



Increasing participation in online communities: A framework for human–computer interaction

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Abstract

Online communities are becoming an accepted part of the lives of Internet users, although participation in these communities is dependent on the types of people that form them. Some of the online community's members do not participate, people referred to as lurkers, whereas others who have been in the community for a long time, referred to as elders, participate regularly and support others. Understanding what drives these individuals and how they chose whether or not to participate will lead to online communities that thrive. This paper proposes a conceptual framework to describe what drives such individuals to carry out actions such as posting messages and adding content (level 1), the cognitions they use to determine whether or not to take such actions (level 2) and the means by which they go about carrying out the action in the environment (level 3). Finally, the framework is applied to the problem of encouraging members to participate by discussing the methods by which people can be persuaded to participate by changing the way they interpret their desires and their environment.

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1. Introduction

Online communities are increasingly becoming an accepted part of the lives of Internet users, serving to fulfil their desires to interact with and help others. These communities can

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take many forms, from websites that provide facilities to discuss particular subjects or interests to groups of people communicating using instant messaging tools (Bishop, 2003a). The existence of such communities is often brought about by people who share similar goals, beliefs or values, with such commonality forming the basis of an agreement to form and sustain a virtual existence (Figallo, 1998). Through being based on such weak ties, many of these functional systems find their existence to be unsustainable, with the goals to keep the community going without being abandoned by its members. Actions, such as posting a message to a bulletin board or joining a sub-community require a drive that appears to be absent in the members who chose not to participate in online communities. Research into members who have never taken a participatory action, who are referred to as 'lurkers' has revealed there are many reasons why this is the case. A study by Preece, Nonnecke, and Andrews (2004) found the main reasons as to why lurkers did not participate was because they felt they did not need to post, they needed to find out more about the group, they thought they were being helpful, they could not make the software work and in some cases because they did not like the group. On the other extreme is a group of community members that Kim (2000) describes as 'elders', who are active members of the community, regularly posting to share their knowledge and the culture of the community. So far, little research has been done into what drives these outstanding individuals to contribute to online communities, with much focus being on why less involved members such as lurkers do not participate.

2. Understanding why people participate in online communities

Some investigations into identifying practical methods of designing online communities have suggested hierarchical needs theory (Maslow, 1943) as an appropriate method of understanding and supporting users of online communities. Kim (2000) suggests that the theory can be helpful in designing effective online communities. This was supported in a study by Grosso (2001), which suggested that it is useful to refer to the theory as individuals may fulfil some of their so-called needs in online communities, as well as in a study by Bishop (2002), which recommended that such communities should provide the basic 'deficit needs' of users so that their higher 'being needs' can be also be met. The theory was further suggested as a means to understand online communities by Shneiderman (2002), who indicated that it appealed to him because it is 'orderly'. Hierarchical needs theory seems to suggest that the reason lurkers do not participate is that their physiological or security needs are not being met and the reason elders participate is that they are meeting their social and esteem needs. However, whilst on the face of things this may seem plausible, the supposition that community members are participating in order to satisfy needs is unsatisfactory. Furthermore, the idea that there is a hierarchy to an individual satisfying so-called needs is also questionable, particularly as it is possible for an individual to be sociable and be creative at the same time and it might not be necessary for them to become secure before they act out social desires. Indeed, Mook (1987) found that when individuals were not fulfilling what Maslow (1943) described as security needs, they still wanted to be sociable with those in a similar situation to themselves, with some exhibiting altruistic behaviours. This suggests that it is not necessary for actors that use online communities to feel safe or physiologically satisfied in order to interact with the system. There have been numerous cases of actors going without sleep and food in order to act out social desires in virtual environments, which have been reported in the media (e.g. Griffiths,

2005). Some research suggests that actors that use human-computer systems are goal-driven as opposed to needs-driven and will seek out opportunities to meet these goals. Nielsen and Norman (2003) argue that if the attention of a user is focussed on meeting their goals they will ignore distractions, such as advertisements that interfere with them. Manto-vani (1996a) supports this in his model of social context in which he indicates that a user, which he refers to as an actor, will construct a situation based on their goals and competencies. Frameworks suggesting that actions are linked to goals seem more appropriate for online communities as needs-based theories do not explain why community members such as lurkers do not participate if their ‘deficit needs’ are being met. March (1991) indicates that one of the primary ways in which individuals develop goals is by interpreting the actions they take and developing new beliefs based on them. It is possible that a lurker may believe that their contribution may not be welcomed, particularly if they have posted in a community before and received an unfavourable response. These beliefs will have a direct influence on their goals meaning they may not have the same willingness to participate as an elder for example, who may hold more positive beliefs about what their actions will achieve. Whilst goals play an important part in determining whether an individual participates in an online community, it does not seem plausible that they are the driving force behind the actions individuals take.

3. The ecological cognition framework

The author proposes a 3-level framework for understanding why members of online communities either participate or do not participate (Fig. 1). The framework accepts many

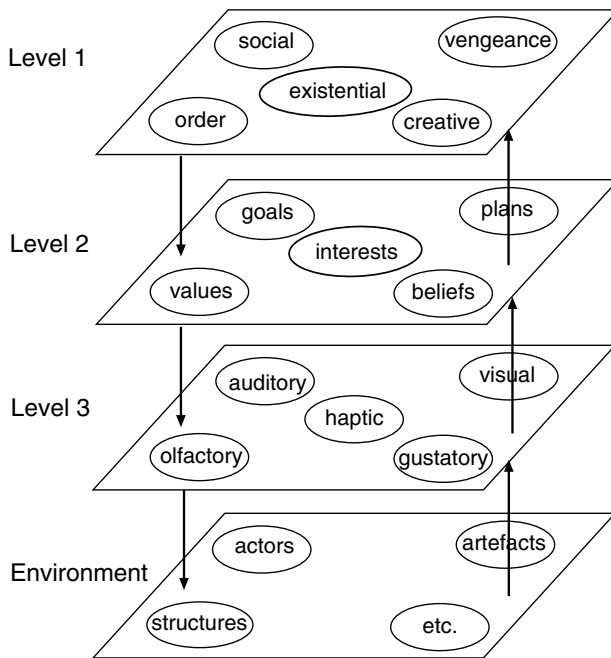


Fig. 1. The ecological cognition framework.

of the principles of action put forward by [Mantovani \(1996b\)](#), including that actors construct interpretations of their environment based on their goals, which are referred to as situations. Mantovani's metaphor of users of virtual environments as actors seems appropriate for users of online communities. The ecological cognition framework indicates that these actors will experience a desire to carry out an action, such as solving a problem of another actor (level 1), interpret whether taking this action is consistent with their goals, plans, values, beliefs and interests (level 2) and use their abilities to carry out the action and perceive the environment they are part of (level 3).

Level 1 of the framework is made up of an actor's desires. These are Social, which includes the desire to become part of the community through socializing and communicating; Order, which includes the desire to arrange and sort artefacts and other external representations as well as the desire to take control of situations; Existential, which includes the desire to eat food and drink water; Vengeance, which includes the desire to retaliate to someone, such as through posting negative comments or through 'flaming', and Creative, which includes the desire to create content in a wiki for example. The main difference between this framework and needs-based theories is the concept that individuals are not needs driven, but driven by their desires to carry out actions.

The five categories of desires presented in this framework are the desires that lead to the actions that are most likely to occur in online communities. The 'social' category is included because online communities are inherently social spaces, and nearly all users will participate through posting messages or taking part in chat sessions. Indeed, [Rhiengold \(2000\)](#) describes 'the social Web' in which people like him participate as a result of being driven by their longings to participate. The 'order' category was included because Internet users carry out actions such as organising bookmarks, rearranging pages and specific members such as leaders may desire to take control of a situation, such as when members are flaming each other in a chat session. Leaders may also experience an order desire if a bulletin board goes off-topic and will carry out actions to bring it back to the original topic, despite the fact that allowing bulletin board to go off-topic can increase sociability in the community ([Bishop, 2002](#)). The 'existential' category was included because despite the environment being computer-mediated, online community members will still experience desires to carry out actions such as eating and drinking, which will have an effect on their interactions in these environments. The 'vengeance' category was included because online community members are known to be more aggressive than those from traditional communities ([Kiesler & Sproull, 1992](#); [Wallace, 2001](#)), carrying out actions such as flaming, and posting negative feedback on other community members for purposes of revenge. Indeed, [Smith \(2001\)](#) describes how some online community members that have been banned from the community will return with new identities to harass other individuals, disrupt the community and challenge the authority of leaders. The 'creative' category was included because many actions in online communities are carried out to solve problems or create content.

Level 2 of the model is made up of an actor's cognitions – their goals, plans, values, beliefs and interests. Research has already established that individuals will seek to achieve consonance of their beliefs ([O'Keefe, 1990](#)). The ecological cognition framework extends this by suggesting that individuals will try to make their beliefs consonant with their goals, plans, values and interests as well. Plans are conceived as a result of experiencing desires and are stored in memory as a result of reflecting on a plan that has been acted out. Goals can be short-term objectives or more long-term ideas or targets to achieve. Beliefs are

assertions that an actor believes to be true, for example, a lurker may believe that by posting a message they are being unhelpful. Beliefs can be changed fairly easily by experience and resolving dissonance. Values are less easily changed than beliefs, as they are clearly defined principles that the actor has accepted through interactions with their environment. Interests are connections with something or somebody that the actor attempts to maintain. An actor is unlikely to change their beliefs about another actor for example if they have an interest in that actor.

Level 3 of the model is made up of an actor's means to interpret and interact with their environment. It is made up of haptic abilities, such as the sense of touch, and capacity to interact through touch; auditory abilities, such as the sense of hearing and ability to interact through speaking; visual, such as the sense of sight and capacity to imagine visual images; olfactory, such as the sense of smell, and gustatory, such as the sense of taste.

The environment is made up of other actors, artefacts, and structures among other things. In terms of human-computer systems, artefacts take the form of text or graphics that offer perceived affordances, such as the perceived affordance of clickability (Bishop, 2005) and structures take the form of applications and software, such as Web browsers and plug-ins.

3.1. Principle 1 – an actor is driven to act by their desires

The first principle of the ecological cognition framework is that actors are driven by their desires to perform an action as opposed to satisfy an internal entity, such as a need. This departs from traditional theories that individuals are needs-driven, a concept that is not appropriate for online communities. Unlike it is commonly thought, desires are not responses to emotions, as they are not sufficiently connected with feelings (Kenny, 1963). Recent research has acknowledged the existence of desires (Reiss, 2004), but these regard desires to be much like what Maslow (1943) describes as needs in that they need to be 'satisfied' as opposed to acted out. In the context of the author's model, desires are thoughts or requests for action that an actor experiences as opposed to a requirement or want. It is acknowledged that one of the reasons online community members participate is that they are driven by their desires to participate (Rhiengold, 2000) and the ethos behind the ecological cognition framework is that online community members are part of the community to give in the form of acting out their desires, as opposed to take from them as hierarchical needs theory suggests.

Under this framework, an elder, who regularly replies to posts in an online community, can be seen as acting out several desires. The elder could be acting out their creative desires, by solving the problems of other actors, or they could be acting out their social desires, by communicating with others to share their community's values and beliefs. Kim (2000) identifies three other categories of online community members who are neither lurkers nor elders. They are novices, who were once lurkers, but have become new members who need to learn about the community and its values; regulars, who were once novices, but now are established in the community and comfortably participating in community life and leaders, who are volunteers and staff who keep the community running and go on to become elders. Like elders, novices will have desires to be social, but like lurkers they may not participate fully, but for different reasons. Regulars act out their desires to be social and creative, and as Wallace (2001) points out, they are sometimes known to act out their less constructive desires if another regular posts a message to a nov-

ice that is contrary to their beliefs. Leaders may act out their order desires, by ensuring that bulletin boards do not go off topic, or by ensuring that everyone is able to participate.

3.2. Principle 2 – an actor's desire to act is limited by their goals, plans, values, beliefs and interests

The second principle of the ecological cognition framework is that an actor will take into account their existing goals, plans, values, beliefs and interests before taking action based on their desires, which may have made such cognitions dissonant.

The framework suggests that once an actor has a desire, they will develop a plan to act out that desire, much in the same way that when they perceive an affordance in the environment they develop plans to interact with the artefact that offered it. The actor may then find that this plan is dissonant with their beliefs. For example, a lurker may desire to be social and develop a plan to communicate with another actor, but believe they will not be being helpful by doing so, so they do not act out their desire, thus experiencing temperance. Even if the actor did not have any beliefs that prevented them from acting out their desire, if the plan to act out the desire was inconsistent with their existing plans, their values, their goals or their interests, then they will experience temperance and not act out the plan.

This is a significantly different concept to those models that propose that actors are goal-driven. According to this framework, actors are not driven by goals, but use their goals to validate the plans that develop from their desires. In their online community framework (OCF), [De Souza and Preece \(2004\)](#) appear to support this concept by indicating that an actor will share goals with other community members and have their actions influenced by them. The OCF also indicates that actors will adopt the norms and rules of the community and such beliefs will also influence their actions.

An important aspect of this second principle is that an actor's cognitions are regularly dissonant and the actor is always trying to make them consonant in order to achieve consonance and experience intemperance through taking actions that reflect their desires. For example, an actor may have a desire to help someone in an online community and plan to go to the community to seek out an opportunity to help someone, but when they find that opportunity they may have a belief that they will not be helpful by posting. They have to resolve this dissonance by either changing their belief or changing their plan. To do this they could use their values, which could include a value to always help someone in need, or their goals, which could include a goal to be a valued member of the community. In most individuals, changing plans would be fairly straightforward, but as [Frith \(1991\)](#) and [Bishop \(2003b\)](#) point out, in individuals with autistic spectrum disorder (ASD) any change in plans may be unacceptable to them. For example, an individual with ASD may have planned to watch a particular television programme at a certain time, meaning even if they had a desire to be sociable with another actor, they may break off any conversation they are having, especially if they have not developed beliefs to the contrary. However, these individuals may be willing to change such a plan if they have a desire to be creative, as they are generally known to be systemisers ([Baron-Cohen, Richler, Bisarya, Gurunathan, & Wheelwright, 2003](#)). Unlike hierarchical needs theory, the ecological cognition framework does not suggest there is a hierarchy to an actor's desires. The prepotency of a desire is not determined at Level 1 by an inbuilt structure, it is determined at Level 2 by the way in which an actor has made their cognitions consonant. For example,

an actor using an instant messaging tool may have an existential desire to eat, but they may also have a social desire to continue with the conversation. The desire that is prepotent will be determined by whether the actor believes it is more important to have food or be sociable.

However, strong an actor's desires to contribute to an online community, if they are unable to make their cognitions consonant, they are more likely to experience temperance than intemperance.

3.3. Principle 3 – an actor will act based on how they perceive their environment

The third principle of the ecological cognition framework is that an actor will carry out an action based on how they perceive their environment. Mantovani (1996a) has already demonstrated that an actor will take into account their goals when interacting with artefacts and other actors, but the ecological cognition framework indicates that they will take into account their plans, values and beliefs as well. If an actor has the desire to do something that results in a plan, this plan is consonant with their cognitions, and they have the ability to act out the desire, the next stage is to interact with the environment. The environment is made up of among other things, actors and artefacts, with the actor limiting their attention focus to those aspects of the functional system they are within that provides them with the opportunity to act out their desires. Indeed, the region of the brain associated with coding the affordance of artefacts (the left inferior parietal lobule) is the same region associated with selective attention (Frederikse, Lu, Aylward, Barta, & Pearlson, 1999; Grézes & Decety, 2002). Furthermore, this region of the brain is also associated with motor planning (Winstein, Grafton, & Pohl, 1997), suggesting that when an actor perceives an affordance they are influencing their plans to act out their desires.

Mantovani's framework (1996a) indicates that actors will seek out opportunities in their environment to meet their goals through limiting their attention focus to those artefacts within their competencies. The ecological cognition framework partially supports this by indicating that an actor will seek out opportunities to meet their desires and how they act out these desires will depend on the situation they have constructed based on how they have perceived their environment. An actor will take into account their goals, plans, values, beliefs and interests when perceiving their environment. If for example, a regular had a desire to be social, they may seek out actors with whom to be social with. They would take into account their beliefs about these actors when deciding whether to act out their desires with them and also whether communicating with these particular actors is consistent with their existing plans, goals and values.

4. Persuading actors to participate in online communities

Encouraging participation is one of the greatest challenges for any online community provider. There is a large amount of literature demonstrating ways in which online communities can be effectively built (Figallo, 1998; Kim, 2000; Preece, 2000; Young, 2000). However, an online community can have the right tools, the right chat platform and the right ethos, but if community members are not participating the community will not flourish. Encouraging members to change from lurkers into novices is proving to be a challenge for community providers and whilst there is a lot of research into why lurkers do not participate (Nonnecke & Preece, 2000; Preece et al., 2004; Takahashi, Fujimoto,

& Yamasaki, 2002) there are few suggestions about how to change their behaviour. Traditional methods of behaviour modification are unsuitable for virtual environments. Methodologies, such as operant conditioning (Skinner, 1938) would suggest that the way to turn lurkers into elders is to reward them for taking participatory actions. Even if the concept that participatory actions, such as posting messages will be repeated if they are rewarded was accepted, this method would still require a lurker to take the initial step and post a message. The ecological cognition framework proposes that in order for actors to carry out a participatory action, such as posting a message, there needs to be a desire to do so, the desire needs to be consistent with the actor's goals, plans, values, beliefs and interests and they need to have abilities and tools to do so. Some actors such as lurkers, may have the desire and the capabilities, but hold beliefs that prevent them from making participatory actions in online communities. In order for them to do so, they need to have the desire to do so and their beliefs need to be changed. Traditional methods, such as operant conditioning may be able to change the belief of a lurker that they are not being helpful by posting a message, but it is unlikely that they will be effective at changing other beliefs, such as the belief they do not need to post. In order to change beliefs it is necessary to make an actor's beliefs dissonant, something that could be uncomfortable for the actor. Indeed Bishop (2004) points out that actors will be less willing to be persuaded if the presented arguments conflict with the beliefs, plans and values they have already developed. However, the use of persuasive text, which is any message devised to counter the beliefs of an actor and provide them with new information (Chambliss & Garner, 1996; Hovland, Janis, & Kelley, 1954) can be one way of changing the beliefs of lurkers, although some studies have questioned the effectiveness of persuasive text in human-computer systems (Murphy, Long, Holleran, & Esterly, 2003).

When presented with a piece of persuasive text that is dissonant with their existing beliefs, an actor will take into account factors including the credibility of the source before changing their beliefs, as well as their other cognitions, such as their goals. This suggests that a lurker may be persuaded to change their beliefs that lead them to experience temperance if they consider the community members suggesting they participate credibly and changing the belief would be consistent with the goals that they hold. Bishop (2002) investigated using a rating system, whereby community members indicated whether they found a particular member trustworthy or not. In the system, which worked similar to the rating system used by eBay.co.uk, individuals were given one point by each member who thought they were trustworthy and lost one point by each member who thought they were untrustworthy. This system would indicate to lurkers which members are most credible, meaning they may be more likely to be persuaded by them to change their beliefs and participate. However, despite the potential of using persuasive text to change the beliefs of lurkers, it may be difficult in an online community for elders and leaders to identify the beliefs that cause a lurker to experience temperance preventing them from becoming a novice, so other methods are required.

Perhaps one of the most effective means to change the beliefs of lurkers so that they become novices is for regulars, leaders and elders to nurture novices in the community so that lurkers can see that those who are new to a community are treated well. Often lurkers will be actors that have posted in other online communities and not received a reply and will hold a belief that they will be ignored if they contribute. These lurkers can be persuaded to change such a belief if they see that novices have their posts responded to in a constructive way.

Whilst changing the beliefs of a lurker will mean they are more likely to experience intemperance and act out a desire to participate, communities also need facilitate the actor in developing desires to participate. One way of doing this is through using mediating artefacts that offer perceived affordances, as suggested by [Bishop \(2005\)](#). Mediating artefacts such as hyperlinks can offer the perceived affordance of clickability, in that they lead the actor to develop a plan to click them. If such a plan is consistent with an actors goals and does not conflict with their beliefs they are likely to experience intemperance and act out the plan, which could be to participate. An actor that immediately acts out the plans that come from mediating artefacts could be engaged in a state of flow, in that they will experience deference, which is another way of encouraging lurkers to contribute to an online community.

[Csikszentmihalyi \(1990\)](#) indicates that when an actor is engaged in a state of flow, the concentration is so intense that there is no attention left over meaning that the worries about problems disappear. This suggests that when in a state of flow, an actor will be acting upon their desires and experience deference. It is likely that when in a state of flow an actor's plans are based directly on acting out their desires. It seems clear that if the actor is in a state of flow, they are more likely to take a participatory action. Achieving a state of flow that results in deference is potentially difficult in online communities, as many of the actions taken by actors will be as the result of resolving dissonance in order to experience temperance or intemperance. However, there have been studies that have determined ways in which flow can be achieved, even in these environments. An empirical investigation by [Novak and Hoffman \(1998\)](#) identified 13 factors of flow; arousal, challenge, control, exploratory behaviour, focused attention, interactivity, involvement, optimum level stimulation, playfulness, positive effect, skill, telepresence, and time distortion. The study demonstrates that flow can be achieved when an actor has a reduced attention focus, loses track of time and becomes immersed in the environment at the same time. As [Mantovani \(1996a\)](#) indicates, an actor will reduce their attention focus to those aspects of an environment that are within their capabilities, and the author further argues that an actor will reduce their attention focus to those aspects of the environment that are consonant with their cognitions. This suggests that if an online community has artefacts and actors that do not create dissonance with an actor's cognitions then the actor is more likely to become engaged in a state of flow and act out their desires. However, whilst engaging an actor in a state of flow might mean that they are more likely to act out their desires to be social, there is also the possibility that they will act out their vengeance desires as well. Indeed, some studies have indicated that in human-computer systems where actors are likely to experience deference they are also more likely to flame others ([Orengo Castellá, Zornoza Abad, Prieto Alonso, & Peiró Silla, 2000](#)). This suggests that any attempt to increase the flow experience of an actor should be done with caution.

5. Discussion

Online communities are becoming an accepted part of the lives of Internet users, who will come together and interact with each other if they share similar goals, plans, values and beliefs. A problem for providers of online communities is that some of their members do not participate. These members do not participate for a number of reasons, including that they believe they did not need to post and that they believe they are being helpful by not doing so. Other community members that have been participating for a long time,

known as elders, regularly participate because they believe that their actions will have positive outcomes. Previous attempts to understand why community members participate or do not participate has suggested that individuals are needs-driven or goal driven. Hierarchical needs theory has suggested that the reason lurkers do not participate is that 'lower needs' are not being met, or 'higher needs' are being met elsewhere and that the reason elders do participate is that they are meeting their 'higher needs'. Theories that suggest that individuals are needs-driven and so-called needs are met in the order of a hierarchy are not suitable for online communities. It is quite likely that community members will desire to do two things at the same time, something that needs-based theories do not take into account. Theories that suggest that individuals are goal-driven are more appropriate for online communities as users will develop and change goals based on their interactions in an online community. However, these theories are not entirely appropriate for explaining why some individuals desire to participate in an online community, but do not actually do so. The author proposes an alternative framework for understanding such behaviours, which is based on the principles that individuals are driven to action by desires, these desires lead to plans that need to be consonant with their existing plans as well as their goals, values and beliefs, and how they carry out an action will depend on their interpretation of their environment. Some online community members, such as lurkers, believe that they do not need to post messages to online communities or believe that they are being helpful by not posting. Such beliefs prevent these individuals from carrying out their desires to be social and participate in the community. Online community providers should attempt to change these beliefs, even if it creates a degree of dissonance with the individual's cognitions. The use of persuasive text is the main means by which an individual's beliefs can be challenged, though providing alternative information to the beliefs that the individual holds whilst not being consonant with an actor's goals. Challenging these beliefs may lead to the individual increasing their participation in online communities through allowing them to act out their desires. Developing systems that offer perceived affordances is another way of encouraging participation in online communities, as is engaging an actor in a state of flow, whereby they will experience intemperance or even deference. However, this may mean that individuals will act out less positive desires, such as vengeance, and flame other community members that offend them.

6. Limitations and directions for future research

This paper has gone some way to explaining why some individuals participate in online communities and others do not. It has suggested ways in which this behaviour can be changed through influencing an individual's cognitions so that their desires to participate are realised. By changing from a needs-based understanding of why people participate in online communities to a desire-based framework, researchers and community providers will be able to focus more on what individuals can give to the online communities they are part of as opposed to what they can take from them. Through studying the characteristics of specific types of online community members, the framework should be durable enough to apply to existing and future online communities. There may be some criticisms that the framework has not been empirically tested, a criticism that has also been levied against Maslow's Hierarchy of Needs (Wahba & Bridwell, 1976). However, some of the framework is supported by empirical studies, such as those using positron emission tomography (PET), which demonstrate a neurological relationship between an actor's plans and

their perception of affordances in the environment (Grézes & Decety, 2002; Winstein et al., 1997) and other studies suggest a strong relationship between beliefs and desires in decision making (Gallese & Goldman, 1998). Future studies could investigate the relationship between perceiving the environment and developing beliefs as well as plans.

Another possible limitation is that the five categories of desires identified might not cover all the desires an individual has. Reiss (2004) identified 16 desires that he believed drives human behaviour, those being power, independence, curiosity, acceptance, order, saving, honour, idealism, social contact, family, status, vengeance, romance, eating, physical exercise and tranquillity. Many of these are included in the five desires identified by the author. For example, eating and physical exercise are existential desires; romance as Reiss describes it is also an existential desire and social contact is a social desire. What Reiss calls power, acceptance and tranquillity are actually similar to what Maslow (1943) described as needs so are not appropriate for a desire-based model. Additionally, there is no need to have a separate ‘curiosity’ desire category as both social and creative desires could result in actions of curiosity.

Whilst some studies into behaviour have investigated animals, some sick humans and others extraordinary people, the author has focussed on the five main types of online community members identified by Kim (2000) and Preece et al. (2004), those being lurkers, novices, regulars, leaders and elders. This paper has described what drives these individuals to participate and the processes by which they decide whether or not to participate. Future research could identify the difference in the cognitions of these individuals and whether some of them experience desires more frequently than others.

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