

Information as capability for action and capital in synthetic worlds

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Abstract

Introduction. The purpose of this paper is to elaborate the specific qualities of information in the context of synthetic worlds, particularly, information practices accomplished in playing online games. The main attention was directed towards two main features of information: information as capability for action, and as capital, implying the potential of using power over others.

Method. A conceptual analysis of about 30 key studies on synthetic worlds and online gaming was conducted, to examine how researchers have characterized information as capability and capital in the context of virtual worlds.

Analysis. The identification and comparison of the similarities and differences in the characterizations of information as capability and capital as constituents of information practices.

Results. Information-based capability for action is the extent to which the actors can identify, acquire and use ecological and emphatic information available in the virtual environment. Importantly, information of both types can afford action in a virtual environment, although failure to identify relevant ecological or emphatic information is likely to render the task performance more difficult or interrupt it. In virtual contexts, information appears as both capital and experience goods whose value cannot be estimated in detail before the consumption process. Nevertheless, information can be bought and sold as a virtual currency in the context of online games in particular. The acquisition of information can provide an individual with the opportunity to use power over others and in some cases even gain the status of a cognitive authority.

Conclusions. The study of information-systemic properties enriches the picture of information practices, by demonstrating how the virtual contexts shape the ways in which people seek, use and share information.

Introduction

Synthetic (or, in common parlance, *virtual*) worlds, including both games and other avatar-based digital social settings, are still an understudied area within information research. This is despite the

fact that they are immensely popular and appear to facilitate novel information practices (Harviainen *et al.* [2012](#)). For example, online game players can conduct information searches in other windows while playing, without any other participant becoming aware that such activity - which may or may not constitute "cheating" - takes place. Synthetic worlds are semi-separate realms that are inevitably a part of the real world, yet as worlds-within-a-world, they can be contrasted with the external reality (which we here, for the sake of readability, refer to as the '*real world*').

The purpose of the present study is to elaborate the picture of information practices by demonstrating how information is employed as (i) capability for action, and (ii) capital and, consequently, source of power, in virtual worlds, particularly in the context of online gaming. It is assumed that on the one hand, such practices are generic. This is because similar to the real world practices like face-to-face conversation, information can be sought and shared in the virtual environments. Drawing on the ideas of Schatzki ([2002](#), p. 73), practice is generally understood as '*a set of organized doings/sayings, tasks and projects*', while information practices are referred to as '*a set of socially and culturally established ways to identify, seek, use, and share the information*' ([Savolainen 2008](#), p. 2).

On the other hand, information practices accomplished in virtual worlds have specific features in that information seeking and sharing are framed by context-intensive norms and conventions (e.g., not sharing '*spoilers*', i.e. messages revealing too much so that some of the fun will be lost). In addition, it is a specific characteristic of information practices in this context that information can be used as currency, i.e., something that can be bought and sold at virtual markets, as well as used to pay for things. Similarly, information may appear as capital, as a source of power in that one can make use of information by exerting domination over others or posit herself as a cognitive authority for others. These are not phenomena limited to synthetic worlds, but we believe that the environment accentuates such processes. Drawing on the above assumptions, the main research question of the present study can be formulated as follows: In which ways does available information - understood as capability for action, capital, and source of power - constitute information practices in the context of online gaming in particular?

To examine the above issue, a conceptual analysis was made by focusing on the characterizations of information as capability, capital and tool of transactions in the context of virtual worlds. The main attention was directed to studies conducted under the aegis of disciplines such as game studies and human-computer interaction. To substantiate the picture, the study also made use of the investigations focusing on information systems (e.g., [Buckland 1991](#)) and information practices (e.g., [McKenzie 2003](#)). To answer the research question, about thirty studies were scrutinized in detail. They were selected on the basis of dealing with both information and at least some types of synthetic worlds. The key works include Castronova ([2005](#)), Consalvo ([2007](#)), Gough ([2013](#)), Harviainen, Gough and Sköld ([2012](#)), Jørgensen, ([2013](#)), Lehdonvirta ([2009](#)), Montola ([2012](#)), Rodriguez ([2012](#)), Vesa ([2013](#)) and Warmelink ([2014](#)). More specifically, the analysis was based on our identification and comparison of the similarities and differences in the ways in which the characterizations of information as capability and capital were seen as being potential constituents of information practices.

The article is structured as follows. First, to give background, the features of synthetic worlds as contexts of information practices are characterized. The main part of the study focuses on information as capability and symbolic currency as well as source of power in the context of everyday information practices. The article ends with the discussion of the main findings and their implications.

Synthetic worlds as contexts of information practices

A synthetic world is 'an expansive, world-like, large-group environment made by humans, for humans, and which is maintained, recorded, and rendered by a computer' (Castronova 2005, p. 11). They are not accurate simulations of the actual world, but rather model limited aspects of reality, combined with metaphoric representations of their underlying systems (Jørgensen 2013). Through their information practices, users of digital realms engage with both the underlying system and each other, controlling task availability and difficulty, for both themselves and others. This takes place in both online games as well as other synthetic worlds, such as *Second Life*. Our focus here is especially on games, as their systemic structure enables the analysis of the particular features of information practices accomplished in virtual contexts. In this article, we will argue that in synthetic worlds, information itself has become a virtual commodity, sought, sold, shared and even rejected at certain prices, most of which are social and/or relate to other information. Furthermore, we will conceptually point out that such worlds are not just information systems, but rather a combination of two (or sometimes more) systems - a retrieval-type system based on computer coding, and the social information system(s) that exists on top of that retrieval system basis.

Persistent synthetic worlds, at their core, consist of programmed code (Vesa 2013). They can be thought of as information retrieval systems of increasing complexity, ones where the retrieval systems themselves have been embedded in the user interface (Jørgensen 2013). The elements of their structure, and the affordances with which users interact, are their keywords as well as retrieval interfaces. When players learn to play and improve their skills at playing, or when users of non-gaming worlds learn the interfaces, they are effectively reading the information system, comparing it to other systems, and adjusting their information practices accordingly. Ian Bogost (2007), following James Paul Gee (2003), calls this 'procedural literacy'. For example, as players of the massively multiplayer online role-playing game *World of Warcraft* train in teams to defeat algorithms called 'bosses'; that take the forms of dragons or demons, they are optimizing their responses to information supplied by the system (Vesa 2013). Each 'quest' given by a computer-controlled non-player character is information that the retrieval system supplies the character, expecting the later input of new information based on that one (i.e. potential task-completion). At the same time, one experiences the synthetic world in such a manner that interacting with the code is meaningful: even as the dragon is 'just' an algorithm, fighting it will feel like one is fighting a dragon. The interface gives the world's information core an experiential meaning (Jørgensen 2013).

Teamwork and quests bring us to the second level of the system: games and virtual worlds are not just artifacts, they are also processes (Montola 2012). Their systemic properties only become actualized once they are engaged with, by one or more users (Klabbers 2009). The designers of a synthetic world design both the underlying code and the processes that it will eventually enable (Wardrip-Fruin 2009). Because of this, online games and other shared synthetic worlds are not just information retrieval systems; they actually exemplify Buckland's (1991) idea of 'systems of becoming informed'. The information-supplying properties of the system expand beyond the code, once players start engaging with it. Such worlds are inevitably both economies and ecologies, when active, and furthermore persistent ones (Jørgensen 2013; Castronova 2005). We believe that information forms a particularly large part of both their ecologies and their economies. Because of this, to engage in information practices in such worlds is to use power, either intentionally or just by default. To not have it takes away one's abilities to act. The avatar, one's virtual body and alter ego within the synthetic world, functions as the ultimate filter for converting masked, system-internal (ecological) information into information accessible by the user (Jørgensen 2013, p. 128-129).

Information as capability for action

According to Wigley (2007), digital games and virtual worlds are areas where one's full attention is focused on the synthetic world during functional play, so that no message from the outside gets through. This leads one to think that for an actor, e.g., player immersed in an online game, the virtual world is the only world. Research, however, does not support this hypothesis. In a gameworld, everything that is encountered can present information relevant to play, if the environment has been designed in such a manner (Jørgensen 2013). Many non-game synthetic worlds, however, are far too large and diverse for that level of tailoring, but even those can contain areas where nearly everything is interaction-relevant information (Castronova 2005). Furthermore, information gaps are inevitable. One's knowledge of a world is always incomplete (Wilson 1977), and the artificial and partially hidden nature of synthetic worlds exacerbates this problem (Harviainen et al. 2012). Therefore, people inside the fiction, even when very focused on it, are reliant on information and conventions brought from the outside (Crookall et al. 1987), and they need to look for more, when gaps appear.

This correlates with what Ingwersen and Järvelin (2005) say of information retrieval systems: they need to be aligned with a user's mental state and desires, or problems in their utilization appear. As virtual worlds are on the code level essentially systems that are intended for cognitive engagement with them, such conflicts are even more significant, as they prevent one's access to the relevant information through cognitive dissociation with the interface. This, in turn, prevents one from enjoying the use of the retrieval system, as it prevents functional play or other social use of the virtual world. Sometimes, users may also enjoy intentionally going against the logic of the retrieval system (see Myers 2010), but as they are bound by its code and access affordances, this is still an exploration of the system, not cognitive dissociation with it.

Jørgensen (2013, p. 79-83) divides systemic information in virtual worlds into two categories: ecological and emphatic. *Ecological information* is that which can be accessed internally to the world and with which people interact using the same kinds of information practices as they would use in the real world. Which practices are emphasized depends on the world and information context in question. In a goal-oriented game, the practices would likely be focused, task-based searches, whereas in a free-form synthetic world like *Second Life*, such practices would also include the seeking of orienting information about the changes or new activities occurring in an online community. Orienting information of this kind would not be linked to the solving of an individual problem or performing a task at hand since such information helps to put one's choices and preferences in a broader context (Savolainen 1995).

In everyday life information seeking research, the researcher focuses on how groups seek information in order to maintain their communities' coherence. Virtual groups, as noted by for example Vesa (2013) and Warmelink (2014), are no different. Instead, we argue, their often distributed nature makes members even more reliant on their information practices. It is a particular characteristic of information practices accomplished in virtual groups that the members have to rely on their own ways to seek information from asynchronous online sources because they cannot engage in regular offline contact. The exception to this is intensely task-oriented periods of time (e.g., organized groups engaging a 'boss' enemy), when organizational structure of online games takes over much of their freedom to act, if they want to keep playing in that group. In such occasions, the members engage in information practices the same way as they do in real life (and can use systems such as voice chat to facilitate such practices). They do so by creating commentary on the ecological information of the world (i.e., by discussing information elements that exist within it), as well as sharing tips on how to deal with that information. The discussions may at times be

situationally constrained, or asynchronous, but the ways in which they are handled nevertheless, as we will see below, share the features of information practices in real-world contexts. Frank (2013) attests to this as well, noting, based on ethnographic research in virtual environments, that after one has gained initial knowledge of how to interact with the virtual world, the practices of communities there start to mirror those of similar people offline.

Emphatic information, in turn, is information that a character inside the virtual world would not perceive on such terms, but which assists the user: character health bars, highlights on usable virtual items, and so forth. It is a signifying representation (or, sometimes, a simplification; Jørgensen 2013, p. 86) of elements of ecological information. Emphatic information thus points out things that exist within the synthetic world (e.g., character health, contents of a backpack), so that the user is more easily able to assess their status or availability.

The difference between ecological and emphatic information points out the reason why the notion of information as capability for action is relevant for the elaboration of the picture of information practices employed in virtual worlds. Unlike in the real world (excluding certain special situations such as religious rituals; see Harviainen and Lieberoth 2012), in synthetic worlds, informational elements may have affordances (potentials for interaction, as per Gibson 1979) that are not visible, or that are false. Examples of such are strange combinations of items in some games, houses that are just scenery and cannot be entered, and so forth (Jørgensen 2013). To tell which is which, players need specific information. Likewise, performing the same game task without the information of a formal quest in a game like *World of Warcraft* means that the player goes without the corresponding reward - or, often, is unable to embark on that task at all (see e.g., Gough 2013).

To have the relevant information in a synthetic world is to be able to act, and even more so, to act successfully. Sexologist Katherine Frank (2013, p. 176-179) offers an excellent example of this: when trying to engage in group sex within a virtual club in *Second Life* for the first time, all she managed to do was bump her avatar into objects, make it urinate on the carpet and finally climb on top of a mechanical sheep by accident. Later, after mastering the basics of the interface, she still failed to commit to a complete scene, as she was unaware of the chat comments her partner was trying to send. In other words, she failed to engage in a socially required exchange of information, and as a result severely insulted the partner.

Information as capital, symbolic capital, and source of power

Instead of passive consumers, users of synthetic worlds are (like the users of many other forms of modern media) producer-consumers or '*prosumers*' (Bruns 2008). Their information practices take place in networks between individuals and organizations, not just in interactions with the retrieval system (Lehdonvirta 2009). In general, information goods are not lost when shared, even though their novelty value may decline with time (Shapiro and Varian 1999). On the other hand, information goods can also be classified into the category of experience goods whose value is unknown until one possesses them. This makes the acquisition of new information in synthetic worlds, particularly games, risky, as knowing too much (i.e., spoilers) can lead to information overload that takes away the pleasure of the activity. At the same time, however, insufficient information will likewise prevent the enjoyable use of the system (Consalvo 2007; Harviainen et al. 2012). Therefore, players have to seek optimal balance and try to '*cheat*' with external information only when it enhances the play's enjoyability or when it allows one to continue playing when that would otherwise not be possible (DeKoven 1978). Individual players, however, have highly differing views on where to draw that line, though (Consalvo 2007).

Participants of synthetic worlds - whether players, residents or something else - need to access information in order to make sense of situations that they encounter and to solve problems, especially (but not solely) in games. Thus, they resort to strategies that give them enough, but not too much information, and surreptitiously so. The first of these are active searches (as per [Wilson 1999](#), p. 256-257), which players strongly prefer to passive searches and active scanning, in order to avoid chance encounters with unwanted information ([Harviainen et al. 2012](#)). As described by Adams (2009), game players do also utilize other modes of information seeking such as non-directed monitoring and active scanning that are not focused on predefined information objects such as texts or images ([McKenzie 2003](#)). However, this mostly occurs when they run a low risk of encountering spoilers, i.e. information that would reveal too much and remove some of the fun. In non-game synthetic worlds with much user-generated content, such as *Second Life*, spoilers may be less problematic, and their inhabitants are therefore much more likely to utilize a broader selection of techniques.

Of special interest, however, is the category of information seeking by proxy, which enables the provision of unsolicited information from a peer ([McKenzie 2003](#)). In synthetic worlds, this mode of information seeking has two sub-categories. The first of these are non-player characters, fictional personas who are part of the system, and who provide a user or the character with information ([Adams 2009](#)). They can be trainers, sources of quests, and so forth. The second sub-category consists of information provided by other residents of the virtual realm, and brings us to a third layer of information in the system, that of social information, shared, traded and often also withheld by players ([Harviainen et al. 2012](#)).

As noted by numerous organizational theorists from Max Weber onward, the control of information is one key way of exerting domination over an organization, even in an otherwise loose community (see [Morgan 2006](#), p. chapter 9). When this is combined with the fact that in online worlds, being seen as inexperienced (e.g., 'n00b') is often highly stigmatizing, we start to see the information economy of a synthetic world at work. The users of such worlds therefore gather information not just so that they can use such information to act and thus have capital, but also because it grants them status. The information is used in many cases to pay for other information, i.e., it is utilized as a means of exchange, but at other times, it is garnered for the sake of displaying that one has information available. This is expertise creation at play, but it does not have to be actual expertise. We believe that the goal is to set oneself as a cognitive authority for others - to become a person considered to be "in the know", whose guidance is accepted as highly reliable ([Wilson 1977](#)). Because of this, for such persons, it is more important to garner symbolic capital of the social kind ([Bourdieu 1984](#)). For this reason, they share information, often of their own initiative, in both discourse between players and on platforms such as forums and blogs ([Harviainen et al. 2012](#)).

In game-type synthetic worlds such as *World of Warcraft*, many experienced players parlay this kind of symbolic capital into membership in high-profile voluntary organizations, known as guilds. Some of the groups are loose and informal, being closer to mutual second-hand information networks and content-providers than professional groups. Others, however, exemplify the 'serious' aspect in Stebbins' (2007) definition of "serious leisure": even as the play itself is voluntary (or it would not be gameplay; [Suits 1978](#)), the guilds that primarily train to take down 'bosses' by coordinating teams of 20-45 players are very tightly controlled by their core groups ([Vesa 2013](#)). In addition to sharing resources, tactics and training ([Rodriguez 2012](#)), such groups also share information practices, through which they try and ensure members' commitment, acquire information on better tactics and so forth ([Vesa 2013](#)).

In this, these *'raid guilds'* exemplify several facets of the collaborative information seeking described by Chirag Shah (2012). The guilds, as task-oriented organizations, engage in all of its five facets: collaboration (*working together synergistically to achieve a common goal*), cooperation (*agents following some roles of interaction*), coordination (*connecting different agents in a harmonious action*), contribution (*offering of an individual agent to others*) and communication (*exchanging information between the agents*) - exemplarily so (Vesa 2013). Furthermore, they also embody the ambiguity and group tension involved in such practices (Shah 2012). Their membership is not stable, because they are voluntary groups, and people have both different levels of commitment as well as different primary levels of commitment (guild, group within it, or individual goals), which lead them to choose differing tactics on organizational communication, information practices very much included (Vesa 2013; Warmelink 2014). While such guilds take the strategic practices to an extreme end, the core of those practices also applies, just in a less demanding form, to other information practices throughout synthetic worlds.

The above processes are furthermore complicated by the presence of systems-external influences such as real-money trade. In this case, information is no more the sole capital or currency. When one buys virtual world elements (tools, extra content, more play time, etc.) with real money, one buys new affordances. This inevitably changes the information environment of the synthetic world, on both the retrieval system and the social level. It means that one purchases access to retrievable content that would either not be otherwise available, or which would take much harder tasks to access. The retrieval system is nevertheless designed in some sense to support this process, as real-money trade (e.g., micropayments) is often what earns the publishers of the world their revenue (Castronova 2005; Lehdonvirta 2009). Yet it nevertheless creates an imbalance within the systems - whereas the retrieval level may accept those changes, other players are not as likely to appreciate such use of shortcuts. Because of this, users of synthetic worlds are more likely to do player-to-player commerce with either virtual currencies linked to those worlds, or with information, which is the least stigmatizing tool of commerce - unless one is doing the asking. Like in real life, one's purchases and ownership of virtual commodities and information goods is often an issue of presenting status (Lehdonvirta et al. 2009).

As noted by Martin (2014), production and consumption, including that of information, is used to include and exclude people in virtual worlds. Using information as a currency is therefore an issue of balance - one wants to provide enough, but not deal in spoilers (in games) or mood-killers (in e.g., erotic play on *Second Life*), or other types of unwelcome or inappropriate information. Frank's (2013) second attempt, described above, therefore failed precisely because she had not yet learned to pay for information with the right type and right level of information (including non-verbal cues) within that particular context.

Real practices: the expanded information system

The second, social information system, as already hinted above, does not end within the boundaries of play. On the contrary, discussing and recording the use of synthetic worlds on external forums has become an integral part of the experience for many users. They do so not just to gain symbolic capital or to write down their own virtual diaries, but also to extend the pleasurable experience of using the system. As Harviainen, Gough and Sköld (2012) have shown, engaging in information practices related to the use of virtual worlds functions as a substitute for the use of those worlds. This is exemplified by blog and forum posts about one installment in a game series while waiting for the next expansion set, but extends into other situations as well. For example, the asynchronous nature of synthetic worlds means that getting a crucial response from another user on the other side of the world may require a lot of waiting. Unable to perform the desired task, many users turn to

content production, as that allows them to engage with the world, even without directly using it - and it garners them potential symbolic capital at the same time.

As a result, players looking for game-related information and other users not wanting to appear as inexperienced are able to seek for needed information by way of browsing potential sources. According to Harviainen (2012), they do so by using techniques of “berrypicking” (as per Bates 1989): they pick up suitable cues here and there, so as to avoid asking direct questions and thus showing their ignorance. The berrypicking carries with it, however, the risk of learning too much by accident. This is another issue of information overload (Harviainen *et al.* 2012), or, in common parlance, 'spoilers' (Consalvo 2007): not to passively encounter unwanted information.

This results in a combination of information seeking strategies: while users of synthetic worlds, particularly games, often focus on task-based information seeking, they sometimes also become extremely skilled blunters (as per Baker 1996). This means that they are able and willing to very quickly shield themselves from information that would be problematic to the play or other user experience, and also often learn to avoid saying too much in their forum or blog posts, as well as in interpersonal information sharing (Harviainen 2012). This is a process, we believe, needs further studying, as similar patterns can be observed all over the real world as well, in cultural, religious and political contexts. By understanding blunting and information withholding in the more constrained settings of virtual worlds, we will know more on how those practices function in also areas where we cannot ask such questions as directly.

Discussion

The purpose of this article is to show that information systemic properties and information practices in virtual worlds are not only of general interest to information research. In fact, they are highly important in that they crucially enrich the picture of information practices, by demonstrating how the virtual contexts shape the ways in which people seek, use and share information. As the findings of the present study indicate, information practices in the contexts of real-world and synthetic world share generic features. In both contexts, information seeking, use and sharing are affected by social and cultural factors such as norms and role expectations. Furthermore, in both contexts, actors draw on similar modes of information seeking such as active search, passive search, active scanning, non-directed monitoring, receiving unsolicited information provided by others, and berrypicking (Bates 1989; McKenzie 2003; Wilson 1999). Finally, in real-world as well in synthetic worlds, information can be sought collaboratively provided that there is a sufficient amount of collaboration, cooperation, coordination, contribution and communication within a group or community (Shah 2012). Whether these observations are as accurate on a less abstract level than that of a broad concept like 'active scanning', taking into account things such as varying tools, group structures, intents, internet connection speeds, and so forth, would be a fruitful area of further research.

There are, however, significant differences between information practices accomplished in the real-world and virtual contexts. These differences originate mainly from the specific features of information with regard to capability for action, and symbolic currency incorporating the potential of using power within a virtual community. The findings indicate that the capability for action is based on the extent to which the actors can identify, acquire and use ecological and emphatic information available in the virtual environment (Jørgensen 2013). Ecological information refers to information that can be accessed and acquired from inside of the virtual community at large while the latter denotes specific objects that are useful for the performance of an activity, for example, choosing a new character in an online game. Importantly, information of both types can afford action in a virtual environment, although failure to identify relevant ecological or emphatic

information is likely to render the task performance more difficult or interrupt it. The same kinds of information-capability reliance exists in other contexts as well (library catalogues being a prime example), but what is remarkable about synthetic worlds is the extent to which the reliance extends.

The study also demonstrated that information can be used as a symbolic capital, currency and source of power. In the context of synthetic worlds, information appears as experience goods whose value cannot be estimated in detail before the consumption process. Nevertheless, information can be gathered as capital, and bought and sold as a virtual currency, in the context of online games in particular. The acquisition of information can provide an individual with the opportunity to use power over others and in some cases even gain the status of a cognitive authority that is manifested in the hierarchy between the well-respected '*old-timers*' and '*newbies*'. On the other hand, the notion of information as currency implies that actors in virtual worlds – similar to real-worlds – have to weigh the costs and benefits of information seeking. Often, the actors, e.g., players of an online game, make use of a limited set of information resources, instead of a full range of options for information seeking.

Conclusion

On simplistic terms, one could argue that everything taking place in a synthetic world is information practice, as it inevitably takes place within, or in relation to, a world that consists of computer code. Such an interpretation, however, would sell short not only the ecological information environments of digital realms, but all of information practices as a phenomenon as well. Therefore, we must look into the way not only systems of human-computer interaction, but also interpersonal communication, the use of information control, and the desired balance between knowing too much and knowing too little, affect one's experiences. In synthetic worlds, we can find exceptional examples of how the uses of information retrieval systems and social information practices are connected.

The fact that information is used as a building block of both symbolic and activity-oriented capital, can be shared while losing little of its value, and is used as transactional currency, demands further research. As people increasingly move online for both their commerce and their leisure, and take both often very seriously, information research needs to follow them and learn how they adapt their practices to those new information environments. We suggest two next logical steps. The first of these are empirical studies, following the rare few that currently exist, on how exactly people seek, share, withhold - and sometimes misrepresent - information in synthetic worlds, in order to gain symbolic capital, access to more content, entertainment and so forth. That line would also be of much benefit to the research of things such as internet trolling and cyberbullying, not just leisure games and virtual economies.

The second very important line is the study of how information practices in synthetic worlds differ not just from the real world, but also from other online spaces such as forums, blogs and discussion groups. By taking into account the systemic and practice traits of synthetic worlds presented here, both information research and the study of human-computer interaction, as well as virtual world economies, will be better able to understand the roots of why behavior in such spaces differs from the real world.

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