatar and the patient’s proteus effect (cf. Yee & Bailensen 2007) in the sense of adaptation as well as differentiation from the virtual avatar, and different forms of engagement with it. The adjective “protean”—the ability to take on many different self-representations derives not only from the Greek Goddess Proteus, who could appear in different shapes, and introduces the idea of extreme self-transformation in the Avatar experience that in somatic bodies is difficult to perform (e.g. by cosmetic surgery) but in virtual worlds is a relatively easy task:

a) Leffian Avatar Therapy and its methodological variations

The patient is able to relate to an external representation on a Computer screen etc.

In group therapy sessions the patient could experience in a game/play the avatar representation of the other’s hallucination. What stays to be asked, is: How can this Avatar way of accessibility to self-others/externalization of the hallucination23, its aesthetic make-up etc. and its interchange actually alter the perception of self and the proper schizophrenic episodes and its frequencies?

b) Virtual self-gaming with different stages levels of immersion

Visual avatar on a 2-D screen or as well in an immersive 3D space? A Playing of a game with the schizophrenia Avatar as Character/role plays and different simple game strategies can be introduced, to get from a fixed self and hallucination to a game of self with possible changing relations being part of the self game (patient playing their avatar their avatar playing the patient the doctor/therapist playing the avatar/patient etc.)

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Using the Virtual Reality Glasses **Oculus Rift** a more immersive experience with the Avatar is made possible, these immersion levels should be alternated and the distancing from the avatar and what it represents could be introduced, besides the therapeutic doctor intervention.

c) **Motoric coordination and touch stimulation in encounters with the avatar**

Herby the motoric body-coordination dimension is taken into account as another immersion level introduced by **allowing full body movements** such as by developed through serious games in which the singular patient Avatar can be modeled and developed for instance for a **Virtuix Omni** gaming platform (including shoes in different sized depending on the patients size) that allow the movement of patient in a scene with the VR of the avatar:

In the end this research could lead us away from the bad trip experienced in schizophrenia and change it into going on a trip/travel with the (schizophrenic) avatar...

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