

Online Community Design: Review of Frameworks and Developing Online Community Construct

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Abstract: The purpose of this study is to develop an online community construct, which proposes an inclusive illustration of the structure of online communities, for online community designers. This study reviewed researches from psychology, sociology, management engineering, and practical reports to understand the characteristics and dynamics of online communities. The proposed online community construct visualizes the cognitive, affective, and behavioral aspects of online community.

As the notion of community originates from geographical groups, and with the assumption that geographical community shares identical characteristics with online community, this study reviewed researches about geographical communities as a starting-point. Then the study went through three main perspectives (1) online community attributes, (2) sense of online community and (3) challenges of online community. Then this study proposed an online community construct that encompasses the reviewed frameworks.

The online community can be seen as a congregation of members from two sources. One is from the 'Shared Goal' that meets the personal needs. Given the shared goal, members gather into the community without personal relationship and have more chances to feel the sense of belonging to their needs fulfillment or benefit. This befitting tendency leads to strengthening of membership. Public online forums fall under this classification. The other source is from the emotional connections that are already initiated by personal and casual contacts in the real world. The network of emotional connection can evolve into an online congregation of people under faint boundaries. Although there is no (or weak) shared goal, members are strongly bound to other members. Personal homepage or web log (blog) can be classified as an example of relationship-oriented community.

Keywords: *Online Community, Online Community Construct*

1. Introduction

Thanks to readily available Internet access in Korea, online communities are now flourishing with unprecedented rate over Korea's fertile IT infrastructure. Now members of online communities can exchange information horizontally and asynchronously across themselves. Larsen and McInerney [21] note that online communities document every life in cyberspace, and exchanging information and knowledge inside them rapidly and dramatically changes our lives [32]. Wellman pointed out that the Internet is becoming another means of communication that is being integrated into the regular pattern of social life [33]. Also E-commerce entrepreneurs anticipate that online communities will play an important role in marketing [20]. The growth of online communities in recent years implies the importance of understanding online communities from diverse domains.

1.1. Research Background and Objectives

When one is to create or maintain an online community, some fundamental questions arise. Why do people join in an online community? Why do or don't they leave the online community? What is the access route for participating in an online community? What is the difference between public forums and personal web logs?

This study's purpose is to propose an online community construct that provides a lucid but dioramic viewpoint over online communities, for online community designers. The study has been focused on investigating the structure of creating an online community, and the behavioral dynamics among members. The proposed online community construct is an abstract model that discounts the details of diverse disposition of online communities, but helps professional designers view online communities in a more holistic way, and thus eventually lead to realize the latent design roles in online communities.

1.2. Research Questions and Method

This research raises the following key issues:

- (1) What has been researched and defined about online communities?
- (2) What is the big picture that recent studies brought about?
- (3) What is the result of verifying proposed online community construct through contemporary online communities?

To attain the answers, this study is composed of four parts: (1) review on related studies, (2) developing theoretical framework and construct, (3) testing the construct's validity, (4) overall discussions and implications.

The review section concentrates on understanding previous researches. From the basic geographical communities, the study tried to approach the essential attributes of a community. Then concomitant

attributes of online communities have been sought from recent research results. Based on the foundation of precedent review work, an online community construct as a compound complex of the main attributes is proposed.

2. Reviews on Related Studies

In the social, practical, and philosophical fields, researches are undergoing investigation to explain the characteristics of a community. These researches suggest diverse theoretical constructs that help set up the starting-point to understand ‘online’ communities.

Gusfield [12] suggested two kinds of communities: one is the territorial or geographical community. In this respect, community refers to a neighborhood, town, or region, thus the sense of community implies the sense of belonging to a specific spatial setting [25][26]. The other is a relational community. It is based on human relationship without reference to a specific location. These two types of communities are not necessarily mutually exclusive. Most of the communities thriving in the Internet fall under the definition of a relational community since their members are not physically bound together [35].

In this study, the term ‘geographical community’ indicates physical, non-virtual community and the term ‘relational community’ means a virtual, computer-mediated networking community. Because the notion of community originates from geographical groups, and since the fundamental characteristic of an online community is inherited from geographical communities, this study reviewed researches about geographical community as a starting-point.

2.1 From Geographical Community, Sense of Community, and Sense of Place

There are several definitions for a geographical community. Duncan [8] regarded the community as an ecological complex based on the interdependence of four components: people, organization, environment, and technology. Heller [13][14] noted that a community is mainly characterized by the relational interaction or the social ties that draw people together. A community can also be seen as a group where individuals come together based on an obligation to one another or for a shared purpose [29]. The intersection of these definitions draws four common attributes. (1) Member: the prime constituent of community, (2) Interaction: the activity among members, (3) Relationship: the emotional network of members and (4) Shared purpose: the agreeing benefit of the community that all the members share.

2.1.1 Sense of Community

A member’s notion of the strength of sense of belonging to a community is known as “sense of community.” While several researchers have conceptualized the sense of community construct [7][10][23], there still seems to be little consensus on the psychological dimensions that underlie the sense of community construct [4].

Heller [13] defined the sense of community as “the feeling of the relationship an individual holds for his or her community.” Newbrough and Chavis [24] also described the sense of community as the personal knowledge that one has about belonging to a collective of others. Others viewed it as “the perception of

similarity to others and an acknowledged interdependence with others” [30].

McMillan and Chavis [24] developed dimensions of the sense of community. According to them, the sense of community is composed of four elements: membership, influence, needs fulfillment, and emotional connection.

- *Membership* indicates that people experience feeling of belonging to their community.
- *Influence* implies that people feel they can make a difference in their community.
- *Needs fulfillment* suggests that members of a community believe that their needs will be met by the resources available in their community.
- *Emotional connection* is the belief that community members have and will share history, time, place, and experience.

This study follows McMillan and Chavis’ definition of the sense of community as it agrees with the aforementioned four common attributes of community. The four common attributes of community and the four elements of sense of community intersect as shown in Table 1.

Table 1 The Connection of (1) Community’s Four Common Attributes, and (2) McMillan and Chavis’ Definition of the Sense of Community

Attributes of Community	Sense of Community	Note for Sense of Community
Members	Membership	Members’ belongingness
Interaction	Influence	Member’s interaction and its effect
Relationship	Emotional connection	Accumulation of shared experience (interaction)
Shared goal	Needs fulfillment	Meeting members’ needs

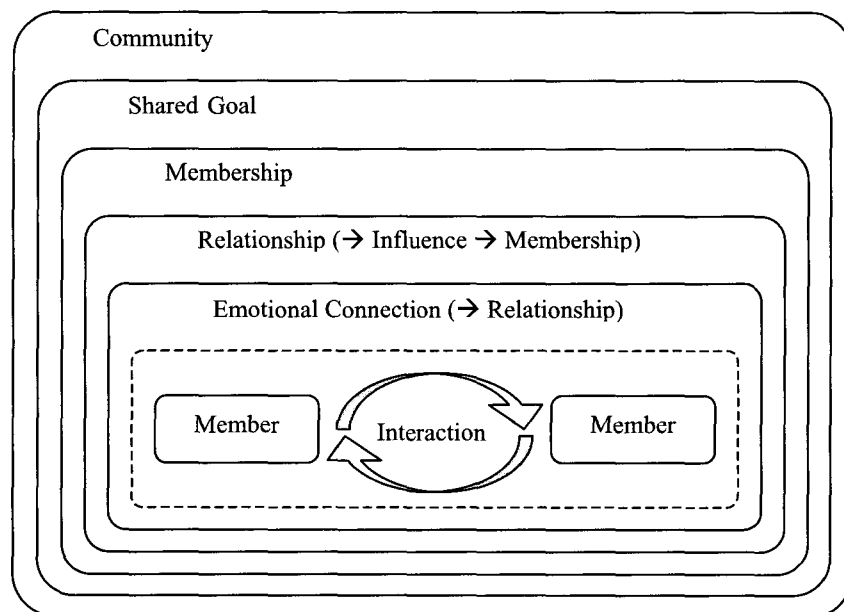


Fig. 1 Structure of Community and Community Sense of Community

Also the conjoint structure of community is portrayed in Fig. 1. The structure is comprised of five layers, including the outmost community layer. Emotional connections can be established when members interact with each other. The emotional connection initiates the relationship, and among large number of members, relationship can evolve into a convoluted interdependent relationship. Cumulated relationship leads to influential power, and then advances to membership. ‘Shared goal’ also endows the members with the membership.

The marked difference between emotional connection and membership is that the emotional connection reflects more on an affective perspective, while membership reflects more on a cognitive perspective.

2.1.2 Sense of Place

Since interactions among community members mostly take place at a specific place in geographic locations, this study looked into the concept “sense of place” [17]. Canter [3] noted that ‘places’ represent a confluence of cognitions, emotions and actions organized around human agency. In this respect, places could be conceptualized as an integration of a tripartite framework: cognitive, affective and behavioral processes. Jorgensen and Stedman [18] defined the sense of place as a multidimensional construct comprising (1) place identity: beliefs about the relationship between self and place, (2) place attachment: feelings toward the place (3) place dependence: the behavioral exclusivity of the place in relation to alternative.

Hummon [17] argued that sense of place involves both a cognitive perspective on the environment and an emotional reaction to the environment, implying a multidimensional construct. The composition is drawn in Table 2.

Table 2 The Association of Community’s Four Common Attributes, ‘Sense of Community’, ‘Sense of Place’, and Their Dimensions.

Community Attribute	Sense of Community	Sense of Place	Dimension
Members	Membership	Place Identity	Cognitive
Shared goal	Needs fulfillment		
Interaction	Influence		
Relationship	Emotional connection	Place Attachment	Affective
N/A	N/A	Place Dependence	Behavioral

Note: N/A=Not Applicable

2.2 Online Community over Geographical Community

Online communities link community members across time, space, and organizational boundaries with the efficiency of the new types of communication technologies. E-commerce entrepreneurs take a very broad view of community that any chatting system, bulletin board or communication software program can be regarded as an online community [27]. Hiltz and Turoff [15] researched a number of “computer-mediated communication structures and procedures beyond the email system,” which help

members create, organize, and retrieve information. With those tools, any member is able to disseminate information electronically without hierarchical channels in an online community [21].

The followings are definitions of online community by various researchers.

- From a relationship building perspective, Rheingold [28] defined the virtual community as "social aggregations that emerge from the Net when enough people carry on those public discussions long enough, with sufficient human feeling, to form webs of personal relationship in cyberspace."
- Fernback and Thompson [9] defined a virtual community as "social relationships forged in cyberspace through repeated contacts within specific boundary or place."
- Balasubramanian and Mahajan [1] defined it as any entity that exhibits all of the following characteristics: (1) an aggregation of people, (2) rational members, (3) interaction in cyberspace without physical collocation, (4) social exchange process, (5) a shared objective, property / identity or interest between members.
- Rothaermel and Sugiyama [29] argued that online communities are not only about aggregating information or resources, but also about bringing people together to meet some of their commercial need as well as social needs.
- Bieber [2] noted that computer-mediated communication structures and tools allow virtual communities to work together online, not only communicating about specific themes by web posting and viewing activities, but also building collaborative knowledge base.
- Koh [20] defined the online community as "a group of people with a common interest or goal, interacting predominantly in cyberspace."
- Wellman [34] noted that "the Internet extends community in the real world, and connects people through individualized and flexible social networks rather than fixed and grounded groups."

Some criteria are removed or merged into other criterion. Table 3 explains the criteria adjustment. With the adjusted criteria, the definitions from various researchers can be epitomized as Table 4.

Table 3: Criteria Adjustment

Criterion	Description	Adjustment
Online	This is major premise of the concept of 'cyberspace'.	Covered by cyberspace.
Time span	An inherent requirement affecting all the other criteria.	Removed
Communication	Interaction between members via network facility.	Covered by interaction,
Emotion	A shared experience or belief between members	Covered by relationship
Social/commercial needs	Needs is a preemptive or antecedent attribute.	Covered by shared goal.
Collaboration	The notion of working together is reflected by interaction.	Covered by interaction

This study selected 6 common denominators for online communities: Cyberspace, Members, Interaction, Shared goal, Relationship, and Information/contents.

Next, researchers introduced immersive behavior dimension, using extended concept of flow [16]. Online community characteristics such as anonymity, addictive behaviors and voluntary behaviors imply the state of immersion, or flow experience as Csikszentimihalyi [5] notes.

Table 4: Summarization of Definitions of Online Community with Adjusted Criteria

Criteria	Fernback, Thompson	Balasubramaina, Mahajan	Rheingold	Rothaemel, Sugiyama	Wellman	Bieber	Koh
Cyberspace	O	O	O	O	O	O	O
Members	O	O	O	O	O	O	O
Interaction	O	O	O		O	O	O
Shared goal	O			O		O	O
Relationship	O		O		O		
Information / contents				O		O	

Note. O = Selected

Csikszentimihalyi [5] argued that flow is the term used to describe the “holistic sensation that people feel when they act with total involvement.” Researchers have used the concept of the optimal experience to study a diverse set of activities from rock-climbing and ocean cruising to mediation and ordinary work [6]. Hoffman and Novak [16] defined the flow experience in the computer-mediated environment as “the state that occurs during network navigation.” According to them, it includes the following four dimensions: (1) a seamless sequence of responses facilitated by machine interactivity, (2) intrinsic enjoyment, (3) loss of self-consciousness, and (4) self-reinforcing. Consequently, flow seems to be characterized by enjoyment and caused by human-machine interactions [11].

Table 5: The Composition of Dimension, Sense of Place, Community Attributes, Sense of Community, and Online Community

Community Attribute	Sense of Community	Sense of Place	Dimension	Online Community
Members	Membership	Place identification	Cognitive	Members
Shared goal	Needs fulfillment			Shared goal
Interaction	Influence			Information / contents
Relationship	Emotional connection	Place attachment	Affective	Relationship
N/A	N/A	Place dependence	Behavioral	Immersive Behavior
				Cyberspace

Table 5 shows the union of dimension, sense of place, community attributes, sense of community, and online community. The concept of flow is expected to be relevant in the online community context because many online community members, unlike the traditional community members, display totally

immersive (or addicted) behaviors toward their community. This study regards immersive behavior as a behavioral surrogate to reflect the online community member's psychological state of flow.

2.3 Challenges in Online Community

Online communities face unique challenges that are not found in face-to-face communications [19].

- Communication: How successfully do media convey a sense of the participants being physically present? [31]?
- Motivation: Does the community satisfy the diverse needs of the online community members?
- Leadership: Do community leaders develop a social climate inside the community necessary for ensuring adequate levels of community activities?
- Technology: Does the community fits with diverse technologies and user skills?

3. Online Community Construct

The online community construct is proposed with three main perspectives: (1) online community attributes, (2) sense of online community, and (3) challenges of online community. The online community construct's frame is based on the four common attributes of community. The dimensions and challenges are marked at their relevant layers. The membership is at the core of the frame, as all the other attributes are facing toward the membership. The communication and technology challenges are placed separately on the diagram, but they can be seen as a communication technology challenge, situated at the inner-most layer (more on synchronous interaction) and outer-most layer (more on asynchronous interaction).

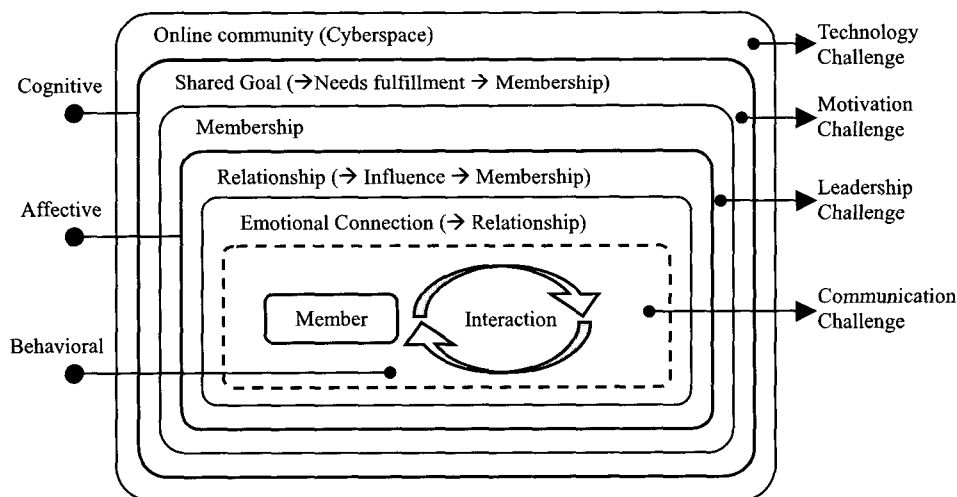


Fig. 2 Online Community Construct

3.1 Implications from the Online Community Construct

The outmost hull of the online community construct is the cognitive layer. The shared goal, as a cognitive aspect of a community, has the role of enticing people into a community boundary. A member can expect both cognitive and affective satisfaction from an online community. An ideal community may

give both cognitive and affective satisfaction to members.

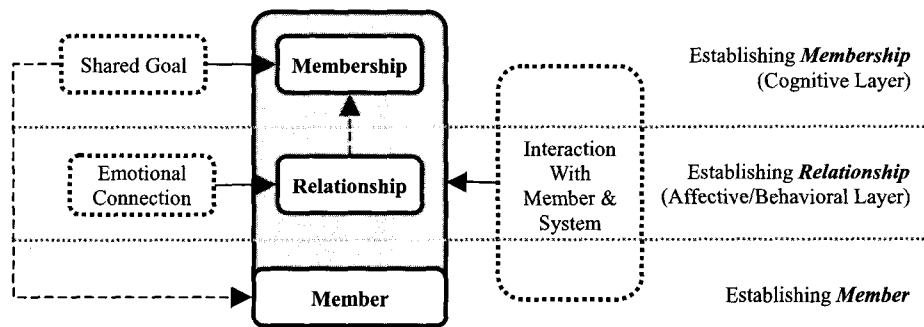


Fig. 3 Correlation of Member, Relationship, and Membership

Fig. 3 displays the connection of relationship and membership. The interaction lies over member, relationship, and membership. Though people interact with each other, the cyberspace (system) is in the midst of people, mediating them as a communication channel. McMillan and Chavis [22] argued that the quality of interaction affects the emotional connection. To achieve higher emotional connection, high quality interaction is indispensable. The quality of interaction can be thought in many ways such as successful closure, less ambiguity, and more promptness. Providing quality interaction will elevate the level of relationship and consequently, membership. Membership is also influenced by shared goal.

3.2 Two Sources of Congregation

The online community can be seen as a congregation of members from two sources. One is from the ‘Shared Goal’ that meets the personal needs. Given the shared goal, members gather into the community without personal relationship and have more chances to feel the sense of belonging to the needs fulfillment or benefit. This befitting tendency leads to strengthening of membership. Under similar interests, members exchange information impassively with other members, thus personal relationship may be grown slowly. This route can coerce an online community into a ‘membership-oriented’ one. Public online forums fall under this classification.

The other source is from the emotional connections that are initiated by personal communications. With casual contacts, the network of emotional connection can evolve into congregation of people under a faint boundary. Although there is no (or weak) shared goal, members are strongly bound to other members. If an online community shows this type of disposition, it can be called ‘relationship-oriented’. Members can find or establish a shared goal among their communication activity. However, because there is no central propagation channel, the shared goal may spread slowly or be ignored by others. Personal web log (blog) can be classified as an example of relationship-oriented community.

As shown in Fig. 2, an online community can be seen as a mixture of many attributes that is imperatively bolstered up on membership and relationship. In other words, membership and relationship can be considered as essential factors for maintaining and amassing community members.

4. Conclusion and Further Studies

This study visualized the structure of the online community attributes: shared goal, membership, relationship, emotional connection, interaction and member. The construct includes cognitive, affective, behavioral dimensions and challenges. The two sources of online congregation are visually identifiable in the online community construct. From the shared goal and from the emotional connection, these two types of communities are not mutually exclusive, but they are one-sided mixture of the attributes. The shared goal is the outward appearance that invites members into the community. However, the membership is the most essential value that keeps the form of community, whereas the relationship holds members inside the community while the shared goal does not actively operate. When a community does not sustain both of membership and relation, it can be broken down, because the members get neither of cognitive or affective satisfaction.

This study suggests the following further issues:

- The proposed online community construct is an abstract model. Other important issues such as demographic disposition, usability, offline-activity, leadership, trust building and design are not dealt within the study.
- The proposed online community construct can be readjusted with the 'shared goal' level because it seems to be the most influential factor for forming an online community.

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