Analyzing online political discussions
Methodological considerations

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**Introduction: Political communication and the Internet**

In the last decade the Internet plays an increasing role in political communication. Political parties have turned to online communication to conduct many activities such as informing journalists, reaching and contacting voters. One of the reasons for political organizations is that the Internet offers a source controlled form of communication produced by professional communicators. There is also an unlimited space to articulate a variety of the political ideological information. Furthermore, what the Internet delineates from traditional media is the possibility of interactivity. Politicians have their own web logs and create the possibility to communicate with individual citizens by e-mail. On the other end, the individual citizens have instant and direct public access to a world of political and governmental information. There is also the possibility of two way communication with politicians, and maybe even more important, with an unlimited audience. The non-hierarchical and decentralized character of the Internet enables communication between people, who would otherwise not have been active in the political discussion.

Although the use of the Internet by the general public increased in the nineties of the last century, there already exist considerable amount of studies on the potential and limitations of the online political communication that take place on a diversity of platforms. For example, the studies of websites of political actors such as political parties (Van Os, Jankowski & Vergeer, 2007), politicians and non governmental organizations (Shane, 2004), hyperlink analyses of websites and blogs (Park, 2003; Tremayne, Zgeng, Lee, & Jeong, 2006), or studies of the characteristics of the users of online political communication (Davis, 2005; Hill & Hughes, 1997; Norris, 2001).

The Internet appears to have polarized political observers into optimists and skeptics (cf. Tedesco, 2004; Davis, 2005). The so called e-optimists view the Internet as more than obtaining information, “but as revolutionizing the character of democratic society by transcending limitations of time, space and access and interactive and deliberative citizenship, not hindered by the elite character of traditional mass media” (Brants, 2005, p.143). The potential interactivity will draw an increased mobilization of people into the political discussion. On the other side are the e-pessimists who question the potential power ascribed to the Internet in activating the political uninterested. These pessimists worry because digital power can create a new digital divide between those who do and those who don’t have access.
to the communication resources. Although access to the Internet has increased, people still need special skills to actually participate in online communication (Norris, 2001). Finally, cyber realists conclude it is still too early to evaluate the impact of online communication on the political arena. Although little has changed in the political process, new possibilities created by the Internet may lead to empowerment of peripheral groups (Muhlberger, 2004).

Political participation of heterogeneous groups of people with widespread opinions could achieve an ultimate public sphere. When many people are exposed to sufficient information and diversity of opinions, one could say that the public opinion on the Internet is formed (Tedesco, 2004). The factual contribution of the Internet and furthermore the electronic discussion forums as facilitator of public deliberation or the impact on deliberative democracy is often discussed (Dahlgren, 2002, 2005; Savigny, 2002).

**Online political discussion and public opinion**

Online political discussion forums such as newsgroups were one of the first new formats in political communication. Because electronic discussions enable people to express their political thoughts to a major potential audience, online discussions by citizens will gain new opportunities for political participation. People, who felt ignored before in the traditional political arena, now can participate in the alternative online arena on public issues (Davis, 2005). The non-hierarchical character of the Internet enables initiatives from people that are traditionally not participating in the political discussions. The increasing usage of online discussions for persuasion and mobilization suggest that electronic forums are important in the formation and expression of public opinion (Davis, 2005). However, there still remains the question of representation. It is difficult to judge whether opinions expressed in the online forums represent the common public opinion.

There are also people who look at political discussions in newsgroups as trivial. Political discussion forums have found to be fraught with very unsavory behaviors, called flaming (cf. O’Sullivan & Flanagin, 2003). The online discussions are filled with biting comment about other people’s views and non-political personal expressions. It seems that in the electronic discussion groups the objective of discussions is more reinforcement of opinions than that it is a forum in which different political views are exchanged and adjusted (Davis, 2005). Research has to gain more insight in how the discussion forums interact with the political processes in a democracy. Therefore we need a better understanding of the structure and content of these new communication forms.
Political systems and discussion groups
A lot of research on political discussion groups is done in the US. The US political-media system differs from the Dutch situation. America has a two party majoritarian political system and a media system characterized by “a neutral, commercial press and information oriented journalism” (so called liberal model) (Hallin & Mancini, 2004; Brants & van Praag, 2006). This differs from the Dutch system, which has a multi-party system, based on consensus, and a media system in which “a long dominance of a party linked public broadcasting system” (so called democratic corporatist model) exist (Hallin & Mancini, 2004; Brants & van Praag, 2006).

It is important to take the different political contexts into consideration studying and interpreting results of the research on political online discussion groups. In the US, many discussion groups that are principally ideological oriented (Davis, 2005; Hill & Hughes, 1997), whereas in the Netherlands, only a few general political discussion groups exist without a specific political ideology. The content of messages within discussion groups will be different because with more homogeneous ideological participants content will indicate the prevailing ideological consensus of that group (Hill & Hughes, 1997). In the non-ideological discussion groups, there probably will be a more heterogeneous ideological contribution. In the section on comparative analysis we will focus on this topic.

Internet and Usenet
Online communication has transformed the public sphere in the sense that people (nonprofessionals) have larger opportunities to disseminate their thoughts over a wider geographical area than prior to the Internet. This article examines one form of Computer Mediated Communication through the Internet, called Usenet (cf. Smith, 1999). This is a predominantly text based application where discussions organized by themes take place. On Usenet discussions occurs via discussion groups accessible through newsreaders and Web sites (Davis, 2005). People can start a discussion (a thread) by posting an article or by replying to an earlier posted article. This kind of discussion is termed a “many to many” form of asynchronous communication. Asynchronous means that people can act and respond when they choose to do so.

Discussion groups can be seen as thematically structured virtual communities. Those communities differ from “real world” communities because they have no geographical boundary. Instead, these communities solely exist based on a shared interest in a specific,
narrowly defined topic. People share their interests but would have never communicated with each other without Usenet.

These virtual communities can be viewed as an aggregate of individuals and at the same time as individuals that are interconnected. The predominant way to analyze communities is to look at aggregate measures. An important criticism was that the individual is viewed isolates from its social structure. A paradigm and a research design that overcomes this criticism is social network analysis. Predominantly developed within sociology, it was Rogers (1995) who translated the approach to the field of communication in his studies on the diffusion of innovations. The paradigm is best formulated in the following quotes:

“(…) In real life, natural settings, communication can be understood better if it is not broken up into a sequence of source-message-channel-receiver acts, but rather examined as complete cycles of communication in which two or more participants mutually share information with one another in order to achieve some common purpose, like mutual understanding and/or collective action.” (Rogers & Kincaid, 1981, p.31)

And:

“In the study of human communication, we feel that emphasis should be placed upon information exchange relationships, rather than on individuals as the unit of analysis.” (Rogers & Kincaid, 1981, p.32)

To date, network analysis plays a minor role in communication science. This is striking because the adoption of the Internet on a large scale opens up new possibilities for network analysis (Wellman, 2001).

**Public online discussions in Dutch politics**

There are many ways to study online discussion groups. Most studies focus on the content of discussion (cf. Hill & Hughes, 1997; Papacharissi, 2004). Others focus on the visualization of the large amounts of discussion data (Sack, 2001; Turner, Smith, Fisher & Welser, 2005). In this article, we will focus on analyzing discussions from a content analysis approach, a social network approach, and from a longitudinal perspective. This will be illustrated on data from in a highly active Dutch political discussion group (nl.politiek), in the weeks prior and after the national elections of November 2006.
Political online discussions can be analyzed in several ways. The most predominant way is studying the general public opinion in the discussion group, such as describing what issues and political actors (e.g., parties and people) come forward and the evaluation of these issues and actors. The research design is content analysis.

A second approach is by looking at the group aspect of the discussion group. This group can be viewed as a community sharing opinions on a narrowly defined topic, in this case politics (cf. Jankowski, 2002). However, within this group, people will have conflicting interests. These conflicting interests may follow the dimensions of left wing and right wing (liberal versus socialist) or religious or secular. As such, the discussion group is a platform for voicing these conflicts.

To take the community approach a step further, analyzing discussion groups allows for several forms of network analysis: communication network analysis and semantic network analysis. In this study we will focus on the content analysis of online discussions on politics and on communication networks between authors contributing to these discussions. The reasons for the combination of multiple research designs and measurements is that it allows for triangulation of results, and for testing or augmenting existing theories. In the case of triangulation, one might question whether cohesion in a group as a network characteristic is also cohesive when it comes to the content of the actual discussions between people. An example of the latter one is whether insulting messages results in smaller networks.

Content analysis

Research using quantitative content analysis have a long tradition in studying and analyzing media messages (Rife, Lacy & Fico, 2005). Those messages are produced and formatted by professional communicators. The content is produced on a routine basis, moderated and edited by an editorial board before being published. This leads to media content that is well thought through, clearly formulated and well substantiated. The content in discussion groups will differ substantially because it is produced by nonprofessionals and is more informal, as such, the nature of the content will be very different from professionally produced content. For instance, nonprofessionals may act and react on a unrestrained and more straightforward bases. Furthermore, they will probably not be as capable in voicing their thoughts in written text. This leads to discussions that are, to some degree, similar to conversations (Drew & Heritage, 2006).
One of the reasons for varying degrees of discussion group performance is the varying degree of implicit and explicit norms (cf. Burnett & Bonnici, 2003), resulting in varying degrees of social control. Explicit social norms, such as a charter or FAQ, on how to behave are often unavailable. This means that unsavory behavior such as flaming, insults and discriminatory remarks are unpunished. Furthermore, people do not know each other personally. In these situations, inhibitions to insult others are less present than when people do know each other personally. This is aggravated by the lack of visual cues aiding the interpretation of messages (cf. Goffman, 1959). So called emoticons can help the receiver to interpret online messages as they were intended. However, not every poster uses them. A final characteristic of online discussions is the asynchronous nature, meaning that there often is a time gap between an initial contribution and a reply. Due to the stretched out discussions, quick corrections or swift punishment on abusive content is difficult. His hampers the quality of the discussion. All in all, this results in political content far more unstructured and emotional than professionally produced content.

The specific nature of the online discussions has consequences for the content analysis. The measurement instrument, depending on the research questions should reflect this. In unmoderated groups, contributions may be submitted on impulse, without checking the message for errors, for emotional content amongst others. The unmoderated nature of online discussions results in a conversation style similar to spoken language used in every day life.

The organization of a discussion group: units of analysis
Discussions in online groups have a hierarchical c.q. nested structure. A discussion group consists of multiple separate discussions. Each discussion consists of at least two messages in reply to each other, produced by at least two authors. Within each message, the identity of each author can be identified.
When a participant adds a new article to the discussion, this article is embedded in the already existing discussion. Depending on the length of the thread already, the discussant can read the discussion and can take into account everything that is mentioned earlier. However, this is not observable from the logged data.

This organization of communication is similar to how Rogers and Kincaid (1981) define convergence in the communication process as a way in which participants want to achieve mutual understanding. This mutual understanding will be reached in an interaction process of exchanging ideas or opinions through time.

**Network analysis**

Network theory is an approach in social sciences developed as a critique on the atomistic approaches such as the survey designs where individuals are analyzed isolated from their social context (Galtung, 1967). Social network analysis focuses on the social structure of one or more groups and on individuals with such groups. Applying this approach for analyzing discussion is not new (cf. Wang & Chen, 2004).

**Units of analysis**

Rogers and Kincaid (1981) define communication network analysis as a method identifying the communication structure in a system. A communication network consists of interconnected individuals by patterned flows of information. The *structure* of a network
refers to the relation between two actors. In online discussions this would be two people in
discussion with each other. The \textit{composition} of a network refers to characteristics of these
actors. Two examples of actor attributes are the degree of participation (i.e. how many
postings does an actor make), or the political preference of an actor (i.e. positive or negative
comments on politician or political party).
Discussion threads are hierarchically organized, meaning that the first message of a discussion
is at the top (see box 1).

\textbf{Box 1: Hierarchical structure of a discussion thread}

<table>
<thead>
<tr>
<th>M1: Message 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2: Reply to M1</td>
</tr>
<tr>
<td>M3: Reply to M1</td>
</tr>
<tr>
<td>M4: reply to M3</td>
</tr>
<tr>
<td>M5: reply to M4</td>
</tr>
<tr>
<td>M6: reply to M1</td>
</tr>
<tr>
<td>Et cetera</td>
</tr>
</tbody>
</table>

Contained in each message, is technical (header) data on - for example - where, when by
whom the message was sent (see box 2). Combining the sequential structure and identifying
who communicates to whom, direct communication relations can be identified.

\textbf{Box 2 Relevant header information for analysis of discussions}

- \textbf{From} name and e-mail address of message author (if provided)
- \textbf{Date} date and time of message
- \textbf{Organization} IP-address
- \textbf{Lines} number of lines the message consists of
- \textbf{Message-ID} unique identification code of message
- \textbf{References} identification code of the messages this message is a reply to
- \textbf{Date} date and time of sending
- \textbf{Xref} cross-reference

But what is a tie when it comes to discussion groups? A tie between individuals is
conceptualized as an explicit communicative relation between two people participating in a
newsgroup. A person’s response to another person’s contribution to a newsgroup constitutes a
tie between those people.
An important advantage in identifying direct relations between contributors is that it allows for creating directed and valued graphs. An example is whether contributor A replies to contributor B, or the other way (directed), or the number of times A replies to B (valued) (cf. Wasserman & Faust, 1997). In figure 1, some examples of types of graphs based on the same thread are presented.
Figure 1: A discussion thread and its communication networks

Discussion thread

Undirected graph

Directed graph

Valued graph

Note: A through E are individuals. The lines and arrows depict communicative relations. Lines depict undirected relations, arrows depicts directed relations. The thickness of the lines depicts the value of a relation.

These interconnected relations between actors can be compiled in a graph. A graph is a model of a social network with (un)directed relations (cf. Iacobucci, 1997). Graph theory allows for the calculation of indices for the structure of the social network. A few of the most important ones are centrality and density. Centrality refers to whether the network is centered around a
single person, or whether there is not real centre in the network. Density refers to the degree of interconnectedness, the level of linkage among the points in a graph (Scott, 2000; Wasserman & Faust, 1997).

**Comparative analysis on discussion groups**
The analysis of discussion groups lends itself for comparative analysis on several dimensions. The most obvious one is comparing two different discussion groups with each other. For instance, a discussion group devoted to political party A with discussion group devoted to party B. Research questions could focus on whether discussions in one group are on different topics, on a more diverse range of topics and whether the groups differ in terms of cohesion. A second dimension is comparing discussions in the same group on different points in time, for instance prior national elections and after elections, because the nature of the political content can differ. A third relevant dimension for comparative analysis is comparing discussion groups in different countries.

One particular angle is of interest. Namely whether a specific type of party system (bi-party or multi-party) is reflected in the available discussion groups? For instance, in the Netherlands a large number - 24 - of political parties participated in the national elections. However, there is only one major Usenet discussion group on politics that has no political ideological preference. In the US, a two party system, two or three specific groups are available for democrats and republicans. Furthermore, a large number of discussion groups contain the term ‘politics’. Mostly, these newsgroups represent a clear ideological political side in contrast with the Dutch political discussion group that has a general character.

If there are multiple Usenet political discussion groups, a further question could focus on cross-reference messages, meaning whether people decide to post one message simultaneously to more than one group. Cross-referencing results in an augmentation of the communication network outside of the discussion group. As such these cross-references might function as weak ties between distinct communication networks.

**Issues concerning sampling**

**Content analysis**
Sampling from discussion groups is relatively straightforward (cf. Krippendorf, 2004; Neuendorf, 2002). Krippendorf distinguishes sampling units, recording/coding units and context units. An important limitation in sampling on messages in discussion groups is the
context of the messages posted. To include the former and later messages to understand the context of the content, the sampling unit should be on the level of the complete threads. Since the content of discussions are archived digitally, computer assisted content analysis seems logical (cf. Skalski, 2002), but this can only be used under specific conditions (Rife, Lacy & Fico, 2005). Because comprehensiveness and type of search determine how well databases provide relevant information the use of computer assisted content analyses was not an option for our study. Therefore, sampling is used for analyses on level of threads.

**Social network analysis**
Sampling is common practice in large scale data analysis. Sampling reduces the costs of data collection and allows for statistical testing to determine whether relations between variables are statistically significant or not. However, sampling in the case of network analysis, where not the individual but the relation between two individuals is the unit of analysis, traditional sampling theory does not hold. If people are selected randomly, the sample of people is representative for the population. However, the relations between these people in the sample are most likely not representative for the relations in the population (Scott, 2000). Only basic indices are defined at the individual level (in the case of ego networks), such as the average number of friends in individual reports, are unbiased. Therefore, the measure complete networks, other strategies than random sampling strategies are needed.

**Boundaries and sampling**
Typically, social network analysis strives to identify the complete network. The question is what delineates a discussion network from other ones. The first boundary is the group itself: only participants’ relations within one or more discussion groups are of interest. If it turns out that contributors cross-post messages simultaneously to other discussion groups, a researcher might choose to extend the boundaries to the other group(s).
A second type of boundary is the time span for which the relations are being identified. Is one week of discussions enough to chart all relations between contributors or does one need a larger time span. One strategy is to select a time span and start at the center (i.e. the day in the middle of the period), then go forth and back one day until a sharp drop occurs in newly defined contributors. If the number of messages per day is not evenly defined, one might choose to start on the day with the most messages.
The second commonly used sampling strategy is the reputation method (e.g. snowballing). This entails an initial small sample of individuals. From these individuals is determined what other individuals they have a tie with. This is repeated a number of times, until the number of additional individuals decreases steeply. This procedure seems applicable to online discussions. However, if sampling from the population of contributors to the discussion group, one has to ensure that each participant has an equal chance to be selected. The actors may not be selected based on the messages, since active contributors then have a larger chance of selection than people that contribute occasionally. However, snowballing as a sampling strategy itself tends to result in biased estimation of connectedness: people with more connections will be able to name more other people than people with fewer connections. Whether this bias also occurs in discussion groups is not clear.

A cautionary remark on the availability of the data: one has to keep in mind that Usenet data are not archived on servers indefinitely. Depending on the level activity of a discussion group and administrators decision, discussions are purged from the server from periodically. More active discussion groups are archived for a smaller period than inactive groups. This retention period may differ for each Internet service provider. Google groups claims to have an extensive archive in the sense that go far back in time. However, some header data are not available. Also, since it is web based, downloading will be extremely arduous. Retrieving newsgroup discussions from Usenet servers is easier since there are numerous software applications available for this task.

**Preliminary results: Dutch discussion in nl.politiek prior and after national elections of November 22, 2006**

In this section preliminary results from analysis on discussion in the Dutch newsgroup on politics in the context of the national elections of 2006 are presented.

**Sampling**

All messages were downloaded from the server news.surfnet.nl from the newsgroup “nl.politiek” (nl.politics) in the period from 25/10/2006 to 12/25/2006. The total number of messages in this period was 115,793 in 2,656 discussions contributed by 1802 participant. These data were used for the network analysis and the longitudinal analysis. From this population of discussions, a random sample was drawn for content analysis, resulting in 214 discussions.
**Results from the longitudinal analysis**

The main question in the longitudinal analysis is whether the activity in the newsgroup alters during the election campaign and after the elections?

In Figure 2, we observe that the number of threads increases towards the Election Day. After the Election Day, the number of participants decreases again. The number of actors is relatively constant. These results indicate that increasing activity seems to increase the number of threads, but at the same time shorten the discussion threads.

**Figure 2**  
Trend of participation in the political newsgroup nl.politiek 10/25/2006-12/12/2007

The results are substantiated by the results reported in Table 1. Here we see that the mean number of messages per day and the mean number of actors per discussion per day are related very strongly (r=.861): the more actors participate in the discussions, the more messages they generate. This seems to be logical, though the relation is not perfect.

Furthermore, we see that the more actors participates within one discussion, the less discussions threads are started (r = -.448). This also implies that when a participant does not see reason to participate in an existing thread he will start a new thread of his own.
The number of threads affects the length of threads. The more threads are started in one day the shorter the threads seem to become \( r = -.456 \)

Table 1 correlations between participation indices

<table>
<thead>
<tr>
<th></th>
<th>mean number of messages per discussion per day</th>
<th>mean number of actors per discussion per day</th>
<th>number of threads per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>mean number of</td>
<td>1.000</td>
<td>.861</td>
<td>- .456</td>
</tr>
<tr>
<td>messages per</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>discussion per day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>mean number of</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>actors per</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>discussion per day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>number of threads</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>per day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>62</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Results from the content analysis

Content analysis on the discussions shows that the Socialist Party was the topic of discussion relatively often (33.6%). However, this is not reflected in the election outcome (11.6%).

Table 2 Most discussed political party

<table>
<thead>
<tr>
<th>Party</th>
<th>Presence in discussion (%)</th>
<th>Electoral votes (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Socialist party</td>
<td>33.6</td>
<td>16.6</td>
</tr>
<tr>
<td>Christian democrats</td>
<td>19.7</td>
<td>26.5</td>
</tr>
<tr>
<td>Social democrats</td>
<td>15.9</td>
<td>21.2</td>
</tr>
<tr>
<td>Liberal party</td>
<td>9.8</td>
<td>14.7</td>
</tr>
<tr>
<td>Green party</td>
<td>3.3</td>
<td>4.6</td>
</tr>
<tr>
<td>Christian party</td>
<td>3.3</td>
<td>4.0</td>
</tr>
<tr>
<td>Right wing parties</td>
<td>5.6</td>
<td>6.6</td>
</tr>
<tr>
<td>Democrats</td>
<td>0.9</td>
<td>2.0</td>
</tr>
</tbody>
</table>

N=214

The most discussed topics are ‘politics in general’ (cf. Table 3). In second place is ‘immigration policy’ with 7.3 percent off all discussions.
Table 3 Most discussed topics

<table>
<thead>
<tr>
<th>Percentage of discussions on topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Politics in general</td>
</tr>
<tr>
<td>Immigration policy</td>
</tr>
<tr>
<td>Crime and safety</td>
</tr>
<tr>
<td>Media</td>
</tr>
<tr>
<td>Democracy</td>
</tr>
<tr>
<td>Human interest</td>
</tr>
<tr>
<td>Economy</td>
</tr>
<tr>
<td>Europe</td>
</tr>
<tr>
<td>Education</td>
</tr>
<tr>
<td>Culture</td>
</tr>
<tr>
<td>Finance</td>
</tr>
<tr>
<td>Health care</td>
</tr>
<tr>
<td>Ethics, norms and values</td>
</tr>
<tr>
<td>Social security</td>
</tr>
<tr>
<td>Traffic and transportation</td>
</tr>
<tr>
<td>Political campaign</td>
</tr>
<tr>
<td>Defense and military</td>
</tr>
</tbody>
</table>

N=214

Network analysis

For the network analysis, two indices were calculated for each week prior and after the elections: density and reciprocity. The density of the network refers to the degree of dyadic connections in the network. In terms of binary data, density is the ratio of the number of adjacencies divided by the number of possible pairs. The degree of dyadic reciprocity is defined as the proportion of reciprocal ties of all existing ties in the network. The results are presented in Table 4.

Table 4 Network structure indices per week

<table>
<thead>
<tr>
<th>Week</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Density</td>
<td>.0240</td>
<td>.0229</td>
<td>.0152</td>
<td>.0139</td>
<td>.0190</td>
<td>.0190</td>
<td>.0200</td>
<td>.0217</td>
</tr>
<tr>
<td>Reciprocity</td>
<td>.3525</td>
<td>.3872</td>
<td>.3611</td>
<td>.3525</td>
<td>.3044</td>
<td>.3358</td>
<td>.3426</td>
<td>.3821</td>
</tr>
</tbody>
</table>

The density of the network is quite low, but more important, seems to be fairly constant. Also, there is no clear break around the election date (week 4 versus week 5). The degree of reciprocity also seems constant. However, as can be seen from Figure 2, the degree of reciprocity is substantially lower around the election date. This is in line with the earlier finding that the length of the discussions decreased around Election Day.
Concluding remarks

Methodological
The analysis of online discussions has high potential. Data are easily accessible, in digital form and allow for unobtrusive measurement of people’s opinions and actions. Furthermore, it allows for communication network analysis. However, analyzing discussion groups is not without pitfalls. Online discussion groups contain so much information and thus can be viewed from different angles, such as longitudinal analysis, network analysis, and content analysis, the combined use of research strategies is appealing. However, combining multiple strategies might prove difficult without a proper guiding the research. Furthermore, such combined research designs require complex analytical schemes and data structures, it also needs to be guided by an explicitly formulated theory.

Network analysis ideally focuses on the entire network. This entails the analysis of the total population within its boundaries. The vast amount of content data needed for combining it with whole network analysis required computer aided content analysis. However, computer aided content analysis itself is not without problems regarding reliability and validity.
An important shortcoming in analyzing posted messages from users, is that lurkers (people only reading but not contributing) are also present in the communication network but not observable. How large this group is, is not clear. Maybe that through the analysis of Listserv discussion lists, where people have to subscribe to join, an estimate of the relative amount of lurkers can be made.

With regard to data collection and analysis, there are many software packages for network analysis and computer assisted content analysis. For an overview of social network software, consult Huismans and Van Duin (2005). For an overview on automated content analysis, consult Skalski (2002).

Theory
What can we learn about online communities in general and about political online communities in particular. The number of online communities is large. However, the number of online political communities is substantially smaller. This might imply that to some extend we cannot go beyond case studies from particular online political communities. One option to extend the research possibilities is to compare online political communities cross-nationally. It can shed light on differences between countries in terms of use of online communication for political debate. It also may identify the different roles an online political community has, depending on the nature of the political system. For instance, whether the two-party system results in more or better online communities than in a multi party system?

Whether the interactive function of electronic discussions indeed leads to more political participation and empowerment of peripheral groups has to be followed with more empirical studies. It is clear that online discussions will gain more possibilities and opportunities for participation in politics, governance and society. How it will develop in countries with different political and media system should be followed. For the Dutch situation it is interesting to study the discussion group considering the Democratic Corporatist model (Hallin & Mancini, 2004), because until now most research is done in countries with a liberal model (US and United Kingdom). Analyzing online political discussion groups, especially taking into account a network approach combined with content analyses give more insight in how and if they actually possess the potential to improve political deliberation.

In a more general vain, viewing participating in virtual communities as a form of converging or diverging opinions (cf. Rogers & Kincaid, 1981) is a manifestation of underlying conflicts
of interests (cf. Coser, 1956). Applied to online political discussion, people vary with respect to their party preferences. These party preferences are related to different interests people have, identifiable by explicitly mentioned party preferences, by mentioning political parties in favorable words, or by certain issues linked to specific political parties.

It is not clear what role these conflicting interests play in the development of specific discussions and what it means for the discussion group as a whole. For example, is the degree of conflict related to the degree of density within a network, implying that conflict stimulates the activity in discussions? Also, does it differ for general discussion groups defined in terms of a general issue (i.e. heterogeneous group composition), as compared to a discussion group formed around an issue that is defined very narrow (i.e. homogeneous group composition).
References


