

# Information, Debate, and Opinion Change On-line

## Deliberative transformations of opinion in computer-mediated discussions

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### SUMMARY

*The present study focuses on deliberative potential of computer-mediated discussion forums and it approaches this question by linking the course of on-line discussion with its opinion dynamics. It is suggested that the process of opinion transformation, which is central to the theories of deliberative democracy, should be seen as a function of discussion in which it takes place. Computer-mediated forums are especially appropriate for this because of their tendency to organize dialogic networks of individuals in which opinions about the issues discussed are the main benchmarks of the participants' identities. This idea was tested with a quantitative analysis of the forum, set up specifically for this study. We were able to operationalize the initial idea by using the so-called deliberative poll. Consistent with the expectations of deliberative democracy about rational expression and sharing of opinion our analyses show a close*

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*interdependence between rational discussion and transformation of opinions. It turned out that participants' opinions were expressed and/or changed because of received information and time spent in the forum, and not because of the normative pressure stemming from the majority opinion. On-line discussion also had two powerful effects on the interpersonal dynamics of opinion: polarization and homogenization around the poles. In other words, discussion among the participants shaped a clear majority opinion while at the same time the overall distance between the opposing opinions intensified.*

Key words: on-line discussion, deliberative democracy, opinion processes, structural equation modeling

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### **Introduction**

Due to their contemporary profusion and popularity, computer-mediated forums for discussion, such as bulletin board systems, Usenet conferences, newsgroups, or mailing lists, grew into rewarding areas of systematic investigation. These spaces of virtual association are attractive because they are easy to access and have the ability to store enormous amount of information. Their increasing usage raises questions about participation, dissemination of information, and formulation of shared interests in contemporary society. The basic premise of the present study is that these concerns can be contextualized through the notion of opinion, because on-line forums essentially consist of interpersonal exchange and argumentation. Our idea is to analyze discussion as a process in which its dynamics is primarily generated by opinions. We believe

this is particularly the case in forums where discussions are concentrated on political issues. Explanatory strength of this thesis is documented in this paper with an experimental on-line forum on the Slovenian membership in European Union.

Central concern of our analysis can be formulated as a question about the impact of computer-mediated discussion on the way participants form and express their opinions. In order to address this question, our study draws from two resources. Conceptually it draws from (1) the studies of public opinion (e.g., Moscovici, 1976; Bourdieu, 1986; Billig, 1991; Price, 1992; Zaller, 1992; Noelle-Neumann, 1993; Splichal, 1999; Shamir and Shamir, 2000). Here the link between discussion and opinions has long been recognized as essential. In fact, opinion change and expression, as well as their determinants, represent central concerns of this type of research. As Price put the perspective of this tradition, “it is *communication* surrounding a point of conflict or uncertainty that allows a public to form out of separate individuals. And it is through the media of mass communication, which allow discussion over issues to reverberate across considerable distance, that mass publics have come into existence. This feature of public opinion /.../ must be given paramount theoretical attention if research is to illuminate the essential workings of mass opinion” (Price, 1988: 675). On the other hand, research questions were contextualized with the insight of (2) recent analyses of on-line communication (e.g., Herring, 1996; Hill and Hughes, 1998; Davis, 1999; Wilhelm, 2000). These analyses instructively present specifics of computer-mediated spaces of discussion and often relate them to the theories of deliberative democracy. Although the notion of opinion is not marginal in this latter body of research, it received little systematic attention. Our study focuses on the dynamic aspect of opinion processes, or to the interplay of mutual influences of participants in the course of their discussions.

Existing research of computer-mediated discussion forums mainly addresses questions about who participates in the discussions and why, what is discussed, what linguistic resources are used, what psychological mechanisms govern exchanges and whether the quality of discussion meets the criteria of democratic “deliberation”; other interesting research questions which appear in the literature are also, how codes of conduct are built and learnt, how communities are formed and how exclusions occur, what effect on-line discussions have on policies, if any, and so forth (e.g., Herring, 1996; Baym, 1998; Hill and Hughes, 1998; Toulouse and Luke, 1998; Aikens, 1999; Coleman, 1999; Davis, 1999; Jankowski and van Selm, 2000; Wilhelm, 2000; Stromer-Galley, 2002; etc.). It seems productive to combine this body of research with opinion studies, especially since the mainstream opinion research is only slowly en-

tering cyberspace and also the study of opinion change has not yet found its way into the studies of computer-mediated communication. In other words, empirical research of computer-mediated discussion has yet to integrate the findings and conceptual resources of the orthodox (public) opinion studies with contextual characteristics of on-line discussions. Contribution of this paper in the direction mentioned is its suggestion to explain in causal terms relations between opinion expression and transformation of opinion. It is argued that opinion processes proceed separately on two levels, intrapersonal and interpersonal. Immediate determinants of these processes are more or less rational qualities of deliberation. Transformation of opinions, in particular, is explained as a function of confrontation of opinions in a computer-mediated forum. The nexus between discussion and formation of opinions or their change is analyzed relative to the faculties of human rationality.

Our idea clearly echoes recent deliberative turn in social sciences which conceptualized exchanges of opinions among citizens on issues of general concern as central to the contemporary democratic process (Bohman, 1996; Guttman and Thompson, 1996; Elster, 1998; Dryzek, 2000). Theorists of deliberative democracy believe public discussion resolves shortcomings of the present democratic practice and thus base their theories on the point that democracy is a communicative social organization that reaches beyond "arbitrary aggregation" of opinions by inviting deliberation as a means of reflective transformation of preferences (Elster, 1998: 3).

We made use of an innovative approach to the operationalization of opinions in our analysis. We adopted the so-called "deliberative poll" which was developed within the tradition of deliberative theory of politics (Fishkin, 1991; 1996). In short, this approach assimilates debate into the standard conception of opinion poll and measures effects of discussion immediately after it is consumed. Accessibility of on-line discussion forums makes this approach particularly applicable to the cyberspace, although slight modifications of the original Fishkin's idea are also needed. Indeed, application of this methodology to the cyberspace was not the first such experiment (see Chung et al., 1999); however, it had its own specific agenda and design. In our case, we set up an on-line forum about the prospective integration of Slovenia into the European Union, in which participants were provided with expert information and ample time to discuss the issue. Participants were surveyed twice during this experiment. We measured their opinions on issues addressed in the discussion before they logged in and after they left the forum. Their contributions were voluntary and participants received no compensation for their time and efforts. The experiment was conducted before the general referendum on EU

membership in Slovenia (which took place in March 2003), so that the issue was politically contested and immersed in extensive media coverage.

Application of “deliberative polling” in cyberspace enables analysis of collective as well as of individual dimensions of opinion processes and is particularly pertinent in tracing concrete changes of opinion in the flows of discussion. For the purposes of more systematic analysis, we distinguished intrapersonal from interpersonal level within the observable dynamics of opinion in the forum. The *intrapersonal* level of opinion processes denotes that part of opinion dynamics which is internal to the individuals and involves determinants which condition the formation of their personal opinion, such as information processing, configuration of priorities, formulation of problems. The intrapersonal level of opinion process is also responsible for the construction of the inner consistency or stability of individual’s opinions. It steers individuals in their interactions with other conversants and commands reflection on existing opinions. On the second level, the *interpersonal* dynamics of opinion is the generative force of the flow of exchanges. It includes evaluative relations between opinions presented in the course of a discussion as well as shifting relations between them, such as validity, accuracy and importance. The *interpersonal* dynamics of opinion is responsible for the formation of a majority opinion and shared definition of the relevance attributed to a particular issue. With respect to this distinction, it is important to ask: In what way the expression of individual opinions influences the transformation of collective preferences? What is the role of expert knowledge and information? In what way time factor relates to the outcomes of discussion? Does computer-mediated discussion lead into consensus? How are individual acts of opinion expression related to the interpersonal dynamics of opinion?

### **Conceptualizing deliberation in computer-mediated forums**

The suggestion that contemporary democratic limitations should be met by increasing the quality of democratic deliberation coincided chronologically with the spread of new communication technologies in the early 1990s. Expectations concerning new communication technologies were based, to a great extent, on their productive integration of mass and interpersonal communication in cyberspace, on their inherent potential that allows everyone to shape the agenda of debate, and in particular on their predilection to foster debates between individual users. Nelson (1999), for instance, emphasized the unique “regenerative” ethos of on-line interaction, attributable to the co-operative exchange of information and extensive mutual support in cyberspace. The social-psychologists Latané and Bourgeois also argued that computer mediated

communication “may provide a way to hold town meetings in which, instead of talking face-to-face, people interact electronically. Such a system would alleviate such possible deterrents to idea exchange as production blocking (in which participants may forget what they wanted to say while listening to the ideas of others) and evaluation apprehension (in which people may withhold their ideas because they are worried about what others may think of them). Again, keeping such groups fairly small may both preserve opinion diversity in the general population and encourage participation among all members” (Latané and Bourgeois, 1996: 47). The general idea is therefore that computer mediated communication offers technical, spatial and other resources for the enhancement of democratic discussion.

If it is accepted that communication is a key element of the democratic life, it is necessary to argue that rational deliberation is its politically most constructive form (Barber, 1984; Dewey, 1988; Habermas, 1996; Bohman, 1996; Dryzek, 2000). Democratic life can only flourish if it revolves around free, rational, and engaged deliberation. The main suggestion of deliberative theorists (Habermas, 1996; Bohman and Rehg, 1997; Elster, 1998; Dryzek, 2000) is that public life should be as much as possible represented by discussions that are critical, inclusive, and inviting to a wide range of participants. Most importantly in this respect, the notion of deliberation includes listening no less than speaking.<sup>1</sup> Deliberative models of democracy typically assert that individual opinions have little significance until they have entered some process of communicative evaluation. An opinion grows from that which is uttered by a single individual into something that is not exclusively conditioned by the interests of its single proponent. Through deliberation differences unveil which could not be observed before; but this should not imply that the less people know about others (and their opinions) the easier they decide. A key question then is how to identify deliberation for the purposes of empirical analysis rather than merely assuming its equivalence to the various forms of political discussion in cyberspace?

Our suggestion is to study the process of opinion transformation as a function of discussion in which it takes place. Computer-mediated forums are especially appropriate for this because of their tendency to organize dialogic networks of individuals in which opinions about the issues discussed are the main benchmarks of participants’ identities. The transformation of individual opinions proves that opinions of others were heard and that participants rethought their own positions. Transformation of opinions epitomizes the point that discussion involved speaking as well as listening. A conceptual solution is therefore to characterize a forum as deliberative on the basis of its results, in

particular on the basis of the relation established between debate and opinion change.

On-line discussion immediately influences both levels of opinion dynamics, the interpersonal and the intrapersonal, albeit a clear-cut distinction between them can only be analytical. From the angle of this conceptualization, the interpersonal dynamics of opinion, i.e. the changing evaluative relations between opinions exchanged in the course of a discussion, becomes more obvious than the intrapersonal quest for consistency, because it generates observable patterns of transformation. Deliberation, as Bohman argues, “is interpersonal: it concerns the process of forming public reason – one that everyone in the deliberative process finds acceptable” (1996: 25). It can be expected, therefore, that (1) on-line discussion will increase the number of issues on which participating individuals disagree; on the other hand (2), it should narrow the extent to which participants differ in their opinions about them. In more formal terms, participation transforms differences of opinions from before the discussion and narrows the differences between them. Through discussion, participants are moved towards a consensus.

### **Intrapersonal dynamics of opinion processes**

Our reading of contemporary theories of opinion processes (Wilson, 1975; Moscovici, 1976; Bourdieu, 1986; Billig, 1991; Zaller, 1992; Noelle-Neumann, 1993; Elster, 1998; Splichal, 1999; Shamir and Shamir, 2000) enabled us to deduce four basic mechanisms that define social conduct in the context of competitive discussion. These mechanisms are (1) willingness to express opinion to a group of conversants or to a larger social setting; (2) motivation to defend one’s opinions against criticisms from others and to maintain their credibility; (3) inclination to apply opinions to the vast range of topics, novel experiences or different subjects; (4) willingness to learn about new experiences and new facts. Although these mechanisms are essentially located at the intrapersonal level of the opinion process, their effects extend as well to the level of interpersonal aspect of dynamic communication; in particular, they contribute to the formation of recognizable opinion structures. In this capacity, these mechanisms are underlying premises of empirical opinion research. Our assumption is that they are applicable to the context of computer-mediated discussion.

We operationalized these concepts into variables and constructed a formal theoretical model of their interdependencies. For the purposes of this study, *expression of opinion* is defined as a communicative activity of individuals, which includes presentation of evaluative statements as well as expectation of

receiving feedback. Expression of opinion is more than just asking questions or stating preferences in that it is linked with a possibility to argue with the conversant.<sup>2</sup> *Stability* is defined as a property of opinion which relates to its temporal dimension and represents a degree in which it is resistant to change during a discussion. Formally stated, stability of opinion is reduced when individuals change their initial position on an issue or, in effect, completely change their mind. Stability is therefore not defined as a relational characteristic of a set of evaluative statements, as suggested for instance by cognitive dissonance theory (Festinger, 1962). Instead, this notion is defined in order to be robustly sensitive for the interplay of discussion and expression of opinion.

It is not complicated to argue that opinion processes depend on the information available, but the relevant question is to what extent this dependence exists and what precisely is covered with the term information. Existing research provides ample evidence that relation between one's opinion and information requires complex explanatory models (Converse, 1964; Zaller, 1992; delli Carpini and Keeter, 1995; Shamir and Shamir, 2000; Lavine, 2002). Zaller specifically pointed out that every opinion is a combination of information and dispositions, whereby information structure cognitive representations of the issue, while dispositions motivate conclusions about it (Zaller, 1992: 6). It is necessary to note that information is processed in versatile cognitive activities during opinion formation. Indeed, it has become increasingly difficult to "regulate how political information is encoded and represented in memory" (Lavine, 2002: 226). We thus operationalized the information aspect of the intrapersonal level of opinion process as a perceived amount of novel information. We were not interested in the weight ascribed to information, its validity or its 'objective' relevance for the discussed issue. We were interested whether participants consciously use information received during the course of discussion. The variable included in our analysis is named *new information* and is defined as the amount of data, evaluative statements, or estimations of possible consequences of an action featured in the discussion forum which individual participants deem a relevant addition to their existing knowledge of the issue in question.

In order to control possible influence of means of communication on the expression of opinions, our study included a variable *perceived democratic character of the Internet* which describes the extent to which users find the Internet as hampering or encouraging free expression. In theory, the Internet represents highly democratic mass medium because of its accessibility, widespread use, and decenteredness. According to Moore, for instance, "the Internet brings the massification of discourse; it prototypes the democratization of media" (Moore, 1999: 42). The important question is whether this evaluation



reflects in the perceptions of its users. We found this aspect relevant in relation to a concern about conceptual nuances in the notion of expression, caused by differences in existing means of mass communication. Implied in these considerations is the effect of how people experience the role of a specific medium on issues such as diffusion or impact of their opinions, but also on their possible distortion. Such concerns are conceptually linked also to debates on the social consequences of technological interferences with markers of identity, and free communication which were triggered by the spread of contemporary computer networks (Toulouse and Luke, 1998).

We also measured *issue salience* in order to understand the role of the object of discussion in the dynamics of opinion. It can be expected (see Wilson, 1975; delli Carpini and Keeter, 1995; Shamir and Shamir, 2000) that the more individuals are involved in the issue, the more they are familiar with the subject and the more important it is for them to participate in a discussion. This variable is linked to the information aspect of opinion expression and is thus constructed in contrast with possible psychological restrains resulting from group dynamics. The opposite idea that individuals shape their opinions with respect to what the majority thinks is often investigated in empirical research. It is essentially built on the premise that normative social pressure determines opinion processes (see discussion in Wilson, 1975; Price and Roberts, 1987; Splichal, 1999; Shamir and Shamir, 2000); some theories even claim that people universally bend their opinions in response to what the majority publicly thinks and thus generalize a rather specific and rare occurrence (Noelle-Neumann, 1993). Although the social context of our forum was argumentative, it is not possible to exclude this aspect. For this purpose, we operationalized the notion of *opinion climate* which describes a characteristic of the particular setting in which discussion takes place. Opinion climate reflects distribution of preferences among the participants. Operationally it can be measured as a relative difference between an individual's opinion and his perceived opinion of majority of other participants.<sup>3</sup> This feature obtains its relevance for the expression of opinions as these preferences shift in time.

The following *hypotheses* concerning intrapersonal dynamics of opinion are proposed: (1) the more information participants feel they receive through discussion, the more instable will be their opinions; (2) climate of opinion that supports individual's opinion increases stability of his or her opinion; (3) climate of opinion that supports individual's opinion also increases the level of his or her expression; (4) perceived democratic nature of the Internet increases the extent of opinion expression; (5) issue salience increases the extent of opinion expression; and finally, (6) stability of opinions increases the extent of

opinion expression. For a graphical representation of hypotheses and their interdependency see formal model in Figure 1.

### **Deliberative polling on-line**

The idea of deliberative polling, introduced in the early nineties by James Fishkin (1991; 1996) and subsequently organized as a large social experiment on several occasions, combines the orthodox opinion poll with a suggestion of deliberative democracy theory that individual preferences can be generated rationally only within processes of discussion. Deliberative poll specifically departs from the orthodox view of polling in terms of expression and confrontation of opinion, rationality as communicative, and time available for reflection of issues. Ideally, it was supposed to measure what the public would think when fully informed by all the relevant and controversial issues concerning the topic in question (Fishkin, 1996: 162). That this expectation is unrealistic derives from the complexity and scope of societies, where combination of face-to-face communication with representation is not achievable in principle.

Our experiment included deliberative polling as a method for measuring opinions. We set up a computer-mediated forum and invited Internet users to participate in the discussion on the prospective *integration of Slovenia into the European Union*. Our reasons for selecting this topic were: (1) prospective membership in the European Union was at the time of this experiment a contested and multidimensional issue, with an enduring and rich record of public attention triggered both by popular interest and media coverage; (2) majority opinion favored integration, although other alternatives were made clear in the public discourse and had vocal opponents; (3) because of the complex formal implications of the issue, participants in public discourse were already used to the presence of intellectuals, state officials, and politicians with their expert knowledge. A systematic analysis of the development of Slovenian public opinion on EU integration is offered in Brinar and Bučar (2002).

The experimental discussion forum was placed on the World Wide Web (<http://www.aktualne.razprave.org/eu>) and was operative from 13<sup>th</sup> to 16<sup>th</sup> of June 2001 between 16.00 and 20.00 hours every day. The experiment consisted of three stages. In order to enter the discussion forum, participants first had to complete a detailed survey on where they stand concerning Slovenian integration into EU and how they relate to other concerns central to the issue. Participants were then able to log in to the forum (under a nickname not to reveal their identity if they wanted) and discuss the issues freely with others. After the discussion, participants were asked to complete the second survey in which some initial questions were repeated in order to estimate the change of

opinion and other effects of the discussion. Special efforts were made at this point in order to devise a technical system of tracking pairs of returned surveys, so that subsequent research and construction of our variables were possible. The data were confidential, but because of this it was not possible to *make sure* that participants also completed the second survey after they logged out from it; they were only kindly asked to do so and thus to contribute to the quality of our findings.

There were two groups of participants: in addition to the interested Internet users who joined the forum on the basis of mass invitations (invitations were sent through e-mail and also the forum was announced on the Slovenian internet portals), we also invited experts who were specifically selected to contribute to the discussion and whose time of participation in the forum was announced in advance. Among this group, the forum gained the most from the contribution of the former Slovenian Minister of Foreign Affairs, Igor Bavčar, senior consultant on EU integration to the Slovenian government, dr. Emil Erjavec, and Gorazd Drevenšek, a member of the activist group NEUTRO that vigorously opposed Slovenian membership in NATO and upheld reservations concerning the integration into EU. Discussions were lightly moderated so as to keep their flow consistent with the list of issues from the survey.

Eventually, 159 Internet users participated in our experimental discussion forum, including expert guests and the moderator; 58 took time to complete both surveys.<sup>4</sup> As expected, majority of the participants were male (69%), the average age, however, was slightly higher than expected – approximately 26. Virtually all participants were regular users of the discussion forums; in fact, only 9% of the participants stated that they use Internet less frequently than once a week.

## Results and interpretation

The central finding of our research was that discussion in the on-line forum significantly affected both intrapersonal and interpersonal dynamics of opinion. Most importantly, rational aspects of opinion were determining factors of opinion expression. It turned out that participants' opinions were expressed and/or changed on the basis of received information and time spent discussing the issues and not on the basis of the normative pressure which stems from majority opinion. In addition, opinions were moderately transformed after the discussion. "Beyond mere smoke of opinion," to borrow Wilhlem's phrase (2000: 29), a valuable reflection of contested issues developed in the experimental forum.

Concerning the interpersonal dynamics of opinion, these findings may be interpreted as an answer to the question about deliberative nature of the forum. Clearly, discussions defined opinions beyond mere aggregation and improved the quality of individual reflection. Central burden of proof lies on the influences on stability of opinion, more specifically on the change of existing opinion or on the formation of new opinions. Stability of opinion was measured in our study relative to the passage of time. The values were generated on the basis of discrepancies in answers to questions on the issue of EU integration, which we tapped with the help of double survey system that queried our participants prior to the discussion and after they left the forum. In constructing our composite measure, we assumed that at a single point in time individuals express their views on different aspects of a controversial issue based on their own standards of logical coherence. However, this assumption is not without problems as it tacitly implies the idea that criteria of opinion coherence may be individually specific and thus allows wide differences if taken on the level of the participating group. In order to avoid damaging consequences of this assumption we developed a measure where the variable is constructed by accumulating changes across various issues. This avoids the problem which may appear with issue-specific measures of logically connected statements.

Table 1: Participants' opinions before and after the discussion

<b>average opinion change</b>	<b>frequency</b>	<b>percent</b>
0,0	9	15,52
0,5	24	41,38
0,1	10	17,24
1,5	1	1,72
2,0	1	1,72
2,5	13	22,41
<i>total</i>	58	100,00
st. dev. = 0,42, mean 0,49		
<b>time spent in the on-line discussion forum</b>	<b>mean value of opinion change</b>	<b>percent of participants</b>
Less than 10 minutes	0,285	31,82
btw 10 and 29 minutes	0,500	31,82
over 30 minutes	0,570	36,36
<i>total</i>		100,00

Eight<sup>5</sup> statements concerning Slovenian integration into EU were used to construct our composite measure of opinion stability (see Table 1). These statements appeared in both surveys and changes in response were summed in order to produce a robust measure. Lower values of our measure represent fewer counts of opinion change after the discussion, and thus, conversely, high opinion stability; for instance, 0 signifies that individuals have not changed their views on any of the eight statements included at all. On average, participants changed their opinions on questions concerning EU integration by half a point on a 5-points scale. This indicates a relatively high general level of opinion stability, but also a notable tendency towards opinion change. Immediate effect of on-line discussion on its participants can be demonstrated with another point. Approximately one fifth of the respondents *formed* an opinion on at least one survey statement during the discussion. General reduction of “don’t know” answers to the second survey can thus be interpreted also as a tendency of the discussion forum to produce more knowledgeable participants. Discussion forum was informative as well as transformative.

Another important aspect about the interpersonal dynamics of opinion is the time dimension. We checked the connection between time spent in the discussion forum and opinion change (see Table 2). Findings confirm our expectations that the more time participants spent in the discussion forum and thus the more information, arguments, and preferences they received the more likely their opinions transformed.

Table 2: Inter-group cohesion and growing of dissensus

	Survey statements concerning Slovenian integration into EU	BEFORE DISCUSSION			AFTER DISCUSSION		
		std. dev. against integration	std. dev. for integration	std. dev. ungrouped	std. dev. against integration	std. dev. for integration	std. dev. ungrouped
1.	Future development of Slovenian economy	1,03	0,68	0,91	1,34	0,61	1,10
2.	The flight of intellectual capital	1,17	0,90	1,00	1,38	0,87	1,05
3.	Obstacles of cultural expression	1,04	0,78	0,86	1,20	0,70	0,88
4.	Solidity and ownership of banks	1,39	1,09	1,21	1,27	0,88	1,06
5.	Preservation of national identity	1,28	0,88	1,08	1,48	0,80	1,08
6.	Promotion of the rule of law	1,54	0,74	1,18	1,35	0,81	1,09
7.	Competitiveness of Slo. economy	1,19	0,91	1,15	1,22	0,75	1,01
8.	Sovereignty	1,41	0,75	1,08	1,68	0,57	1,21

We also hypothesized that as a function of discussion in the forum (1) the range of issues on which participating individuals disagree widens after the discussion and that (2) the extent of their differences narrows because of the move towards a consensus position. Owing to the reduction of “don’t know” answers in comparing the first and the second survey, it can be argued that participants of the discussion forum formed a common field of reflection. On the other hand, there is no confirmation that this trend is accompanied by a move towards consensus as the second hypothesis suggested. In fact, our analysis revealed that opinions were more dispersed after the discussion than before (avg. std. deviance before the discussion was higher than afterwards only with respect to 3 out of 8 measured statements and the change in these cases did not exceed 0,07. The reverse shift with respect to the 5 remaining statements ranged from 0,09 to 0,27. In sum, discussion of the topic in our case extended the range of preferences, but drove individual participants further apart in their perception of the contested issues, far from a unanimous opinion or consensus.

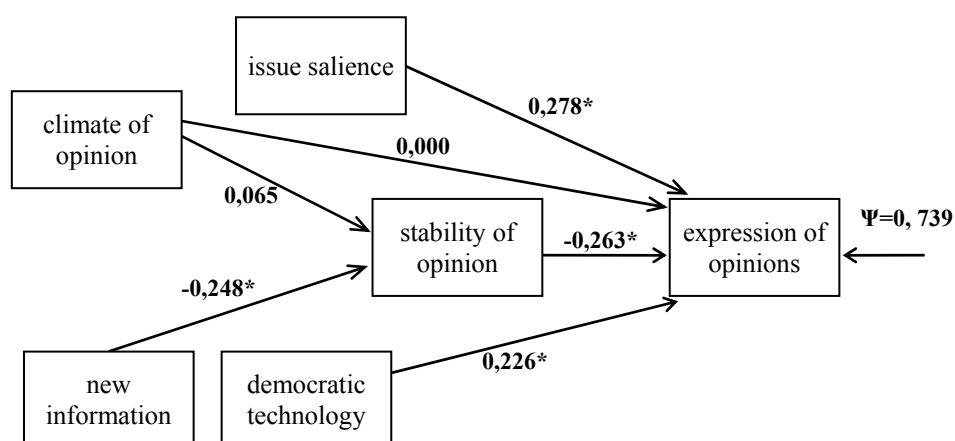
It is striking to observe the reverse trend, which is homogenization of opinion *within two distinct groups of participants*, more specifically among those that opposed Slovenian integration into European Union and those who favored it (see Table 2). This may be an indication that discussion in computer-mediated forums may contribute to the crystallization of group opinions. In our case, polarities became clearer, resulting in further differentiation between alternative positions for and against. In other words, cohesion within groups increases after discussion, but the principal difference between the two groups remains about the same.

The second part of our analysis was focused on the investigation of intrapersonal dynamics of opinions. We proceeded in our study from the formal model which consisted of concepts and hypotheses developed with the intention to provide an explanatory account of opinion expression. Because of the complexity of our model, we used structural equation modeling approach, which enables testing for causal relations between comprehensive theoretical explanations of selected concepts (Jöreskog, 1993). Statistical analysis was prepared with a standard computer program for this method, LISREL 8.3 (Jöreskog and Sörbom, 1999).

According to the basic statistical parameters, theoretical model of opinion expression was quite good. The level of explained variance (26%) and the goodness-of-fit index for the model were more than satisfactory. In addition, modification index computed by LISREL program was negligible.<sup>6</sup> A statistically significant causal relation between opinion stability and expression of opinion was established with our structural equation modeling ( $\gamma = -0,263^*$ ; see

graphical representation of estimates with LISREL).<sup>7</sup> This does not confirm the expectation from our first hypothesis, for our data show that the more one changes his or her opinion (before and after the discussion), the more likely he or she is to express his opinions. This is surprising and deviates from the literature on opinion processes off-line (Wilson, 1975; Zaller, 1992; Splichal, 1999; Shamir and Shamir, 2000). It is probably explicable as an indication of the fact that in on-line discussions individuals tend to explore and probe the implications of newly acquired (formed or adopted) opinions. Since our initial hypothesis was constructed on the basis of off-line experience, computer-mediated forums of discussions may be seen as inviting a higher degree of experimentation with ideas. This finding can productively contribute to the existing knowledge of the differences between off-line and on-line communication (Herring, 1996; Walther, 1996).

Figure 1: Explaining expression of opinion – LISREL estimates for the formalized theoretical model



Another accepted notion is challenged by our findings, namely that the Internet users are much more inclined to talk than they are ready listen (Hacker, 1996; Streck, 1998; Davis, 1999). Our data suggest that discussions triggered engaged reflection about the exchanges of information and opinions. This attitude was reflected in the later feedback of the participants, but it can be even more convincingly explained with results of statistical analyses. The fact that opinions of participants changed after the discussion alone leads to the conclusion that exchange of different perspectives resulted in reflection on

the issues. But this point can be further documented with a statistically significant relation between the perceived amount of new information and stability of opinion ( $\beta = -0,248^*$ ). This causal influence suggests that the more information one felt to have received during the discussion the more he or she changed his or her opinions on the issues discussed. Most likely, the information which was new to the participants played a decisive role also in the formation of opinion, that is in reflection on issues where participants had no opinion before the discussion. Arguably, some degree of filtering was involved as well, because, in general, participants presented themselves as well informed.

Construction of our formal model proceeded from a conceptual separation of normative and informational influences. Our understanding of these two aspects is based on the work of Price and Roberts (1987) and is expressed in a separate treatment of opinion climate and new information received from the forum. Results of our analysis show that this separation was justified; Pearson's correlation coefficient between the two variables (opinion climate and new information) was low ( $r=0,070$ ) and statistically insignificant, indicating that there is no overlap in their influences. Moreover, transformation of opinion is better explained in terms of new information than in terms of normative influence built into the climate of opinion.<sup>8</sup> Perceived support in the climate of opinion has no statistically significant bearing on the stability of one's opinion ( $\beta = 0,065$ ) and even less influence on the expression of opinion ( $\beta = 0,000$ ). In other words, it was irrelevant to the participants of our experimental discussion forum what the majority position on a given question was and they tended to express their opinions anyway. Taking into account that the issue discussed was very important to the participants the expression – issue salience significantly influenced expression of opinions ( $\beta = 0,278$ ) –, it is possible to develop further implications from the above point. Clearly, participants did not form nor change their opinions because they perceived that majority opinion sided for or against their preference. This point takes out a great deal of conformity, which operates public communication off-line (see Noelle-Neumann, 1993; Shamir and Shamir, 2000), from the computer-mediated discussion forums. This interpretation is also consistent with the point that perceived democratic nature of the medium affects the level of opinion expression ( $\beta = 0,226^*$ ). To our participants, computer-mediated discussion forum seemed inherently democratic.

## Conclusions

The present study focused on deliberative potentials of computer-mediated discussion forums and it approached this problem by linking the course of on-



line discussion with the opinion dynamics emergent from one such forum. Consistent with expectations of deliberative models of democracy that computer networks enable constructive expression and sharing of opinion and also in line with the modernist perception that opinion plays a pivotal role in the electronic public sphere, our analyses showed that there is a very close interdependence between discussion and opinion processes. We were able to connect the process of discussion with transformations of opinion by applying the so-called deliberative poll (Fishkin, 1996). This was not the first such attempt (see Chung et al., 1999), but it was innovative in terms of its theoretical background and research objectives.

Placing the notion of opinion into the center of communication process is a quintessentially modernist conception, this notion remains vital for contemporary society. With unparalleled opportunities for expression which are largely attributable to the new communication technologies the importance of opinion can hardly be disputed. However, it is usually taken for granted or casually. For instance, only few attempts were made recently, to develop new *theories* of opinion and thus to reflect and specify the place of opinion in current conditions. This point is bolstered by our findings that opinion processes on-line differ from the accepted understanding built predominantly on the off-line experience (Herring, 1996; Walther, 1996). The tendency to use the on-line forum to probe or to experiment with implications of novel insights is particularly significant. This does not reduce the relevance of our initial assumption that orthodox theories of opinion processes which were built on off-line experience are epistemologically valid for explaining experience in computer-mediated forums. It does, however, raise the point that perhaps these theories lack conceptual resources to capture the specifics of on-line discussion.

The framework of our research emphasized the notion of opinion change that lies at the very core of contemporary theories of (electronic) public sphere (e.g., Elster, 1998; Coleman, 1999; Dryzek, 2000). Its aim was to investigate separately two aspects of this dynamism, the interpersonal and the intrapersonal level. Our findings showed that discussions in our experimental forum contributed to the formation of opinions and simultaneously generated moderate transformation of existing opinions. The extent to which opinions changed turned out to be dependent on the time spent discussing issues: the longer participants engaged in exchanges the more their opinions changed. Two other influences on transformation and expression of opinions were perceived amount of new information received from the forum and perceived democratic nature of the Internet as a mass medium.

To some extent these points undermine critical evaluations, frequently elaborated in the academic as well as in everyday discourses, that on-line dis-

discussion forums are inherently volatile, primitive, and destructive. There is mixed evidence in the critical literature whether existing discussion forums can be said to meet high normative requirements of the democratic theory. An often mentioned consequence of the cohesiveness of on-line forums is that on-line discussion forums develop a strong climate of exclusion towards individuals that do not quite "fit in" (e.g., Hill and Hughes, 1996; Tsagarousianou et al., 1998; Davis, 1999; Hague and Loader, 1999; Fung, 2002; Hagemann, 2002). Our findings do not themselves offer a conclusion that on-line forums nurture communicative rationality and political efficiency. We can argue, however, that the established relation between discussion in on-line forums and interpersonal opinion processes emphasizes the necessity of starting from the premises of deliberative models of democracy. There the faculties of human rationality are taken most seriously and enable most critical investigation against the empirical evidence.

As our findings cast a political discussion forum in a promising light, they invite further inquiry. Results of our study raise questions about some other contextual determinants that we had not taken into account and it seems appropriate to mention these in our concluding discussion. For instance, could it have been the case that to some extent the flow of discussion we investigated had been influenced by the fact that participants were aware of the experimental and academic background of the forum. Also, we paid little attention in our analysis to the significance of topics we selected for the discussion. The question of integration into European Union has been a very contested, and highly debated issue. It was frequently addressed by the mass media and public commentators. Slovenian integration into EU was an issue that attracted lively discussion far outside the realm of our experimental forum. Another important issue is the symbolic context of the information sources that were featured in our forum. We only briefly mentioned the role of expert insight in our analysis. Although our experimental forum hosted prominent invitees already active from the Slovenian public sphere, it was a necessary limitation to exclude specific instruments for systematic measurement and control of the notion of expertness.

Open questions mentioned notwithstanding, some clear conceptual bearings of our findings for the central concern of this study would be mentioned. In more narrow sense, our contribution to the understanding of on-line deliberation derives from two important points. Discussion in our forum exhibited powerful effects on the interpersonal dynamics of opinion: (1) polarization and (2) homogenization of opinions around core alternatives. In other words, discussion between participants shaped a clear majority opinion while at the same time the overall distance between opposing opinions intensified. Notable po-

larization of opinions was expressed in a reduction of distance between individuals who were for and against an issue. If this point is linked to the conclusion that discussants in our experiment were ready to listen to other perspectives no less than they engaged in presenting opinions of their own, and that discussions evolved under a very strong influence of rational factors, such as issue salience, received information, time spent in the forum and so forth, the prospects of reaching a consensus seem weak. Interpersonal dynamics of opinion is driven away from a unanimous decision. This process is probably close to the arrangement of mass preferences during a political campaign, which also involves reasoned discussions and which at some point requires a discontinuity. An important exception may be that in the on-line forum, polarization is much faster.

Finally, discussion and transformation of opinion can hardly be investigated without a comprehensive account of the electronic public sphere. Because of the complexity of this relation, we find the suggested separation of the two contexts, the personal and interpersonal dynamics of opinion, along with the assumption of their process nature, very productive. In analytical terms, it enabled complex modeling of the selected concepts, whereas in conceptual terms it enabled a creative interchange of different theoretical sources. It also implies a clear suggestion that opinions should play a central role in explaining social communication in computer-mediated environments. As argued in the second section of this paper, cyberspace has become profused, even saturated with assertive statements. Not only does this point make the study of mechanisms triggering opinion expression in computer-mediated contexts very significant, but it also points to the need of finding out places where there is just as much demand for expression as it is for learning about new insights.

#### **ENDNOTES:**

- <sup>1</sup> Practical conditions of establishing the ideal of deliberative democracy requires clarifying and strengthening the link between decision-making and discussion of its possible consequences. Wide range of participation is needed for this process, so that opinions can be heard, challenged and acknowledged; and also changed. Deliberation is therefore a way of linking a plurality of political preferences with outcomes of political decisions (see Habermas, 1996; Bohman, 1996; Elster, 1998).
- <sup>2</sup> Expression of opinion is in this sense an act of participation in the electronic public sphere; the relevance of this point increases with the inclusion of political representatives into the forum. Habermas, for instance, argued that public sphere benefits from “citizens who seek acceptable interpretations for their social interests and experiences and who want to have an influence on institutionalized opinion- and will-formation” (Habermas, 1996: 367).
- <sup>3</sup> This idea requires a complex methodological procedure in order to secure a consistent and reliable measure of its background concept. It was already tested in another study (see Petrič and Pinter, 2001), where a more detailed explanation of the methodological procedure is also offered.

- <sup>4</sup> In transforming the accepted notion of survey participation, which essentially involves a “subsidized” social exchange, deliberative poll was focused in its original versions extensively on the question of motivation (Fishkin, 1996: 143). In our experiment, no compensations were offered to the participants for their involvement and time other than intellectual value and expert information. All technical details and possible uses of the experimental forum were explained in detail to the participants.
- <sup>5</sup> See Table 2 for a list of statements on which evaluative claims were formed and included in the survey. Complete translations or original formulations are available on request.
- <sup>6</sup> Our measurement of the key dependent variable also suffered from a technical drawback. During the experiment, it turned out that reliable measurement of actual opinion expression in the forum could not be included into survey results. The variable was instead measured as a general experience of participants, *i. e.* how often they express opinions publicly. We later tested whether this matches the degree to which they actually expressed in forum, by post hoc classification of opinions in the discussion logs.
- <sup>7</sup> For semantic reasons, values of the variable *stability of opinion* were recoded so that the lower values now represent “instability” of opinion; this also enables easier interpretation of results.
- <sup>8</sup> To some extent, this is also unexpected because normative pressure is at least to a small degree a defining characteristic of all group and public communication (Price, 1992; Splichal 1999). Perhaps if the forum continued for a longer period of time and the amount of information which participants exchanged emptied out, as is normally the case with existing news-groups or mailing lists, the effect of normative influence of the emergent groups might actually subvert the information-based reflection of the contested issues. The interplay of the rational and the irrational in opinion processes, could be further explained along these lines only with more extensive research, but this vastly extends the scope of the present paper.

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## **Informacija, rasprava i promjena stajališta on-line**

### **SAŽETAK**

Istraživanje se bavi prosuđujućim potencijalima kompjutorski posredovanih foruma za raspravu i pristupa temi povezujući tijek on-line rasprave s dinamikom stajališta. Smatra se da proces promjene stajališta, koji je ključan u teorijama o prosuđujućoj demokraciji, treba biti promatran kao svrha rasprave u kojoj se događa. Kompjutorski posredovani forumi prikladni su za to zbog njihovih tendencija da organiziraju dijaloške mreže pojedinaca u kojima su mišljenja o određenoj temi oslonci identiteta sudionika. Ova zamisao provjerena je kvantitativnom analizom foruma uspostavljenog baš za ovo istraživanje. Uspjeli smo provesti početnu misao koristeći takozvanu anketu prosudbe. U skladu s očekivanjima prosuđujuće demokracije o racionalnom izražavanju i dijeljenju stajališta, naša analiza ukazuje na veliku razinu međuovisnosti između racionalnih rasprava i promjene stajališta. Ispostavilo se da su stajališta sudionika izražena i/ili promijenjena zahvaljujući primljenim informacijama i vremenu provedenom u forumu, a na zbog pritiska okoline koji potječe iz mišljenja većine. On-line rasprave također su imale dva jaka učinka na dinamiku interpersonalnog stajališta: polarizacija i homogenizacija oko polova. Drugim riječima, rasprave među sudionicima jasno su oblikovale stajališta većine a ukupna razlika između suprotstavljenih stajališta istodobno se povećala.

Ključne riječi: on-line rasprava, prosuđujuća demokracija, procesi mišljenja, model strukturalnog izjednačavanja