Chapter 16

Serious Games and Social Change
Why They (Should) Work

Christoph Klimmt

Of the content areas discussed in this volume, social change presents a special challenge for theorists and for game designers. Social change, in contrast to learning and development, typically refers to much broader, multicomponent phenomena closely connected to peoples' daily lives, often in conjunction with others in the family and community. Health-related behaviors, for instance, are targets of entertainment education media striving for social change (Singhal, Cody, Rogers, & Sabido, 2004), and cannot be limited simply to providing new knowledge about a certain disease. Rather, several communication goals have to be achieved if social change is likely to occur, including changes in beliefs and attitudes, learning how to perform selected behaviors, (e.g., how to become an organ donor or how to use a condom), and instilling motivation to change among members in the targeted audience. Ideally, a successful serious game may be able to produce significant changes in all of these outcomes, or at least modest changes that are sustained over time.

In this chapter, I argue that serious games have an important place in communication campaigns for social change. I will do so by constructing a conceptual model of serious game outcomes that combines a variety of well-established psychological mechanisms. After discussing these mechanisms, I will outline empirical research perspectives and, more importantly, reflect on the nature of playful action that provides conceptual reasons underlying possible outcomes.

Conceptualizing Social Change

The theoretical difficulty associated with the notion of social change is its connection to multiple levels of social analyses (e.g., Sherry, 2002). Ultimately, social change can (and needs to) be construed at the level of society (Papa et al., 2000). If a certain social change is to occur in a relevant, notable, and measurable way, then a substantial portion of a society's members needs to adjust their behavior. For instance, a society's position towards domestic violence will only be regarded as having changed if a significant number of men have adjusted their behavior in certain ways sustained over time. In this sense, social change is societal change, and it is the ultimate goal of any communication campaign. If successful, a critical mass of behavioral alteration is achieved, producing future chain-reactions and ultimately leading to self-stabilizing processes (Papa et al., 2000). For instance, shifts in public opinion about certain behaviors (say, using tobacco) may lead to altered legislation that stabilizes the desired change. It guides public behavior, institutionalizes the endorsement of the desired behaviors, and thus expands the change process beyond the (small) social movement that had initialized the shift in public opinion originally.

In addition to the societal level, social change can be construed at the level of organizations and groups, both formal or informal, large or small. Social life is organized in very different ways, including tribal structures, core families, schools, and companies. At this level of analysis, decision-making bodies relevant for a campaign are simple to identify, which opens access points for communication that address a change of behavior within the social structure. For example, heads of tribes, chief executive officers, or school directors are important partners (or targets) of campaigns for social change at the mesolevel. On the other hand, mesolevel structures typically display strong internal coherence and long-grown social bonds among members, which can result in significant capacities to resist or counteract change messages concerning traditional behaviors now seen as threatened. A community of immigrants that adheres to a traditional social behavior, such as arranged marriages of young girls, for instance, would resist communication activities that threaten traditions if the campaign strategy is not carefully designed and executed. Nevertheless, since mesolevel social structures are important reference points for individuals and their behavior (Tajfel & Turner, 1986), communication for social change cannot ignore this dimension, but rather, has to face the challenges associated with it.

Finally, social change must be explicated at the level of individual cognition and behavior. Society-level and group-level effects of communication campaigns depend on the ability to reach and influence a sufficiently large number of individuals, including opinion leaders, innovators, or influencers (Keller & Berry, 2003; Rogers, 2003; Singhal et al., 2004). Because social change involves complex processes of knowledge acquisition, attitude change, follow-up interpersonal communication, and collective action (Papa et al., 2000; Singhal et al., 2004), a potentially large number of cognitive/attitudinal, motivational/affective, and behavioral media effects needs to be assumed as part of the communication process for social change, which can complicate serious games research.

These conceptualizations of social change have guided previous projects on entertainment education campaigns that utilize conventional mass media, such as radio or television (Singhal & Rogers, 1999, 2002; Singhal et al., 2004). Entertainment education has been developed as a strategy to render change-related messages so appealing that target audiences reluctant to select serious, instructional media would find exposure to the messages gratifying (Singhal...
& Rogers, 1999). The model of serious games effects outlined later in this chapter looks at serious games as an interactive delivery medium for entertainment education (see also Wang & Singhal, this volume, chapter 17). This perspective allows the direct application of established theory to the uses and consequences of playing serious games. By reviewing the specific properties of digital games, especially interactivity (Klimmt & Vorderer, 2007, Vorderer, 2000), existing assumptions on entertainment education effects in the domain of social change can be adopted or modified.

**Important Properties of Serious Games**

A model of the possible effects of serious games on social change needs to be based on the unique properties of digital games that could be relevant for such effects. Five characteristics of digital games will be considered: modality, interactivity, narrative, option for social (multiplayer) use, and the specific frame of gaming experiences (cf. Ritterfeld & Weber, 2006).

**Modality**

The history of digital games is dominated by continuous improvement of game technology, which has primarily focused on better graphics and better sound. With the availability of more powerful computing hardware, the richness of audiovisual representation in digital games has increased dramatically over the years. Contemporary shooter games share the basic principles of the early Pac Man games, but have proceeded from the formerly abstract and symbolic to a very natural, concrete, and lifelike representation of the game world (Tambo, 2006). More recently, haptic modality has been included in the technological improvements of digital games. Force feedback input devices stimulate players’ hands and transmit, for instance, simulated vibrations of moving vehicles to the driver (player). More complex motion-oriented devices, such as the controller of Nintendo’s Wii, allow natural movements to create input to the game. For example, a tennis game on the Wii is played by moving the controller similar to the way one would move a tennis racket in a real tennis match. The latest technological advances include speech recognition, which enables new modes of input and, among other advantages, “natural” conversations with digital characters in the game world (Johnson et al., 2004). In sum, contemporary digital games are high-fidelity simulation environments that can involve various senses and create very convincing, immersive experiences (Steuer, 1992; Wirth et al., 2007).

While commercial games companies strive for fidelity or lifelike multimodal representation to increase the games’ entertainment value (Tambo, 2006), the technological capabilities of modern digital game systems (engines) also allow for creative, multiperspective representation of complex, abstract spaces (Wolf, 1995), issues, and processes, which are potentially useful in terms of didactics (Amory, Naicker, Vincent, & Adams, 1999; Ritterfeld & Weber, 2006). Thus, the modality property of modern digital game technology is relevant to both motivational and cognitive issues in the modeling of serious games’ impact on social change. Furthermore, it is a quality that distinguishes digital games from the conventional mass media that have been used in prior entertainment education projects (Singhal et al., 2004).

**Interactivity**

Interactivity has a long history in the communication literature, especially in the literature on computer-mediated communication and Internet use (e.g., Kiousis, 2002) and virtual reality media (e.g., Steuer, 1992). The implications of interactivity for new media entertainment, especially digital games, have also been discussed (e.g., Grolal, 2000; Klimmt, Hartmann, & Prey, 2007; Vorderer, 2000). In the context of digital games, interactivity is defined as a game property that allows users to influence the quality and course of events occurring in the game world (see Klimmt & Vorderer, 2007). Depending on the game genre, interface technology, and player skill, interactive game use can manifest in very different ways, including simulated motion within three-dimensional virtual spaces, manipulation of complex ecological or economic systems, communication with virtual characters, and adjustment of visual perspectives onto the game world’s processes and events.

A very important commonality of all the conceivable manifestations of digital game interactivity is the increased self-reference they create for players. Interactive use creates a game experience in which players perceive themselves as the center of events, as the driver of change and progress. Game events are closely connected to player action through interactivity. Whatever happens in the game world becomes relevant to the player’s self due to interactivity: The player has caused the event through her or his input (Klimmt & Hartmann, 2006)—perhaps based on plans and intentions, perhaps without intention or in spite of contradicting intentions. The player is immediately affected by the event, as it is relevant to her or his own situation within the game world, namely the individual’s performance and further options to proceed and act. In contrast, when watching a noninteractive movie, events on the screen are neither caused by viewers nor are viewers directly affected by them. Rather, the movie characters are agents of and affected by the events. Movie characters may be highly relevant to viewers (e.g., Klimmt, Hartmann, & Schramm, 2006), which also renders movie events caused by or relevant to the characters important for viewers. But interactive digital game use clearly creates a more direct, self-related connection between player and game world events. This self-connection holds important implications for game experience (Vorderer, 2000) and cognitive processing of game content, such as mental model construction.
Narrative

Early digital games did not include much of a notable narrative. If anything, they incorporated simple narrative structures such as good triumphs over evil. Modern games contain much more complex narrative structures, and specific techniques to integrate player interactivity with a coherent narrative framework have emerged (Klimmt, 2003; Kücklich, 2003; Lee, Park, & Jin, 2006). In contemporary story-driven games, players explore a rich world with hundreds of smaller stories connected to one main plot—a structure similar to that of a modern novel. Careful balance of (1) open elements that players can explore interactively and (2) predefined closed elements that secure the coherence and logical structure of the story, allows one to integrate voluminous and very appealing narrative frameworks in contemporary games. Just like multimodality and interactivity, the capacity of digital games to tell reasonable, comprehensive, and interesting stories is, in terms of serious games effects theory, relevant both to issues of playing motivation and to processing of game content.

Social (Multiplayer) Use

With the technological improvements of computer networks (LAN) and broadband Internet connections, more and more digital games include options to bring several or even a very large number of players together. Small-scale multiplayer sessions are run on local networks ("LAN-party," cf. Jane & Mattens, 2005) or by an Internet server to which individual players hook up (e.g., Griffiths, Davies, & Chippell, 2003). Large-scale social game play is organized within virtual game worlds that exist permanently online (massively multiplayer online role-playing games (MMOs) (cf. Chan & Vorderer, 2006; Yee, 2006). Playing together alters the experiential quality of digital games substantially and opens new possibilities for entertainment (Klimmt & Hartmann, 2008). In terms of serious games, multiplayer gaming is a feature that should be considered in terms of both cognitive and motivational dimensions of game impact. Specifically, online interaction among players and possibilities to create or cocreate parts of a game world together hold implications for the appeal and the impact power of serious game applications.

Specific Frame of Play Situations

The final characteristic of digital games introduced here as potentially relevant for serious games is the situation of playing a game that is attached to digital game use. At first glance, the observation that digital game players perceive the playing situation as playing a game is of course trivial. However, the psychology of play assigns very important consequences to the condition that a situation is framed as playing (Ohler & Nieding, 2006). Play as a mode of human action serves as a bridge between reality and fantasy (Surton-Smith, 1997). Playful action is focused on the execution of activity and the immediate results of the activity. Consequences of the results that would connect a given activity to other subsequent activities are, in contrast, irrelevant for playful action (Oetters, 1999). For instance, the action category work is characterized by the fact that its outcomes (e.g., a product manufactured), are always related to further consequences (e.g., the product can be sold), and the individual receives payment for the result, which are already anticipated during the execution of action (i.e., when manufacturing the product), and thus affect the action (e.g., in terms of motivation to work accurately and fast). Playful action, however, is intentionally limited to a situational frame that blocks out further consequences of action results. Play stands for itself; it is executed in its own right, and players want their play to differ from nonplayful, consequential kinds of action. The special frame that is given to playful action comes along with a variety of interesting implications. One of them is reduction of complexity, because players do not have to keep consequences of action results in mind. Another is a strict enforcement of a limited set of rules, which can only function within a specific situation frame. A third important property is the accessibility of imagined contexts and activities. By blocking out connections to other events and actions (consequences), fantasy can occupy players' minds and facilitate role-play in contexts that would not be feasible, appropriate, or desirable in nonplayful action.

For instance, children can imagine they are fighter pilots or princesses, and they can act within these role descriptions if they create the situational frame of playing. Because they are playing, their behaviors as pilots or princesses do not affect their life after play is over—nobody will, for instance, question their mental health because they talk about launching missiles or marrying a prince. Therefore, the situation frame of playing a game allows an individual to enter realms of fantasy and imagination—characteristic that applies to any mode of playing, including playing digital games. Consequently, playing digital games is, from the perspective of players, a specific mode of action that allows and legitimizes "as-if" experiences, and the trying out of actions and simulated confrontations with unknown, impossible, even immoral or socially disagreeable events and behaviors. This experimental, obligation-free nature of game play has important implications for serious game effects on social change.

Serious Games and Social Change: A Model of Potential Effect Mechanisms

Based on the description of key properties of contemporary digital games that are or could be included in serious games as well, this section outlines a model of how serious games could facilitate social change on an individual level. The model considers only those effects that may come out of individual players' game use or the social-psychological consequences of individual exposure to a
serious game. Meso- and macro-level perspectives on social change are not integrated into this particular model. The reason for this conceptual focus is that playing digital games is an activity that creates highly individualized, potentially unique experiences, in each user. Collective gameplay is possible and popular, but it is very hard to derive implications of MMO use on meso-level social change. Rather, it is argued that individual exposure to and involvement with serious games (including games with online and massively multiplayer functionality) will result in specific individual processes that affect individual players in ways beneficial for the occurrence of behavioral change, which in turn represents the base for large-scale social change, as discussed above.

The structure of the model is a matrix of three stages of game exposure (stage of activity/medium selection, stage of exposure itself, stage of post-play thinking and communication behavior) and three effect categories relevant to serious games (motivation to elaborate on content of desired social/behavioral change, knowledge acquisition/comprehension, and attitude change/persuasion). Table 16.1 visualizes this matrix and presents the proposed mechanisms through which serious games are argued to be potential facilitators of social change. Fifteen mechanisms are introduced that can but do not necessarily have to be active in serious games' effects on social change. Conceptually, the mechanisms are founded on previous work in entertainment education, entertainment research, cognitive and social psychology. In the following description, mechanisms are organized through their effect categories: those related to (1) exposure and elaboration motivation; (2) comprehension and knowledge acquisition; and (3) persuasion and attitude change.

Mechanisms Related to Exposure and Elaboration Motivation

Players' readiness to select media messages that include change-related content and their motivation to process and elaborate on that content are processes relevant to serious games' effects. Motivation has been identified as a key facilitator of successful information processing both in learning (e.g., Renninger, Hidi, & Krapp, 1993) and in persuasion (e.g., Petty & Wegener, 1999). It is proposed that serious games gain capabilities to induce social/behavioral change due to their ability to trigger relevant motivational processes, especially the motivation to select change-related messages, to process their content during exposure, and to elaborate on them beyond the exposure situation.

Entertainment Capacity of Serious Games Increases Likelihood of Selection of Change-Related Message (Mechanism 1)

In traditional entertainment education, the combination of entertainment and educational content serves communicators' goal to facilitate any contact of target audiences with the change-related message. While this strategy works very well in countries with media systems that are not fully developed, there
is much competing communication available to audiences in media-saturated countries (Sherry, 2002). Serious games that facilitate enjoyment (similar to popular entertainment games) can nevertheless claim the same motivational advantage that entertainment education programming claims in comparison to serious instructional media materials. Moreover, using serious games as a vehicle for change-related messages adapts a communication strategy for social change to specific target audiences’ media preferences. Especially male adolescents, but also older males, can be reached via sophisticated digital games very well today, perhaps even better than via television. Female audiences can be addressed through digital games as well, if certain conditions are met (Cassell & Jenkins, 1998; Klimmt & Hartmann, 2006; Nutt & Raitlon, 2003). In this sense, the integration of serious games into a communication campaign can include the likelihood of target audiences selecting change-related messages (i.e., they are more likely to play the game than to work through a change-related multimedia course), especially among game-affine target audiences such as adolescent males (e.g., Jansz, 2005).

**Play Situation Reduces Resistance to Being Confronted With Change-Related Message (Mechanism 2)**

Media choice is an extremely complex process with numerous variables (LaRose & Eastin, 2004), but it can also be construed in terms of avoidance motivation (Fahrbocking, 2005). In many cases, messages on social change create cognitive conflict in target audiences: Behaviors to be changed are common and well-accepted, maybe even rooted in tradition and cultural norms. Messages that suggest a change of such well-known and widely practiced behavior can thus appear as a threat to recipients’ self-image, as uncomfortable, and even embarrassing (e.g., Papa et al., 2000). Serious games can, because they are framed as play (Sutton-Smith, 1997), potentially override the refusal of target audiences to receive such uncomfortable messages. By creating a sense of fantasy and imagination, they may let confrontation with the change-related message appear less binding, serious, and consequential.

Green (2006) argues that narratives can facilitate mental simulation of unknown, difficult, or frightening events. The same could be argued for digital games. If a serious message concerning the problems associated with a well-accepted behavior causes cognitive conflict in target audiences, the as-if quality of a game may increase chances that people would agree to receive that message, because they perceive the message as fictional and thus less striking in terms of real-life contexts and self-image.

**Enjoyment Generates Attention and Interest During Exposure (Mechanism 4)**

Motivational variables are also important to the construal of serious game effects during exposure. For instance, motivated students will invest more energy and thinking in solving the assigned tasks, which leads to better learning outcomes (e.g., Lepper & Malone, 1987). Cognitive models of knowledge acquisition rely (sometimes implicitly) on learners’ attention. Attention is modeled as a perceptual gateway to information processing (e.g., Lang, 2000); successful knowledge gain can only occur if attention is directed towards a learning content. Entertaining media content is argued to attract users’ controlled attention (Schneider & Shiffman, 1977), that is, enjoyable media motivate users to actively allocate their attentional resources to process their content. Users benefit from this attention allocation, because they can exploit the full entertainment capacity of the medium (for instance, they do not miss a joke or miss comprehending the complete story of a crime show). Controlled attention allocation thus serves audiences’ desire to obtain as much (enjoyable) information as possible from the media product. For serious games, the ability of the entertainment elements to attract attentional resources to their processing is potentially helpful for knowledge transfer efficiency, because chances that the change-related messages within the game will be processed and elaborated are higher if users are devoting attention to the game (cf. Ritterfeld, Klimmt, Vorderer, & Steinholzer, 2005).

**Sense of Community in Multiplayer Gaming Legitimizes Interest in Controversial Change-Related Message (Mechanism 5)**

Various frameworks from social psychology, including social identity theory (Tajfel & Turner, 1986) and self-determination theory (Deci & Ryan, 2000) argue for people’s strong tendency toward social cohesion. Individuals prefer to engage in behaviors that are common within their social reference groups and tend to avoid behaviors that the reference group finds disagreeable. That means that perceptions of being the only member of one’s social reference group (e.g., tribe, clan, community, or neighborhood) who thinks about or simply receives a change-related message will undermine people’s willingness to process that message. Multiplayer serious gaming may overcome this barrier: If target users recognize that the (large) community of other players are also involved in the serious game, the perception of deviance from social norms through exposure to the change-related message in the game could be countered, which would result in greater motivation to deal with the game and its message(s). This is especially true if the gaming community actively communicates about the game’s content and provides motivational and emotional support to individual players (e.g., Bracken & Lombard, 2004).

**Enjoyment Promotes Involvement and Motivation for Repeated Exposure (Mechanism 11)**

One of the most important properties of media entertainment is its capability to motivate audiences to return to them. Many people are willing to consume
the very same piece of entertainment several times, because it was (is) so enjoyable (Tannenbaum, 1985). One enjoyable episode of a television series creates an appetite for subsequent episodes. One level of an entertaining digital game motivates players to play the game again tomorrow to see what will happen in the next level. Involvement with an entertaining media product thus creates motivation for continued and repeated exposure (Wirth, 2006), which is an important element in cognitive processing, especially in learning and knowledge acquisition from media messages (e.g., Ritterfeld & Weber, 2006; Vorderer, Böcking, Klimmt, & Ritterfeld, 2006). Enjoyment-based involvement with a serious game should thus increase motivation for repeated game play, which would cause redundant processing of the game's change-related information—with positive implications for comprehension and retention.

**Enjoyment Promotes Involvement and Motivation to Elaborate on Game Content between Exposure Situations (Mechanism 12)**

In times of nonexposure, involved digital game players frequently reflect on what they did during the past sessions of game play and plan ahead what to do (and how to do it) in future gaming situations. Unresolved challenges and puzzles as well as ongoing events (e.g., large-scale events in multiplayer worlds) are especially likely to trigger cognitions about the game while one is not playing it. Parasocial relationship theory argues that television viewers who are strongly involved with a media persona will think about the persona frequently in everyday life (e.g., Klimmt et al., 2006), with important consequences for the parasocial relationship itself and the viewer's further selective exposure behavior. Similar cognitive processes are likely to occur in players heavily involved in a serious game (or with game characters). Such elaboration processes can also promote the impact of the change-related message of a serious game (to the extent the message is effectively intertwined with the motivating/appalling elements of the game; e.g., opponents who symbolize a behavior to be changed).

**Enjoyment Promotes Involvement and Motivation to Talk about Game Content (Mechanism 13)**

Studies on noninteractive entertainment education suggest that stimulating interaction among members of the target audience and promoting communication about the issues of the campaign are critical to success (Papa et al., 2000; Sood, 2002). Highly entertaining serious games could therefore contribute to social change by motivating players to talk about their game experiences with other players (and with nonplayers), for instance, to manage their social reputation as a game expert within their peer group or to seek advice how to proceed in the game successfully. Communication that addresses game issues can be facilitated online, offline, and, in the case of multiplayer gaming, even within the game environment (Klimmt & Hartmann, 2008). Consequently, the communication-inspiring capacity of high-involvement games could also support serious games' effectiveness in terms of social change.

**Mechanisms Related to Comprehension and Knowledge Acquisition**

So far, properties ascribed to serious games show that they can affect players' motivational system in ways beneficial for the facilitation of social change. The second major class of effect processes is comprehension of the change-related message and the acquisition of knowledge. For instance, a change of social behavior in the domain of health must necessarily be grounded on improved knowledge of the target audience on the (negative undesirable) consequences of the behavior currently practiced, and about the advantages of the behavioral alternative introduced by a communication campaign (e.g., Sood, 2002). This section describes the mechanisms of serious games' effects that support players' message comprehension and knowledge acquisition.

**Multimodality Increases Likelihood of Knowledge Acquisition (Mechanism 6)**

The immersive capacity of modern digital game technology is mostly exploited for entertainment purposes (Tamborini & Skalaski, 2006). However, a lot of research has also shown the importance of multimodal content presentation for the effectiveness of computer-based instruction. Moreno and Mayer (2002), for instance, explain the effectiveness of multimodal content presentation as a better fit of the instructional communication form to learners' working memory structure. Other researchers argue that multimodal presentation of content can enhance learners' understanding of complex and abstract phenomena (Jones, Minogue, Trettter, Negishi, & Taylor, 2006). While there is a substantial risk of cognitive overload, distraction, and other effects dysfunctional to comprehension and knowledge acquisition, multimodality is proposed as a potentially powerful factor in serious games' effects on social change, since the behavior to be changed, its causes and consequences, as well as its broader social and historical context can be presented to players in a very illustrative way (see also Ritterfeld, Weber, Fernandes & Vorderer, 2004).

**Interactivity Increases Likelihood of Connection of Game Content to the Player's Self (Mechanism 7)**

In contrast to television-based instructional material, computer-based instruction is mostly interactive. It is hoped that interactivity will affect a variety of processes in media-based learning in positive ways. For instance, Kirschner, Bostow, and Dedrick (1995) report that adding a simple element of interactivity to a video-disc instruction on AIDS (e.g., a fill-in-a-response task on screen after each chapter of the video course) improved knowledge acquisition. Conceptually, interactivity of learning environments is a potential resolution to learners' cognitive overload (Kirschner, 2002) and to individual differences in
learning capacity and speed, because through interactive navigation through the instructional material, learners (may be able to) adjust the complexity and speed of the tasks and information presented to them to their personal capacities and preferences (Ritterfeld & Weber, 2006; see also Blumberg & Imades, this volume, chapter 9; Goo, this volume, chapter 5; Lieberman, this volume, chapter 8; Shute, Ventura, Bauer, & Zapata-Rivera, this volume, chapter 18).

In the context of digital games, interactivity may be an important facilitator for game effects on social change because it increases the connection between players' self and the content of the game. Because players can act within the virtual game world and see the results of their input, their role is completely different from the role of a television viewer, for instance (Klimmt & Hartmann, 2006). Television viewers observe other people, their actions, and the events happening to them. Game players do the action by themselves and witness what is happening to themselves (Vorderer, 2000). Whatever happens in the game thus automatically holds a close, personal, and individual connection to the player—either because it is a result of player action or it is an event that is or could be relevant to the player; for example, in terms of success, failure, discovery, or other enjoyment-related issues.

The increased self-relevance of digital game play would also apply to the change-related message built into a serious game. Interactive confrontation with a social behavior to be changed, for instance, shapes the learning experience differently from the conventional "Behavior X holds negative consequences Y for character Z and should thus be replaced by behavior A" (the kind of learning experience a narrative entertainment education broadcast would create). Rather, the interactive learning experience would be "If I perform behavior X, this holds negative consequences Z for me (or my player character at least), but if I perform behavior A, I (or my player character) am doing better." Such increase of self-connection may be important to motivational issues, for example, increased personal relevance of the change-related message, but also to issues of comprehension and knowledge transfer, because myself-focused learning experiences are potentially useful to facilitate procedural learning through simulation ("I am performing a behavior" instead of "Character X performing a behavior" or "Performing a behavior in general"). As social change typically refers to behavioral change, such procedural and self-directed ways of looking at the content of media-based instruction (including serious games) may thus be especially effective in this domain of serious game application.

Narrative Creates Sense-Making Framework that Facilitates Comprehension (Mechanism 8)

Conventional entertainment education approaches rely on narratives into which change-related messages are integrated (Singhal et al., 2004). Narratives are also widely used in traditional education (e.g., McEwan & Egan, 1995). Contemporary digital games can contain substantial narrative (see above), so interactive stories within serious games could be used for instructional purposes as well. One specific function that narratives serve is sense-making; that is, the integration of individual real-world views and knowledge into the comprehension of mediated information. By making personal sense out of a story, audience members increase their comprehension and memory performance and can identify the personal relevance of the message more easily (e.g., Brendlinger, Dervin, & Foreman-Wernet, 1999). Serious games tell stories interactively (see above), which creates a unique capability to allow sense-making processing: Because interactivity evokes stronger self-connections in players, a narrative that unfolds through player interaction should be most comprehensive to individual players.

Multiuser Play Facilitates In-Game Communication that Supports Comprehension (Mechanism 9)

The importance of communication among members of the target audience for the impact of entertainment education has already been mentioned (see explication of mechanism 13). Serious games that offer online play can create spaces for such connected communication within the game context and thus very close to the actual change-related message. Talking about the message does not require a change of communication channels from receiving and processing the message, as it is the case with television or radio consumption, which does not enable interpersonal communication among (larger groups of) audience members. Such interplayer communication can serve emotional motivational purposes (Pena & Hancock, 2006) and also support comprehension and knowledge acquisition, because talking to other players may help to resolve individual problems with understanding parts of the message or simply lead to repeated confrontation with the change-related message. Interaction with a larger player community and support received from other players when playing online (Klimmt & Hartmann, 2008) is a potential facilitator of cognitive effects for serious games (given that the games provide the option to play online). Of course, such interplayer communication may also lead to resistance to the change-related message (Singhal & Rogers, 2002). However, as communication campaigners can participate in online player interaction, their moderation and input may be able to override such barriers potentially associated with communication among players (see the previous section on social change).

Interactivity and Multimodality Increase Likelihood of Knowledge Application (Mechanism 14)

The process of acquiring knowledge is not limited to when the learner is exposed to the target information. The postexposure stage is also relevant to knowledge processes, because a sufficient degree of cognitive integration of the
Effect Mechanisms Related to Persuasion and Attitude Change

To the extent that social change is bound to individual behavioral change such as health behavior or domestic violence, changing attitudes is a priority for many communication campaigns (e.g., Slater & Rouner, 2002). The relevance for persuasion within communication for social change is justified by various theories of human behavior that assign a key role in the genesis of behavior to attitudes and values. For instance, the theory of reasoned action (Ajzen, 1991) heavily relies on attitudinal processes as determinants of behavior. Another example is moral disengagement theory (Bandura, 2002) that proposes moral reasoning as an important precursor to social behavior, especially in situations of conflict. Changing people's attitudes is thus an important access point for communication campaigns to change people's actual behavior. Therefore, issues of persuasion are most important to conventional entertainment education for social change and also for serious games designed for this purpose.

Except for the cognitive effects of violent digital games, there is not much empirical evidence for persuasive digital game effects. One cross-sectional survey found weak correlations between digital game play and aggressive political opinions (Eyal, Metzger, Lingweiler, Mahood, & Yao, 2006); a pilot survey in Germany (Klimmt, 2006) revealed more substantial associations between use of war, police, and fighting games and right-wing conservative political attitudes. A set of theoretical mechanisms that could underlie such persuasive game effects is outlined in this section.
media can render specific values more important to audience members than these values were before exposure. This happens via the temporal change of the value structure (e.g., assigning more importance to the value of gender equality), which may allow specific attitudes to be shaped accordingly (e.g., more positive attitude toward sending girls to school; cf. Slater et al., 2006).

Similarly, transportation theory (Green, 2006; Green & Brock, 2000) argues for narrative’s persuasive power, as fictional media content is processed less critically (e.g., in terms of questioning credibility and truthfulness of the information), while it is still perceived as being a relevant source of information for real-world beliefs and attitudes. Such persuasive effects could also be assumed for serious games, which display both fictional and virtual worlds (see the above discussion on the situation definition as play). While modifications to the existing accounts for narrative persuasion may be required to address the peculiarities of interactive narrative in digital games, exposure to a serious game is proposed to result in attitude change similar to conventional entertainment education and fictional narrative which has been partly demonstrated empirically (see Brock, Strange, & Green, 2002; Shrum, 2004).

**Attitude Change May Result From Misattribution of Attitude to Real-Life Source (Mechanism 15)**

Finally, advantages in persuasion may be found in serious games for social change after actual exposure. Mares (1996) has argued that people tend to confuse sources of information (especially fact and fiction sources), which opens a pathway for fictional information to affect real-world beliefs and thoughts. Such attitudinal effects are proposed for serious games as well, especially because their life-like appearance (interactivity and multimodality, see above) renders game experiences increasingly similar to real-world experience, e.g., in terms of spatial environments, and, in multiplayer settings, also in terms of social interaction (see Yee, 2006). For instance, confrontation with a change related message in a highly interactive and multimodal digital game might display a social behavior in a context that is extremely similar to a context that a player is confronted with weeks later in real life. Attitudes that have been emphasized by the game may thus be accessed in the real situation without the complete reconstruction of the acquisition of that attitude as coming out of a virtual fictional game world. Such source confusions could thus complete the narrative persuasion process in the postexposure stage of confrontation with a serious game (see also Green, 2006).

**Summary**

The model outlined in this chapter relies on specific properties of digital games that can be adopted for serious games addressing social change. These properties have been connected to player motivations, cognitions, and behaviors that are related to the game experience or to the change-related content within the game in order to derive 15 mechanisms which all can contribute to a serious game’s impact on social/behavioral change. The mechanisms from which serious game impact on social change can or could benefit refer to: (1) preexposure (selective exposure and cognitive stance); (2) exposure and information processing; and (3) post exposure (elaboration and communication) and address issues of (a) player motivation; (b) comprehension/knowledge acquisition; and (c) attitude change/persuasion. Much of this 3 x 3 cell argumentation matrix is identical or similar to what is discussed about conventional noninteractive entertainment education (Singhal et al., 2004). Substantial additions and conceptual variations have been proposed, however, to deal with the peculiarities of the digital game medium (Vorderer & Bryant, 2006). The main assumption of the model is, however, that many properties of contemporary digital games that are currently exploited for entertainment purposes only (e.g., stunning graphics and sound, rich narrative, discovery experiences, social interaction among players) can be very helpful for serious games for social change as well—if the integration of the change related message into the enjoyable elements of the game does not undermine the entertaining capacity of the game.

**Conclusion**

Up to this point, the model of serious games’ effects for social change outlined in this chapter has been extremely enthusiastic about the possibilities of serious games. Indeed, the model outlines many justifiable arguments for potential effects of serious games on individual variables relevant to social/behavioral change. But this should not be mistaken for the assumption that one, some, or all of these mechanisms are operating in any given serious game and that, consequently, serious games are a guaranteed success for communication campaigns. Rather, the working model is proposed to stimulate more detailed theory building for which 15 directions have been described, more empirical research, and experimental serious game development. Much more detailed knowledge is required to identify those mechanisms that are most promising in terms of effect potential and that are practically manageable at the same time. For instance, a multiplayer game is extremely expensive, both in programming and daily running. The benefits for game impact coming along with online game play would have to be calculated against these costs. Another important economic-technical issue is the equipment of the target population. In media saturated countries (Sherry, 2002), high end gaming technology (on which many of the proposed effect mechanisms rely) is certainly a good choice for communication campaigns; the opposite holds true for audiences in countries with high poverty. Finally, and most importantly, whether any of the proposed mechanisms can be exploited by a serious game for social change is a question of design and implementation. Suboptimal design not only can fail to exploit a given effect mechanism to evoke social change, it can
also have contraproducive consequences; for example, an interactive narrative that leaves space for undesired message interpretations such as the Archie Bunker effect (Singhal & Rogers, 2002).

One issue for which the model does not offer a suitable, generalizable strategy is how to build a change related message into a serious game. In conventional entertainment education, characters, and plots are the general tools used for this purpose (Singhal et al., 2004), and to a certain extent, these general strategies can also be integrated into serious game design (see the model's mechanisms 3, 8, 10, 11, 12, 13, and 15).

However, a critical question to serious games is how to synthesize the change related message(s) with the interactivity of the medium. Predefined narrative structures and interactivity are not always compatible (Lee et al., 2006; Murray, 1997). While there are certain techniques to blend narrative and game play available to game designers, it is still most challenging and important to think about how change related messages can be installed in digital games in ways that resonate with interactivity, multimodality, and online game play. Theoretical arguments that games with such built-in messages should work have been compiled in this paper; however, without practical implementation and game design, all theory is useless for the facilitation of social change. Therefore, research on serious games for social change needs collaboration between scholars from communication and computer science in order to develop real prototype (pilot, testing) games to explore the theorized capabilities of serious games to facilitate social change. Because in theory, digital games are very powerful facilitators of social change—this paper attempts to motivate scholars to take on the research challenges necessary to add serious games to the repertoire of modern entertainment education.

References


Jugendlichen (Video game play and political conservatism among adolescents). Presentation at the Workshop Konstruktion von Politik und Gesellschaft in Computergesellschaft, Munich, Germany.


