

## Cyborg – an Utopia for Computer Games

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1 »In games we act at a machine while playing. Every game makes us more familiar with the >tool computer<, makes us accustomed to the processing of texts and images as a working process and adjusts our reaction times and dexterity to the machine.« Nohr, *Les Liaisons Dangereuses*.

2 Turkle, *Wunschmaschine*, 78.

3 Fritz, *Warum Computerspiele faszinieren*, 13.

4 Fritz, *Warum Computerspiele faszinieren*, 14.

5 Walz, *Paradigame: Computerspiele als wissenschaftliches Paradigma*.

6 Weizenbaum, *Haefner, Sind Computer die besseren Menschen?* 120–125.

In different genres computer games simulate realities prompting their users to relate to them. By now, adults in Germany consume more games than movies a year. The hobby computer game expands technological competencies [1] and constitutes a socialisation that leads into computer culture [2]. There is wide-spread agreement that feelings, language, perception and thinking of people playing computer games is subject to an influence by the games. With growing game competence consumers think in several form systems and simultaneously on several application levels. Games could support experiences that are of importance outside the virtual world. Playing games is said to support problem solving ability, reaction time, conflict solving strategies, concentration, and certain perceptive functions (e.g. the so-called »parallel processing«) and facilitate the access to work with computers. [3]

The utilitarian-pragmatic direction of effect research assigns a chance to competence acquisition on different levels to the computer game and therefore also regards it as a preparation for an adequate mastery of life. [4]

»The mastery of the games finds its expression where companies use the intrinsically motivating effect of game-like challenges for their working structures and processes; when skill-specific computer games are applied in job assessments, i.e. transfers are performed between virtual and real world; when games serve as test or simulation environments; when technologies that enable games are integrated into other contexts as an engine of innovation. [5]

The first computer games were developed under strict secrecy regulations in the USA where military operations were intended to be simulated and directed on the screen as realistic as possible [6]. In the following the fast development of modern PC-systems was sup-

ported by demanding graphic animations, the promising profits and the creative drive of the programmers. Text-dominated chess games on the big processors of the 60s were basically revolutionised by decisive progress in processor development ten years later [7]. In the 80s, shooter games like *Space Invaders* and *Pac Man* accomplished the leap from gambling joints to the home PC, before the first comic-adventures could be played, the creation of which was accelerated by the development of enhanced storage capacities. While playing systems are continuously pushed beyond their limitations and new technical demands were formulated.

### Game Motifs

If you put PC games, users and IKT (Information- and Communication Technologies) access into context to examine their participation in the experience treasure computer game, you will find a structure for Germany that displays significant differences between female and male buyers and users and indicates an under-representation of women in the PC game sector, says the *Society for Entertainment Software (Verband der Unterhaltungssoftware (VUD))*. [8] Female participation in computer games lies around 30% and directs the focus to game motivation and contents. Game motifs include the individual-specific prejudices concerning perception, valuation and expectation of a person that are based upon psychical dispositions all humans share. [9] Among other things are the contextual categories of human action aims relevant for playing games on the PC... e.g. the aim to establish and preserve a social contact (contact motif), the aim to achieve power and to execute it (power motif), or the ambition to demonstrate the own efficiency to oneself and others (efficiency motif). [10]

As the choice of games serves a wide spectrum of human motifs and nearly all of them offer incentives for efficiency-motivated action it is to be assumed that individual elements of the games impede the female game motivation. In an examination on the relation of girls and computer games *Helga Jungwirth* found among other things the use of predominantly male game pawns to be the cause for the weak interest into computer games. [11] *Ute Jeß-Desaever* locates the motif in the concepts as follows: The producers of this software have not considered women in their target groups due to their assumption of

7 Slabihoud, *Der weite Weg bis zur technischen Revolution*.

8 VUD, <http://www.vud.de/infoservice/index.htm>.

9 Wegge, Kleinbeck, Quäck, *Motive der Bildschirmspieler*, 216.

10 Ibid.

11 Jungwirth, *Computerspiele und Geschlechtsrollenbilder*.

12 Jeß-Desaever,  
Die digitale Zukunft der  
Geschlechter, 48.

a lack in interest, thus prompting women to lose or fail to develop any interest at all, because the market does not offer something women-specifically interesting, i.e. nothing relating to the life context of girls. [12]

13 Action-adventures are a  
combination of the genres  
action, adventure and  
jump'n run. They are a corri-  
dor and its game level has to  
be mastered by a hero figure.  
Interesting is the use of the  
third-person-perspective  
making the players observers  
of the action. They are based  
on the principle of linear task  
sequences sending the pawn,  
the avatar, on a mission.  
»Today, the notion avatar is  
used for nearly every compu-  
ter-animated figure. The Ava-  
tar is our representative in  
the game (...)«. Neitzel, Die  
Frage nach Gott, 61 – 68.

In reversal of these observations one can ask, if computer games with female heroines and their embodiments, the avatars, might offer women the motivation to participate in the playful, lustful and flexible handling with the PC.

### Role Model in the Adventure Game

*Eidos*, producer of the *Tomb Raider*-games, celebrated first media successes in the field of action-adventure-games [13] with the development of the prototype by means of *Core Design*.

Computer games with heroes in the Third-Person-Perspective [14] exist only since 1992. The games market experienced before the groundbreaking development from 2D-animated games to 3D-graphics and became enriched by a multitudinous number of action and adventure games. Players who had steered *Pac Man*-like animated figures through labyrinths with ingenious strategies before, had now the opportunity to have their fantasy motivated by film-like sequences and to roam spaces unrestrictedly. Even the heroes became more plastically and were predominantly imitated from stereotyped martially masculine beauty ideals. The first cult games were created and especially games like *Doom* and *Quake* found access to a broader public with their excessively violent, relatively realistic elements [15]. As one of the first producers *Eidos* included women into its marketing concept with the main role of *Lara Croft*. *Tomb Raider* was the first commercially successful computer game with a heroine – with whom also women were intended to identify with. The share of female buyers of this game lies between 20 and 25%: We thought it easier to address women with such a main character instead of the usual »blond heroes« explains marketing executive *Beco Mulderij* of *Eidos*. [16]

The »making-of« of *Tomb Raider* is exemplary for the development of adventure games: in the project's first phase Level-Designer looked for appropriate settings needed for reproduction. Parallel, program-

mers develop a game-engine – the technical basis the graphics of this special game work on. The storyline for the film-like course of action is developed by a screen-writer, while simultaneously »some-one creative« (with *Core* the artist *Toby Gard*) develops variants of a possible main character.

As *Core's* legend puts it, *Toby Gard*, bored by the omni-present male heroes in the game scene, looked for an alternative character: *Gard* looked for a character supposed to captivate the player by an epic adventure with ancient tombs and deadly traps; an identification figure the player can love and protect. When *Gard* realised that no male hero would meet these requirements he created a female heroine: *Lara Croft*. [17] *Lara* is conceived as a lone warrior. She faces a self-chosen adventure and does not ally herself. Every emerging figure within the frame of one level can only be an enemy. [18] The sense and attraction of the game is to survive the requirements of all levels. The player can make *Lara* execute different, consequently enhanced actions that developed parallel to the present status of technology from simple jump'n run to climbing, swimming, crawling and shooting practise of different kinds. This repertoire makes an directed virtual body use possible. The player's desire to explore a space is fulfilled with nearly human movements. The more actions the avatar »learns« to perform by means of new technological developments, the closer it is to reactions players would execute in similar situations in real spaces. In the games the actual start is preceded with training sequences where the actions can be trained as they require some dexterity in handling the keyboard. These training sequences are by the way part of the screenplay and condition the players such that they react craftily to later, further effects like the emergence of enemies: killing per keyboard at cyberspeed or escaping by tactics and bodily aptness. While digitally creating *Laura*, the first avatar and *Lara Croft's* prototype, *Toby Gard* let »accidentally slip the mouse« as he himself puts it. He refers to the endowment of *Lara's* breasts that are generally described as »XXL«-breasts [19]. In the *Tomb Raider* versions published so far these breasts prove to be the most prominent optical characteristics of the avatar in the truest sense of the word.

Due to clever merchandising *Lara Croft* is certainly the most famous example for a »female avatar«. Although she has got a few sisters

17 *Eidos*, *Tomb-Raider-*  
*games with Lara Croft.*

18 Only in episode IV  
does she accept the  
help of an old friend in  
the training sequence  
and later in the game.  
*Insiders from the fan*  
*community understand*  
*this as an attempt by Ei-*  
*dos to prepare players for*  
*Tomb Raider's intended*  
*transformation into a*  
*multiple-character-game.*

19 *WittRaider,*  
*Lara bei Brigitte.*

16 *Louis, Lara und die*  
*1000 Helden, 109.*

14 *Third-person-shooters*  
*are computer or video games*  
*where the representation of*  
*the virtual game world is*  
*created from a perspective*  
*behind the pawn.*

15 *Schindler, Wiemken,*  
*Doom is invading my*  
*dreams, in: Fritz, Fehr,*  
*Handbuch Medien: Compu-*  
*terspiele, 247 ff.*



fig 01

by now, it has become unavoidable to speak about *Lara*. She is a symbol for thousands of »digital beauties« – a more or less impressive phalanx of demonstrations how elaborate representations can be realised with digital technology.

*Lara* is a strongly feminised being without defined characteristics despite a highly polished CV [20], therefore offering perfect panels for projection. Thus the avatar satisfies the desired fantasy to succeed and gain respect in a men's world, but it cannot bear any more characteristics due to its restrictions as a mass product. [fig 01]

The avatar is certain, as it is crossing no borders within the gender hierarchy. Additionally, it is compatible beyond the borders of gender – in the understanding that it serves identification patterns that are generally human. That makes them attractive for female players, too, but restricts the scope for action and fantasy to the usual gender schemes. This restriction reduces the culturally reproduced homogeneous mass of women in computer games to models like *Lara Croft*. In this level it becomes irrelevant again for game motivation, if the avatar flaunts female forms that attract attention or is conceived as a male. Insofar, has *Lara* however been of use as she demonstrates how gender role stereotypes could be played with in games.

### Roles and Identities

Games, including the role play, have always been a significant aspect of our individual ambition to build an identity of our own. Avatars could be understood as the metaphorical embodiment of the self in a game. By self-relation the player connects the pawn and the game in the end with his/her own life. The problematic mentioned in the game have a relation to the player's self-perception. The game is a compression medium, reflecting aspects of real life in some important characteristics. The question arises which possibilities for the construction of subjects from computer games could be effected, because: If it is possible in the reception of games to link the freedom of fantasy to the own experiences and feelings, meaning to cross the borders of the own imagination, then can a creative potential certainly be released: »After all and above all does creativity mean to develop something of your own. (...)« Growth and prosperity in the cause of playful thinking and acting appears to be linked to experiences in childhood to a special extent because – as I assume – the own self grows in accordance with the growing product as it did then. [21]

20 »As daughter of Lord Henshingly Croft Lara grew up in the safe world of aristocracy and while at Gordonstown she discovered the Scottish mountains, (freeclimbing), Lara used her time at a Swiss boarding-school for extreme skiing. In her holidays she travelled to the Himalayas to encounter new challenges. A plane crash that she survived as the only passenger changed her attitude towards everything: she broke away from her life as the daughter from a noble home and became the independent adventuress she still is today. Her parents who intended to marry her to the Earl of Farrington cancelled their financial support. Lara lives of her travel-book's sales revenues and spends her time to collect extreme experiences.« In: *Lara Croft. LARA CROFT Magazine*, 84 ff.

21 Schachtner, *Geistmaschine*, 93.

The development of specific virtual subjectivity is most profoundly developed until now in computer games as an artistic medium. An example for flexible constructions on the basis of an action-adventure is *fluid* – arena of identities from 2003 by *Matthias Fuchs / Sylvia Eckermanns* [22] [fig 02]: *fluid* focuses the flexibility of identities in computer games and the relation between female player and figure. The total identification of both is one of the prerequisites for the immersion into the world of the game and becomes here the contextually determining moment of action. The female users are confronted with the task to create themselves an identity in the course of the game: At locations like the »River of Constant Change, the Lake of Narciss« or in the »Style Laboratory« the female players can equip themselves with individual attributes, reflect or reproduce themselves. But they can lose their identity, too, if they for example cannot resist the temptation of narcissistic self-reflection. Tools like the »fluid SkinGun« enable the female players to rob other identities. Thus, the chosen self is contended, negotiated and disputed in the confrontation with others and the own self-image. [23]

Here, identity means a set of distinguishing features. At the start of the programme on has not a single attribute. In *fluid* the avatar changes as a result from the confrontation with other beings or hidden locations. The field of MUDs and MOOs [24] offers revealing examination and experience reports, too, that can be regarded as related to adventures [25]. In most MUDs [26] pure text is used to create a three-dimensional virtual reality on the basis of the own fantasy [27]. Users move through by means of one or more online-personalities: (...) One is free to choose one's sex, as well as race, class, age, education depending from your verbal skills; the identity as determined by birth and biography resolves in a diversity of possible roles. This new subject could now be observed as de-centralised or multiplied etc. and would not have been »resolved« by it. (...) Do I feel masculine because I am a man? Or because this role has been assigned to me by others? Or because I chose this role? How do I feel, if others assign the role »woman« to me? The border experience that can be practised in real life only as a transsexual or transvestite can be achieved online in a simple manner and without any risk. Something similar accounts for other dimensions of subjectivity. New perspectives, new universes of possible actions are opening up in cyberspace. [28] Thus, a MUD can become a context where one can discover who one is and who one wants to be independent from



fig 02

22 »fluid - arena of identities« was conceived as remittance work for Selfware, a series of events organised within the frame Cultural Capital of Europe in Graz 2003, <http://www.tO.or.at/~fuchs-eckermann/fluid/>.

23 Hartware medien kunst verein, Katalog der Ausstellung »games. computerspiele von künstlerInnen«, 60.

24 Multi-User-Dungeons: Interactive role plays from the genre of fantasy games, the most famous is »Dungeons and Dragons« developed at the beginning of the 70s that is based on a real role play. Whereas MUD's feature purely text-oriented interactions via the own described figure including names and complete optical appearance, the MOOs, that were developed at the end of the 80s, offered avatars and could be modified and used to represent the own person in the net. *Baller, Elektronisches Kasperle*, 38.

25 Turkle: *Life on the Screen*, 292 ff.

a specification to visualised body contexts. *Sherry Turkle* acts on the assumption that the diversity of positions in the culture of simulation could assist in realising the version of a multiple yet integrated identity. Additionally, interactions in virtual contexts might have positive effects on social interactions in real life, if they are accordingly appreciated and reflected in a deepened manner. [29] But constructions of gender roles cannot be simply avoided here, too: To pass as a woman for any length of time requires understanding how gender inflects speech, manner, the interpretation of experience. [30]

Avatars in the MUD have to be subjected to the production of gender – even if the gender can be chosen freely it is important for all interactions to be identifiable through a mask. The motive for a gender role change in the MUD is often the desire for erotic adventures, and on this level there is wide experience platform offered for them. In the best case, the resulting experiences form models to reflect social gender constructions. [31]

If and to which extent models from MUDs and works of art like *fluid* can e.g. lead to a change in gender relations depends on how the scope for action can be mentally enhanced. The question is how an outside of gender and even an outside of gender production can possibly be realised in games and the net – and how Utopias intended to overcome binary oppositions can be developed through diverse body strategies and action patterns. [fig 03]

## Cyborgs

A theoretic approach to avoid gender constructions can be found in *Donna Haraway's* essay »A Cyborg Manifesto«. Here, the cyborg (she) serves as a metaphor, a fictional carrier of abilities that possibly undermine gender production. The cyborg, as thought by *Donna Haraway*, does not correspond to avatars in computer games. She can however incite impulses to imagination for the image of an ironic, utopian, feminist self, whose representatives in games would offer completely different (also ironic and changing) possibilities for identification as known so far. Therefore the cyborg is just a surrogate from *Haraway's* ironic, political myth. She is implemented as a tool to make other images able to be thought at all and to trigger thoughts about an individual allegory based on the cyborg (with all its imponderabilities).

26 One of the most famous is the MUD »LambdaMOO«, that was examined by *Sherry Turkle* and describes itself as some kind of chatroom, <http://www.lambdamoo.info/>.



fig 03

27 »Building« on MUDs is something of a hybrid between computer programming and writing fiction. One describes a hot tub and deck in a MUD with words, but some formal coded description is required for the deck to exist in the MUD as an extension of the adjacent living room and for characters to be able to »turn the hot tub on« by pushing a specially marked »button«. In some MUDs, all players are allowed to build; sometimes the privilege is reserved to master players, or wizards. *Turkle: Life on the Screen*, 181.

28 *Barth, Computerspiele*, 201.

A Cyborg Manifesto conceives the cybernetic organism as a »a potent subjectivity synthesised from fusions of outsider identities« [32]. *Haraway* focuses on positive effects and possibilities in technological progress and asserts that today we are already cyborgs in our imaginary and material reality – beings we are mainly familiar with from fictional worlds, that are hybrid, animal and machine in one and are changing ambiguously between natural and manufactured. Accordingly, we are already chimeras and have already transformed into theoreticised and fabricated cyborgs: »Modern medicine is also full of cyborgs, of couplings between organism and machine, each conceived as coded devices, in an intimacy and with a power that was not generated in the history of sexuality. Cyborg »sex« restores some of the lovely replicative baroque of ferns and invertebrates (such nice organic prophylactics against heterosexism).« [33]

While the imagination of really existing cyborgs might still be disturbing at first, the realisation of existing cyborgs (and those to be developed) on the level of acting avatars in computer games (and therefore on to the level of mastery of technology) opens up new possibilities. With the cyborg *Donna Haraway* develops the idea of an abstract imagination of an independent self. The different self-designs can be used as basis for political actions. The intended reorganisation of gender relations is thus been linked with a self-conception of the subject that has to be created anew. *Haraway* relies on the subversivity of the cyborg, on her chance to undermine the own teleology as a hyper-liberal atomised individual. In the centre stands the idea that as a being of a post-gender society cyborg is a creature without origin and therefore is the replication of cyborgs uncoupled from the processes of organic reproduction: Cyborg politics is the struggle for language and the struggle against perfect communication, against the one code that translates all meaning perfectly, the central dogma of phallogocentrism. That is why cyborg politics insist on noise and advocate pollution, rejoicing in the illegitimate fusions of animal and machine. These are the couplings which make Man and Woman so problematic, subverting the structure of desire, the force imagined to generate language and gender, and so subverting the structure and modes of reproduction of »Western« identity, of nature and culture, of mirror and eye, slave and master, body and mind. [34]



fig 04

29 *Turkle: Life on the Screen*, 268.

30 *Turkle: Life on the Screen*, 212.

31 *Turkle: Life on the Screen*, 213.

32 *Haraway, A Cyborg Manifesto*, 173.

33 *Haraway, A Cyborg Manifesto*, 150.

34 *Haraway, A Cyborg Manifesto*, 176.

35 Haraway, *A Cyborg Manifesto*, 169.

36 Haraway, *A Cyborg Manifesto*, 161.

37 Haraway, *A Cyborg Manifesto*, 157.

38 Haraway, *A Cyborg Manifesto*, 150.

39 Haraway, *A Cyborg Manifesto*, 178.

40 Haraway, *A Cyborg Manifesto*, 180.

As Donna Haraway puts it: »Sex, sexuality, and reproduction are central actors in high-tech myth systems structuring our imaginations of personal and social possibility.« [35]. She pleads: »I argue for a politics rooted in claims about fundamental changes in the nature of class, race, and gender« [36], as every classification into one of these social categories creates an »Outside«, too: unstable affiliations due to aberrations. There is no »natural matrix of unity« [37], as Haraway puts it, no female-being that naturally connects women with each other.

The cyborg softens existing borders by diversity and creates the possibility to form groups (or coalitions and alliances) by affinities instead of identities. The author pleads to enjoy the blurring of borders and assume responsibility in construction. Cyborg should be regarded »as an imaginative resource suggesting some very fruitful couplings« [38] and could fulfil the desire for embodiment of »heroic quests, exuberant eroticism, and serious politics« [39] that so far has often not been thought or expressed in the context of woman and machine. The cyborg as a myth is therefore fit to represent the Other: A cyborg body is not innocent; it was not born in a garden; it does not seek unitary identity and so generate antagonistic dualisms without end (or until the world ends); it takes irony for granted. One is too few, and two is only one possibility. Intense pleasure in skill, machine skill, ceases to be a sin, but an aspect of embodiment. The machine is not an it to be animated, worshipped, and dominated. The machine is us, our processes, an aspect of our embodiment. We can be responsible for machines; they do not dominate or threaten us. [40]

If you imagine cyborg as an avatar, as an element of a computer game that can be chosen freely and changeably assigned, more filigree and complex game locations are to be invented, designed and explored as were offered until now. Game structures, strategies and the bodily equipment of the (s)heroes would be developed, experienced and received individually. In contrast to the previously known avatars, cyborg is not familiar with the game with the mask as she does not live from being a subject only when reflected due to her changing identity. The cyborg of the game and net world carries the distinction of personality.

## Utopia

Female avatars as representatives of women in computer games, as role models for female participation in the game culture can only mark a transition. Their concepts evoke desires and needs to invent and test representations in the cyber-technical space and to face the requirements of technology. It makes sense to occupy a void space in the public sphere computer to change the existing relations between gender and technical access. The question of the future will be to clarify how the keys for the enhanced acquisition of the technical abilities for the modification of games are to be maintained. To undermine accustomed representations of femininity, to create democratic relations in the net and to contrast new images that possibly elude from the production of bi-sexuality, Utopias are needed.



## Bibliography

- Susanne Baller**, 1997. Elektronisches Kasperle, in: Spiegel-Verlag, (Ed.): Der Digitale Mensch. Spiegel spezial Nr. 3, Hamburg.
- Thomas Barth**, 1999. Computerspiele: Fetischismus, Regression, Sucht und Narzissmus? Die Pädagogik der Computer-Popkultur und die Selbstkonstituierung der Subjekte, in: Forschungsgesellschaft für Informatik (Ed.), Computerspiele. Informatik Forum Band 10, Nr. 4, Wien 1996.
- Lara Croft, in: Eidos Interactive Deutschland GmbH (Ed.), LARA CROFT Magazin, Ausgabe 1, Hamburg.
- Eidos Interactive Deutschland GmbH**, Backgrounder Tomb Raider No 2: Tomb-Raider-Spiele mit Lara Croft. Eine Erfolgsstory. Actualised on 08.06.99, E-Mail from Julia Sasse, Presse and PR, Fa. Eidos. [julia.sasse@eidos.de](mailto:julia.sasse@eidos.de), (last visited 2004-08-04).
- fluid – arena of identities**, <http://www.tO.or.at/~fuchs-eckermann/fluid/>, (last visited 2004-08-04).
- Jürgen Fritz**, 1995. Modelle und Hypothesen zur Faszinationskraft von Computerspielen, in: Jürgen Fritz, (Ed.), Warum Computerspiele faszinieren. Annäherungen an Nutzung und Wirkung von Bildschirmspielen. Weinheim, München.
- Donna Haraway**, »A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century«, <http://www.stanford.edu/dept/HPS/Haraway/CyborgManifesto.html>, (last visited 2004-08-23).
- hardware medien kunst verein**, Tilman Baumgärtel (Ed.), 2003. Katalog zur Ausstellung „games. computerspiele von künstlerInnen“ 11.10. – 30.11.03, Reserveteillager auf Phoenix West, Dortmund.
- Ute Jeß-Desaeever**, 1999. Die digitale Zukunft der Geschlechter. Oldenburg.
- Helga Jungwirth**, Computerspiele und Geschlechtsrollenbilder. Über Video- und Computerspiel zu einem neuen Selbstverständnis, <http://www.bpb.de/snp/referate/jungw2.htm>, (last visited 2004-08-04).
- LambdaMOO**, <http://www.lambdamoo.info/> (last visited 2004-08-04).
- Chantal Louis**, 1998. Lara und die 1000 Helden, in: EMMA-Frauenverlags GmbH (Ed.), Emma Nr. 1. Köln.
- Britta Neitzel**, 2001. Die Frage nach Gott, in: Ästhetik und Kommunikation e.V., Knut Hieckethier, Britta Neitzel (Eds.): Computerspiele. Heft 115, Berlin.

- Rolf Nohr**, Les Liaisons Dangereuses: Computerspiel und Film, [http://www.game-face.de/article.php3?id\\_article=11](http://www.game-face.de/article.php3?id_article=11), (last visited 2004-08-04).
- Christel Schachtner**, 1993. Geistmaschine. Faszination und Provokation am Computer, Frankfurt/ M.
- Friedemann Schindler**, Jens Wiemken, 1999. Doom is invading my dreams. Warum ein Gewaltspiel Kultstatus erlangte. in: Jürgen Fritz, Wolfgang Fehr, (Ed.), Handbuch Medien: Computerspiele. Theorie, Forschung, Praxis. Bundeszentrale für politische Bildung, Bonn. Referat Medienpädagogik und neue Medien. Bühl.
- Stephan Slabihoud**, Der weite Weg bis zur technischen Revolution, <http://www.8bit-museum.de/>, (last visited 2004-08-04).
- Sherry Turkle**, 1995. Life on the Screen. Identity in the Age of the Internet. New York.
- VUD**, Verband der Unterhaltungssoftware Deutschland e.V., Jahrbuch 2002, <http://www.vud.de/infoservice/index.htm>, (last visited 2004-03-11).

- Steffen P. Walz**, Paradigame: Computerspiele als wissenschaftliches Paradigma. Ein Kommentar zur LEVEL UP-Konferenz, [http://www.game-face.de/article.php3?id\\_article=16](http://www.game-face.de/article.php3?id_article=16), (last visited 2004-08-04).
- Jürgen Wegge**, Uwe Kleinbeck, Almut Quäck, 1995. Motive der Bildschirmspieler. Die Suche nach virtueller macht, künstlicher Harmonie und schnellen Erfolgen? In: Jürgen Fritz, (Ed.), Warum Computerspiele faszinieren. Weinheim, München.
- Joseph Weizenbaum**, Klaus Haefner, 1992. Sind Computer die besseren Menschen? Ein Streitgespräch. München.
- WittRaider**: Lara bei Brigitte, [http://ggw.biz-worms.de/wr/archive/artikel\\_lara\\_brigitte.htm](http://ggw.biz-worms.de/wr/archive/artikel_lara_brigitte.htm), (last visited 2000-09-19).

### Images

- fig 01**: Archive of the author.
- fig 02**: <http://www.tO.or.at/~fuchs-eckermann/fluid/>, (last visited 2004-08-04).
- fig 03**: <http://www.tO.or.at/~fuchs-eckermann/fluid/>, (last visited 2004-08-04).
- fig 04**: Archive of the author.