

Chapter 35

Challenges of Analyzing Informal Virtual Communities

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ABSTRACT

Drawing from previous research, this chapter presents major challenges associated with the analysis of interaction patterns in informal virtual communities. Using social network as well as content analysis to understand the structure and nature of interaction in such virtual communities, the goal was understand the physical structure of the community as well as the nature of the themes discussed by community members in an attempt to build a theoretical model of interactions.

INTRODUCTION

A virtual community emerges from a particular need (to find or share information about a particular topic, find love, friendship, recognition, etc.). Usually initiated by one or several people, these initiators will often try to control how community members interact. In the inception period of any virtual community, the rites and rules of engagement are still undefined. Leaders enrol the first members, who tend to follow the natural authority of the community's creator(s). Interactions can be both formal and informal. Today people spend a great deal of time in many different kinds

of virtual communities; interacting with people they have never met, and exchanging all sorts of information.

In a previous project we were interested in understanding the sense of community in informal virtual communities where people connected using video technology and were engaged in exchanges on various topics. To investigate, we employed social network techniques to examine relationships between individuals and content analysis to examine the nature of themes discussed in this community. The intent was to develop a theoretical model of the interactions. This chapter describes the findings from that project and discusses some of the challenges associated with analyzing informal virtual communities.

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RELATED WORK

Many methods have been employed for studying virtual communities and range from empirically based methods to those which are more theoretical. Similar to work conducted by De Laat (2002), we used social network analysis (SNA) to analyze interaction patterns in virtual communities. SNA seeks to understand community member networks, and to ascertain members’ relative social locations in the network or community.

A social network is a set of individuals who are connected to one another through socially meaningful relationships (Hanneman, & Mark, 2005; Freeman, 2004). Before moving onto a discussion of social network analysis nomenclature that is relevant to this chapter, a tabular comparison of formal and informal virtual communities can be found in Table 1.

In social network analysis, nodes represent members and the links between represent relationships between members. In order to visualize interaction patterns, interactions were codified into a four dimensional matrix. A matrix of a network of size n is a square matrix ($n \times n$) with

variables of objects representing connections among network members. The network is presented as a graph with a number of nodes representing individuals and the connections between them represent relationships (see Figure 1 below, for example). If a connection is present between node A and B , then a 1 is recorded in the cells (A, B) and (B, A) ; and as 0 if there is no connection. Further if the relation is directional from A to B , an arc (flow) from source A to sink B , it is recorded as 1 in cell (A, B) , and a 0 in cell (B, A) . This is also referred to as *adjacency*. *Adjacency* is the graph theoretic expression of the fact that two individuals are directly related, or tied to one another (Robinson & Foulds, 1980). Formally, it is presented as:

Let $n_i, n_j \in N$ denote agents i and j in a set of N agents. Let a_{ij} denote the existence of a relation (arc) from agent i to agent j . Agents i and j are adjacent if there exist either of the two arcs, a_{ij} or a_{ji} . Given a graph $D=(N,A)$, its adjacency matrix $A(D)$ is defined by $A(D)=a_{ij}$ where $a_{ij}=1$ if either a_{ij} or a_{ji} , and 0 otherwise.

Table 1. Characteristics of informal and formal virtual communities

| Characteristics | Formal virtual communities | Informal virtual communities |
|-------------------------|--|---|
| Membership | Stable | Some variation |
| Goals | Explicit | May be implicit |
| Supporting technologies | Asynchronous and synchronous | Mainly synchronous but some asynchronous technologies may apply |
| Social protocols | Explicitly defined | Implied or might not exist |
| Growth | Planned and stable growth | Unplanned growth, may die without warning |
| Type of Awareness | Professional, demographic, tasks, and social awareness | Might vary |
| Trust level | Tends to be high | Might be difficult to determine |
| Discourse directions | Moderated | Might not be moderated |
| Ownership | Institutional | Open |
| Nature of data | Cleaned | Noisy |
| Social networking | Strong | May be weakened due to anonymity |
| Privacy | Safe | May be threatened |

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