Time to Split, Virtually:
Expanding Virtual Publics Into Vibrant Virtual Metropolises

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ABSTRACT

This paper assesses some of the strong claims made about the significance of virtual communities to electronic commerce. It focuses on the notion of community building as a means to constructing virtual metropolises, where tens of thousands of individuals are engaged in public computer-mediated discourse.

It is argued that the community approach discourages systemic analysis of collaborative media systems. In so doing, it distracts researchers’ attention away from how the interplay of technology and content can both enable and constrain the growth of a collaborative system’s user-population and participation.

The paper proposes an alternative approach based on systems-theory. The model produced using this approach focuses on how to effectively expand contributions to, and use of a certain class of computer-mediated space, referred to as virtual publics. It suggests that an effective segmentation strategy is an essential element for those wishing to build a vibrant virtual metropolis. Segmentation strategy refers here to any systematic method used to split discourse spaces with the aim of creating a system of related virtual publics.

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1. INTRODUCTION

The exponential growth in recent years of telecommunication technologies has resulted in a new era of both electronic commerce [38] and interpersonal communication [36]. Computer mediated communication (CMC) tools have altered both one-to-one and one-to-many communication. Of particular significance to this paper, is the growth of collaborative media systems where the audience is a significant source of media content as well as its primary receiver. For historical reasons, the users of such systems and/or aspects of the systems themselves are commonly referred to as virtual communities, or less often as online communities, electronic communities, or e-communities.

Increased interest in business processes over the Internet has resulted in an avalanche of terms to describe the phenomena. These include: Internet commerce (e.g. Dow Jones Interactive), electronic commerce, icommerce, i-commerce, ecommerce, e-commerce, web commerce, net commerce, e-business and e-tailing [30]. The abbreviation for electronic commerce most commonly found in ACM and IEEE publications appears to be e-commerce and is therefore used here. There is also debate as to what constitutes e-commerce [38]. It is generally accepted that the core issue is the selling of goods and services online [40]. Similarly, e-commerce is also referred to as an information technology application [21]. To conduct business transactions online a variety of pre and post sale issues must be addressed. This suggests that a broader understanding of what constitutes the field of e-commerce is required.

Strong claims have been made about the significance of virtual communities to e-commerce [12,15]. The claims primarily relate to the ability of virtual communities to increase a portal’s value by increasing web site click-throughs and reducing user churn rates. This, in turn, relates to the ability to profile users and to generate customized advertising. The marketing value of CMC between customers, potential customers and vendors has also been recognized [15]. Further, the large number of group-CMC interactions occurring via the Internet allows for extraction of potentially strategic information (e.g. recommender systems [35] and marketing information [22]). Virtual communities have also been proposed as intermediaries [4]. Finally, the large-scale use of group-CMC tools have resulted in fundamental changes in the information environment, resulting in power-shifts that must be taken into account by those engaged in e-commerce [23].

This paper examines in detail the theoretical basis for linking the creation and management of group computer-mediated discourse spaces to e-commerce enterprises. In particular, it focuses on how to plan the expansion of open collaborative media systems. It shows how e-commerce strategy, with a public group-CMC component, will need to take into account the relationship between discourse goals, the segmentation of discourse space and technology. In so doing, it aims to encourage systematic scientific research into the impact and the geographies of these cyber-spaces.
2. Defining “Virtual Community”

For historical reasons, users of collaborative media systems, or the systems themselves, are commonly referred to as ‘virtual communities’. Initially, such systems were not used for commerce but rather for socializing and collaboration. As a result, early advocates of CMC focused on the freedom of “virtual association” and the sense of community often gained by user-participation. Rheingold, the main popularizer of the term virtual community, argued that “whenever computer mediated communications technology becomes available to people anywhere, they inevitably build communities with it” [36, p.5]. From this deterministic approach, it is only a small step to conclude that all collaborative-communication systems must have an associated virtual community, as community will automatically result from its associated CMC. Hence, the widespread use of the term.

However, the position that all group-CMC systems have associated virtual communities should be rejected for a number of reasons. First, community only results from a special set of circumstances. The most commonly cited definition of virtual community is that of Rheingold. He defines 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 relationships in cyberspace” [36, p.5]. Clearly, such webs of personal relationships do not occur in many of the cyber-places that allow for group interaction (e.g. book review pages at Amazon.Com). Second, the term virtual community is redundant if we label every instance of group-CMC a virtual community. Finally, simple technological determinism has been refuted on both empirical and theoretical grounds [16,18]. It is interesting to note that even Rheingold now also rejects the notion that virtual communities are important to e-commerce. This is in part because of technological-deterministic theorizing that automatically links the use of CMC-tools to community. Consequently, despite a lack of consensus about what virtual communities are, theories linking e-commerce to open group-CMC have generally taken the ‘community’ perspective. This has had a negative impact on e-commerce theorizing.

At present, there is still significant debate about what exactly constitutes a virtual community [16]. Perhaps this is because it is not entirely clear what a real community is. The Penguin’s Dictionary of Sociology highlights this problem when it states, “the term community is one of the most elusive and vague in sociology and is by now largely without specific meaning” [1]. Researchers into non-virtual communities have had trouble distinguishing community from: (I) place, (II) population, and (III) human interactions [32]. Similarly, many researchers have used the term virtual community interchangeably with one or more of the following virtual community components:

(a) The computer-mediated space that supports group-CMC;
(b) The people communicating via a computer-mediated space that supports group-CMC;
(c) The interaction of users via group-CMC.

It is reasonable to conclude that the concept of virtual community is not equivalent to its cyber-place or its member’s interactions, nor its user-population. Fernback and Thompson [8] produce a workable definition of virtual community that is adopted here. They define a virtual community as “social relationships forged in cyberspace through repeated contact within a specified boundary or place (e.g., a chat channel) that is symbolically delineated by topic of interest.” This definition allows for a distinction between a virtual community and its computer-mediated space or virtual-settlement, its member’s interactions, and its population. It also recognizes the emergent properties of a virtual community’s components, which they refer to as “social relationships.”

Even with this clearer understanding of the term virtual community, we are still confronted by dilemmas in regards to when it should be used. In response to the virtual community label, Doheny-Farina [7, p.72] labels the discourse space created by such systems as “virtual airport bars” because he views the interactions that occur via such computer-mediated spaces as ‘fleeting’. Coate [6] on the other hand uses the ‘inn’ analogy because he sees such cyberspaces as places where the building of community is possible. In reality, the types of social relationships forged via such systems vary widely [42], making problematic any collective label based on a generalization about the types of relationships formed with their help.

As noted above, it is widely accepted that virtual communities are important to e-commerce. This is in part because of technological-deterministic theorizing that automatically links the use of CMC-tools to community. Consequently, despite a lack of consensus about what virtual communities are, theories linking e-commerce to open group-CMC have generally taken the ‘community’ perspective. This has had a negative impact on e-commerce theorizing.

3. Scalable Communities?

To date, Hagel and Armstrong [2,12] have produced the only widely recognized model of virtual community ‘growth’ or as they label it “scalability.” Their “Net Gain” model makes various links between virtual communities and e-commerce and is repeatedly cited in academic papers [4,10,38]. This section examines the Net Gain model, highlights its weaknesses and demonstrates why an alternative approach based on a systemic analysis of public open computer-mediated discourse spaces is required.

According to Hagel and Armstrong, virtual communities are computer-mediated spaces where there is a potential for an integration of content and
communication with an emphasis on member-generated content. Therefore, for computer-mediated space to be classed as a virtual community, it must enable the integration of communication and content. They therefore distinguish between on-line information services, such as Lexis-Nexis, which offer a rich menu of content but do not blend the information provided with member-generated communication, from virtual communities. At the same time, according to Hagel and Armstrong, it is possible to have a virtual “community with no members” [12, p.134]. The example they provide is Apple’s e-World, which suffered great difficulties because despite its great graphics and well-organized environments, it lacked users to generate content. Some additional examples of virtual communities provided by Hagel and Armstrong are The Well, Amazon.Com, and ESPNET (an Internet based sports community).

For virtual communities to grow, Hagel and Armstrong believe that a virtual community’s organization has to be “scalable.” Virtual community scalability they defined as the ability of a virtual “community to grow without losing its sense of community” [12, p.152]. The use of the term ‘scalable’, implies, that like scalable databases [11], virtual communities can expand linearly, by the addition of users and content.

According to Hagel and Armstrong, a large scalable virtual-community, which can potentially have millions of members, will consist of a large number of sub-communities. To preserve a sense of community, organizers must preserve intimacy and a sense of membership continuity. To maintain a sense of intimacy, sub-communities must remain small. To achieve this organizers must give sub-communities the resources they need to develop. Organizers must also provide protection to “stalwarts” from hoards of “new-bies” by moderation where appropriate. Membership continuity is helped not only by interesting member generated content but also by hooks such as calendar events and membership directories, which encourage increased community interaction. Finally, organizers of virtual communities must ensure that the advantages of scale related to purchasing power are captured. This will allow the broader virtual community to enjoy the benefits of growth.

Like most researchers into virtual communities [18], Hagel and Armstrong focus on factors that operate at the level of social interpretation. That is, they focus on how people feel about each other, “a sense of community,” “satisfaction of needs”, etc. However, it is not logical for them to require that virtual communities maintain “a sense of community” as they grow, if they are in fact only a type of computer-mediated space. It is also hard to understand why some of the examples of virtual communities cited by Hagel and Armstrong, such as Amazon.Com would have a sense of community or require it for their growth. In fact, if a virtual community with almost no members can exist, how can it have a sense of community at all? Further, it is not clear as to what exactly Hagel and Armstrong are referring to when they write about the size or scale of a virtual community. Are they talking about the mediated space, the generation of user content, or user population? In addition, how does one measure a “sense of community?” Hagel and Armstrong are unable to produce a coherent theory of virtual community expandability because they fail to distinguish between the various components of a virtual community, and its emergent property - social relationships. By focusing on notions of ‘community’, they ignored how the interplay of technology and content both enables and constrains the growth of computer-mediated discourse. This difficulty is to be expected from an acceptance of the technological determinist position that the use of group-CMC inevitably leads to the creation of ‘communities’.

The review above suggests that e-commerce theorists should actually be addressing a different question than how to “scale” ‘virtual communities.’ Rather they should examine the requirements for expanding computer-mediated spaces that are open to the public and allow for interactive group communication, referred to as virtual publics [17], while maintaining an appropriate user population and user contribution level. In other words, the alternative approach proposed here, is to move the focus away from social theory by examining virtual public expandability rather than virtual community scalability [18].

4. Coming to Terms With Virtual Publics

4.1 Virtual Publics Defined

Steven Jones [20] coined the term cybersociety to refer collectively to the new forms of social interactions and the complex social systems, such as virtual communities, that have emerged from the wide-scale use of CMC-technologies. The term cybersociety does not refer to the technology used to support CMC or to the CMC itself. Rather it refers to the social interactions and connections that are supported by the various computer networks that have now merged to become the Internet.

The social interactions that form the basis of cybersociety occur via a variety of public settings and private communication channels. These public cyberplaces have been termed ‘virtual publics’ [17]. More formally, virtual publics are symbolically delineated computer-mediated spaces, whose existence is relatively transparent and open, allow groups of individuals to attend and contribute to a similar set of computer-mediated interpersonal interactions.
Virtual publics are not a subset of the class ‘virtual community’. The term represents a different approach to categorizing cyberspace. Unlike virtual communities, virtual publics can be owned, because they are not an emergent or ephemeral system property, but rather interactive discourse spaces.

Virtual publics can be distinguished from private computer-mediated spaces. For example, a password protected corporate employees-only discussion board would not constitute a virtual public. This is because the public probably would not know about its existence (i.e. it is not transparent) nor would they be able to use it (i.e. it is closed rather than open). This distinction is made to emphasize the difference between the constraints acting upon users of public as opposed to private cyber-places. For example, the use of a corporate cyber-space may be compulsory, and the content production may not be considered a ‘public-good’ (see below). Further, the rules for engagement may also be formalized or restricted, collectively resulting in different usage patterns.

The need for this term ‘virtual public’ exists for a number of reasons. First, the types of social relationships forged in virtual publics vary widely. This makes any collective label based on a generalization about the types of relationships formed within them, such as virtual community, problematic. Secondly, it is important that a term exists that distinguishes between cybersociety and its public spaces. Thirdly, despite the differences in the technological and social aspects of virtual publics, their similarities make a collective label viable. Fourthly, as will be shown below, virtual publics are of considerable importance to e-commerce. On the other hand, as discussed above, the importance of associated ‘virtual communities’ is less clear.

An active virtual public will have a user-population. The term ‘virtual public user-population’ refers to the individuals that engage themselves in a virtual public’s symbolically delineated space. For example, the user-population of virtual publics based on web-BBS’s would be those individuals that over a period of time surfed to examine the web based discussion. It would not include those that only examined the discourse in a setting that did not allow them to engage in interactive discourse. For an individual user to be considered part of an email based virtual public’s user population would require list subscription. Therefore, a non-subscribed spammer would not be considered a part of the user-population. While not all cases of membership are clear-cut, the vast majority of cases can be categorized. With an understanding of user-population, it is possible to distinguish between participants that are ‘lurkers’ and those that are ‘contributors’. Lurkers are members of a virtual public’s user-population that do not engage in public discourse. Contributors are members of a user-population that over a period engage in public discourse.

The messages that produce the interpersonal communication via virtual publics can take four forms. They can be broadcast, two-way, reactive, or interactive. Fully interactive communication requires that later messages in any sequence take into account not just messages that preceded them, but also the manner in which previous messages were reactive [33]. Interactivity is not a characteristic of the medium. It is the extent to which messages in a sequence relate to each other, and especially the extent to which later messages recount the relatedness of earlier messages. True conversations require interactive-communication [13,34,44]. For a computer-mediated space to be considered a virtual public, it must enable interactive communication. Therefore, virtual publics can generally be distinguished from related ‘search spaces’. The messages posted to a virtual public or thousands of virtual publics are often collected to create a searchable database of virtual public discourse [35]. Such databases are not, in most cases, symbolically delineated interactive group-discourse spaces and are therefore not virtual publics.

4.2 Categorizing Virtual Publics

Virtual publics come in many forms of relevance to e-commerce. These range from short-lived event chats to long-lasting product discussion spaces. Product related special event chats might drive sales better than other ongoing virtual publics. E-brokers or cybermediaries [38] with product related virtual publics might have higher sales. Communities of practice [43] might function best when most group discourse is associated with a virtual public? Whatever the case, a research framework is needed that allows such questions to be addressed systematically. This section describes various ways in which virtual publics can be categorized. It highlights the diversity of types of virtual publics and the difficulties associated with categorizing a social space based on social structure.

Tables 1, 2, and 3, compare three ways for roughly categorizing virtual publics. These are, by use, by associated social formations, and by technological base. All three tables make note of the fact that cyberspace is not only composed of virtual publics.

Hagel and Armstrong [12] provide a scheme for categorizing virtual communities by use, which can be applied to virtual publics. They argue that virtual communities are about “aggregating people” through an engaging computerized environment, which allows for interactions. The basis for the interaction is the ability of virtual communities to help people meet one of four basic needs: interest, relationships, fantasy or transactions.
Virtual publics can therefore be categorized by the needs to which they cater. By addressing these basic needs, virtual publics can provide a distinct focus for their membership. Hagel and Armstrong also categorized virtual communities into consumer-focused or business-to-business focused communities. Consumer-focused virtual publics could be sub-categorized as, geographic, demographic (e.g. age, sex, etc.) or topical. Business-to-business virtual publics could be sub-categorized as vertical industry publics (e.g. software developer user-group), functional publics (e.g. marketers), geographic publics (e.g. local business association), or business type virtual publics (e.g. small businesses). Table 1 outlines this categorization scheme.

Table 1. Virtual publics by use.

<table>
<thead>
<tr>
<th>Cyber-Space</th>
<th>Virtual Publics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transaction</td>
<td>Business Type</td>
</tr>
<tr>
<td>Geographic</td>
<td>Vertical Industry</td>
</tr>
<tr>
<td>Functional Communities</td>
<td>Demographic</td>
</tr>
<tr>
<td>Interest</td>
<td>Relationships</td>
</tr>
<tr>
<td>Fantasy</td>
<td></td>
</tr>
</tbody>
</table>

A useful taxonomy of social formations that are associated with various virtual publics does not exist. The creation of such a taxonomy would require an analysis of the social networks typically formed by users [42]. Table 2, simply illustrates how the ‘virtual community’ debate suggests a role for sociologists in helping us to understand these cyber-spaces.

Table 2. Virtual publics by social structure

<table>
<thead>
<tr>
<th>Cyber-Space</th>
<th>Virtual Publics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual Settlements: The cyber-place of virtual communities.</td>
<td>Cyber-Inns</td>
</tr>
<tr>
<td>Virtual Airport Bar</td>
<td>Others Forms of Virtual Publics.</td>
</tr>
</tbody>
</table>

Categorizing virtual publics according to their technological base is more straightforward, for example, email based virtual publics, Usenet based virtual publics, etc.

Table 3. Virtual Publics by Technology Base

<table>
<thead>
<tr>
<th>Cyber-Space</th>
<th>Virtual Publics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Web-BBS</td>
<td>Web Avatar Meeting Place</td>
</tr>
<tr>
<td>Usenet Group</td>
<td>Email List</td>
</tr>
<tr>
<td>3-D World</td>
<td>Text Generated Space</td>
</tr>
<tr>
<td>IRC (Internet Relay Chat)</td>
<td>Other CMC-Technologies</td>
</tr>
</tbody>
</table>

Each of the above categorization schemes has its advantages depending on the question being addressed. However, the link between any such taxonomy and discourse structure is not clear. To derive such an understanding a systemic model of virtual public discourse is required.

5. Virtual Public Expandability

From the above review, it is clear that virtual publics are of potential value to those engaged in e-commerce. Of course, this value will relate to the purpose of the virtual public in question, and the size and quality, of its user population and user contributions. As a result, it is likely that many maintainers of virtual publics will wish to increase their value by expanding their user population and user contributions. Therefore, a model of virtual public expandability that can be used by those constructing e-commerce strategies is of considerable importance. Unfortunately, current theories of communication-technology or media use focus on optimization, fit, or effectiveness (e.g. media richness). Such theories are inadequate in situations where media choice does not relate to rational criteria of communication effectiveness [29]. Further, theories, that predict that technology will determine social use can be rejected on a variety of theoretical grounds [16,18,29]. The result is that to date, no systematic theory of the expansion and management of such cyber-spaces exists.

Virtual publics discourse is the output of a complex open system. It is an open-system because one of its essential components, users, can be exchanged with its surroundings. This is because users can subscribe/associate or unsubscribe/disassociate with a virtual public almost at will. To understand the impact of the expansion of any part of a complex open-system, on the system as a whole, an examination of its internal constraints is required. This is because the constraints will invariably produce interlocking nonlinear feedback loops [9]. A “feedback loop” is the environment around any decision point in a system. Decisions lead to a course of action that changes the state of the surrounding system and gives rise to new information on which future decisions are based. Therefore, systems theory provides an approach to modeling virtual public discourse and expandability.

5.1. Modeling Virtual Public Discourse

Two basic sets of constraints delimit discourse in all virtual publics. The first are human factor constraints on initiating sustainable interactive discourse (critical mass). The second are human factor constraints that limit the expansion of discourse (information overload).

5.1.1. Critical Mass. Hiltz and Turoff [14] proposed a “critical mass hypothesis” for sustainable interactive-CMC. Their theory resulted from the observations of early
computer conferencing systems. They noted that conferences with less than 8 to 12 active users would after a short while fail to produce enough new material to justify users continued use of the system. They also observed that some of the users of these small conferences simply migrated to larger and more active conferences. The importance of a critical mass to sustained discourse in virtual publics is also suggested by research into the diffusion of innovations. Markus [28] proposed that the widespread use of interactive media can result in a ‘public good’ if critical mass is reached. Likewise, economists have noted that for a positive ‘network effect/externality’ to occur an associated critical mass must be reached. ‘Positive network externalities’ occurs when a product or service becomes move valuable as more users adopt the product [10].

5.1.2. Social Loafing - Free Riding. The empirical studies that have explored the relationship between user contributions and user populations in ongoing computer-mediated group discussions have consistently found that a small minority of participants post a large proportion of messages [17]. Further, increases in user-population do not result in linear increase in user contributions [17]. In other words, a ‘social loafing’ or ‘free rider’ effect can be observed as group size increases [24]. Free rider effects are common in situations where a public good is available to everyone, regardless of whether or not he or she contributed to its provision; and an individual’s consumption of it does not reduce what is available to anyone else [39]. Several authors have noted that contributions to virtual publics can be considered public goods [23]. This in turn provides clues as to how to understand contribution rates in individual virtual publics that have reached critical mass.

Thorn and Connolly [39] argue that if we view discourse contributions as a public good then we should expect reduced contribution rated in the following situations: a) greater contribution costs, b) larger groups of participants, c) lower values of information to participants, and d) greater asymmetries in information value and benefits across participants.

There are two other important implications to viewing contributions as public goods. First, it implies that exchanges in such spaces are more akin to gift transactions than commodity transactions [23]. A gift transaction involves a diffuse and usually unstated obligation to repay the gift at some future time. In gift economies, an individual generally benefits by increasing the range and diversity of her/his social network. In its purest form, social relations rather than price drive gift economies [3]. This in turn suggests that the use of tools, such as agents and filters, that breakdown shared social cyber-space, will impact adversely on virtual public contributions.

Unfortunately, little if any research exists that directly explores the relationship between the use of agent or filter technologies and the formation of computer-mediated social networks. Second, most public goods will suffer from “crowding” [5] (e.g. too many people using a park). In fact, the next subsection on information overload describes a form of ‘crowding’ in virtual publics. Just as understanding of the an ecosystem’s stress points is essential for park management, an understanding of the group communication boundaries is essential for effective long-term management of virtual publics.

5.1.3. Information Overload. Many users of the Internet have experienced what is commonly referred to as “information overload”, that acute sensation of being swamped by unwanted information. This occurs because the degree to which information technologies can effectively control or aid CMC is limited by the finite capacity of human cognition. It logically follows that beyond a particular communication processing-load, the behavioral stress zones encountered will make group communication unsustainable. Communication load being the processing effort required to deal-with a set of communications. Users of virtual publics have two options when group-communication starts to result in information overload. The first option is simply to end participation. The second option is to change communicative behavior so that it becomes manageable. This can occur in various ways, including lowering response rates, or paying less attention to messages. Another method is to use agents and or filters to manage personal communication space. However, the result of such techniques is sub-group rather than group communication and the removal of the individual from the groups shared symbolically delineated space. This in turn will alter virtual public group communication patterns.

5.1.4. User Population/Discourse Contribution. By combining the two basic sets of constraints affecting discourse in all virtual publics, critical mass and information overload, with the ‘social loafing’ phenomena, Jones and Rafaeli [17] produced the user population, discourse contribution function presented in Diagram 1.
5.1.5. Technological Base & Discourse Structure. The technology used to support a virtual public cannot remove the constraints on group-CMC noted above. However, different technologies can alter the zones at which these constraints operate [41]. In other words, a relationship exists between CMC-technology and the point at which group CMC results in information overload. This is because technology-type correlates with message systems characteristics, which in turn relates to communication-processing load.

Communication-processing load relates to a number of message system characteristics. Users generally have to make more of an effort to reply coherently to a thread than to a single message [25]. Therefore, higher interactivity correlates with higher communication-processing load. Similarly, a dense pattern of messages (high frequency of postings) will require quicker and more sustained processing by group members. Therefore, message density will also covary with communication-processing load. It is also likely that a decrease in ‘interactional coherence’, not compensated for by a useable persistent record, will also increase communication-processing load [13]. For example, disrupted turn adjacency may require increased user effort to track sequential exchanges. Disrupted turn adjacency is caused by the fact that CMC-systems such as email-lists transmit messages in the order they are received without regard to what they are in response to. Thus in group-CMC a message may be separated from a previous message it is responding to by another message, or lags in message transmission may even result in reversed sequencing.

A relatively synchronous CMC-technology such as IRC may be able to reach a higher communication load than an email list. This is because of the speed at which users in an IRC channel window can reply to the comments of other users. However, IRC channels may not be able to reach the same user population as an email list. This is because email users can store messages and take time to structure their responses.

The stress zones caused by information overload on interactive group communication can be identified empirically by the large-scale mapping of active participation in different types of virtual publics [18,19,26]. The claim here is not that technology will determine online behavior, rather, that technology is both an enabler and constrainer of actions. Each class of CMC-tools will have its own associated stress zones that can be measured. For each class of CMC-tools, it is also likely that the point at which information overload becomes an issue will relate to the nature of the virtual public’s discourse. For example, virtual publics which aim to support empathetic communities [31] may require a greater level of interactivity and thread depth to sustain appropriate discourse than a virtual public focused on software support. If this is the case, then the maximum sustainable active user population of virtual publics that support empathetic communities will be less then those of software support virtual publics using equivalent CMC-tools. However, considering the differences in the way CMC-tools structure communication it is likely that the position of the information overload stress zone will primarily relate to technology type.

5.1.6. A Systems Model of Virtual Public Discourse. The preceding section describes some of the constraints acting on virtual public discourse. Diagram 2 shows how these constraints result in nonlinear feedback-loops. It works as follows. An increase in the membership of a virtual public will probably result in an increase in virtual public communication. However, because of the limited mental-resources available to individuals to process group
communication it will not be possible to expand virtual public communication indefinitely. Once virtual public communication becomes unmanageable or incoherent, it is likely that there will be an impact on virtual public population size or growth. That is, there will be a nonlinear feedback.

6. Strategy and the Virtual Public Systems Model

The provision of discourse space for computer-mediated social networking is one way to tie users to a particular system. Therefore, given the low cost of Internet channel switching, methods for maintaining and expanding a user-base are likely to become increasingly important. It also follows that the value of a virtual public or series of virtual publics will relate to the size and quality of its user population, and their contributions. Therefore, an understanding of how to effectively expand virtual public user population and user contributions can potentially inform the production of an e-commerce strategy. The virtual public component of an e-commerce strategy will need to address three issues: i) how best to attract individuals to a particular virtual public; ii), how to get people to stay; & iii) how to effectively manage growth.

Strategizing about virtual public maintenance and growth will be inadequate if the constraints that impinged on virtual public discourse are not taken into account. This section focuses on how the connection between discourse goals, segmentation strategy, and how the model outlined above can be used to inform the virtual public component of an e-commerce strategy. If space permitted, a variety of other strategic issues would also be examined that can affect the flow of new users a virtual public and the centrifugal forces that keep them subscribed / associated after critical mass is reached. These include: the quality of discourse content; the impact of discourse databases on user awareness and discourse management; the permanence of the virtual public in question; and potential technology shifts.

Discourse Goals: maintainers of virtual publics need to determine the type of discourse they typically wish their virtual public to contain. For example, if sustained interactive communication is considered essential, then a critical mass of communicators will be required.

Amazon.com provides a virtual public for each of the books it sells. However, in this case sustained interactive communication between book reviewers does not appear to be a goal, so critical mass is not an issue. For Excite’s ‘Virtual Places™’ virtual publics, critical mass is an ongoing issue. For a number of years, Excite.com has run a public server for the avatar software Virtual Places™. Avatars are software generated visual characters that individuals can use for inter-personal communication and for navigating cyber-space. With the help of ‘Virtual Places’, any web page is potentially a virtual public, as any web page can be used as a cyber meeting-place for group discourse. Virtual Places discourse is synchronous and limited to 25 users. Therefore, the virtual publics they create are often highly transitory. To maintain and sustain
a virtual public using such software ongoing interactive discourse is essential. Therefore, each newly created ‘Virtual Places’ virtual public will initially be confronted with the issue of critical mass. For this reason Excite created a web system sub-divided into 6 categories: peers, interests, regions, general chat, special events and adults only; where users are encouraged to gather and chat. Where sustained interactive discourse is a goal, various techniques can be used to gain critical mass. Administrators can seed discussions by systematically encouraging a group of key individuals to contribute. Economic incentives can be given and where a number of related virtual publics already exist, group segmentation can be used to gain instant critical mass for new virtual publics.

**Segmentation Strategy:** - perhaps the most important point that can be extracted from the expandability model is that ‘segmentation strategy’ is an essential element for those wishing to build a vibrant virtual metropolis. ‘Segmentation strategy’ refers here to any systematic method used to split discourse spaces with the aim of creating a system of interrelated virtual publics. The term virtual metropolis refers to collaborative systems where tens or even hundreds of thousands of individuals are engaged in public computer-mediated discourse. Virtual metropolises do not result from the large-scale growth of discourse within a single virtual public. Virtual publics are not ‘scalable’. Therefore, a ‘mega virtual public’ cannot be sustained. Rather, virtual metropolises emerge from the creation of a series of related virtual publics, via the appropriate segmentation of discourse in different related cyberspaces. In turn, the resulting system of interconnected virtual publics encourages the expansion of user populations, while reducing the likelihood of overloaded virtual public discourse. The examples that follow help illustrate these points.

Amazon.com segmentation strategy is straightforward; each book has its own virtual public. Therefore, as the number of books Amazon sells grows, the number of virtual publics it maintains expands. Excite also have a segmentation strategy for its Virtual Places™ virtual publics. As users logon to Excite.com with their avatar software, chat spaces are suggested. If more than 25 users are on a particular page, users are encouraged to move to less crowded but related space. Administrators of email lists based virtual publics have generally not had segmentation strategies. Hence, the small number of email based virtual metropolises. However, this has changed recently with the advent of free email list management companies such as onelist.com and egroups.com. These companies gather many email list virtual publics into a single virtual metropolis by encouraging users to form new lists using their free services.

The need for critical mass and the appropriateness of segmentation strategy will relate to the purpose of a system of virtual publics and their technological base. Measures of virtual public ‘crowding’ are slowly being extracted from large-scale field studies into virtual publics discourse. These measures in the future will help refine segmentation strategy [19,26].

### 7. Conclusion

It is argued that the community perspective is not required to make decisions about splitting online groups. In fact, a focus on notion of community may lead us from issues of correct structure into emotional battles. While splitting groups up with a sense of community is a generally an emotional issue in the real world, in computer-mediated situations the process appears to be far less problematic. The splitting of groups will not necessarily impact upon a sense of community. Many virtual publics do not have such a sense about them. As such, splitting groups should be tied to a segmentation strategy and virtual public crowding metrics as they are produced.

The model of public interactive group-CMC outlined in this paper can help guide our understanding of computer-mediated interactive discourse spaces, and how to best use it for e-commerce. The model refocuses our attention on the factors that constrain user behavior. In regards to e-commerce strategy, the model suggests that virtual metropolises will result from the creation of many inter-related virtual publics. The rate at which this can occur will in part relate to appropriateness of the segmentation strategy used.

### References


