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THE INTERNET AND DEMOCRACY: THE CAUSAL LINKS BETWEEN TECHNOLOGY AND POLITICS

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ABSTRACT

This paper strives to explicate the causal links between changing technology and democratic governance. Its overarching goal is to define the relevant concepts of communication and governance and more importantly, to focus empirical observations on the critical dimensions of a multifaceted phenomenon. The analysis focuses on three key links in this causal chain. The first is the effects of technological innovation on different communication activities. The second link involves the role communication and information play in democratic governance. The final is the social and political mechanisms by which technological innovations are introduced within and transform democratic processes and institutions. We argue that a sharper understanding of these three essential links will enable the growing numbers of researchers interested in electronic democracy to employ the massive social experiment the Internet represents to clarify and further democratic theory itself.

The rise of the Internet has led to a burgeoning literature on the probable effects of emerging information and communication technologies (ICTs) on democratic processes. The breadth of the debate is impressive, largely due to the complexity of democratic governance and the historic implications of the information age. Those venturing into this literature, however, are met with a confusing tangle of propositions, many of which are contradictory and all of which are interrelated in unexplicated ways. Fears of social polarization due to inequitable access to ICTs or of increasing government intrusion into our private lives are juxtaposed against the promise of rejuvenated political participation engendered by new communication channels. Visions of citizens being empowered by ubiquitous access to government information are tempered by warnings of information overload.

This paper strives to clarify the links between changing technology and democratic governance. Analysts observe technology driving a number of profound changes in our communication systems: costs are plummeting, advanced capabilities are becoming increasingly easy to use, interconnected networks enable users to access information stored on millions of computers, the Internet enables whole new populations to broadcast content, and real time as well as asynchronous multicasting support entirely new modes of communication. Unfortunately, much of the writing on electronic democracy treats technological advance as a *deus ex machina* inextricably leading to a certain final outcome. Critical causal links remain implicit. In what ways does the Internet improve and qualitatively change existing and already quite advanced communication systems? What specific roles do information and communication play in democratic governance? What are the social and political mechanisms by which technologies affect democratic processes and institutions?

Greater attention to these linkages is warranted for a number of reasons. Both democratic governance and modern communication systems are complex and multifaceted. Theory is needed to define the relevant concepts and to focus empirical observations on the critical dimensions of these phenomena. Moreover, the history of technological prognostication is littered with faulty predictions of the impacts of new technologies.(1) These impacts only become apparent slowly over many years, and they are often small and unanticipated.(2) Consequently, researchers require a comprehensive understanding of the phenomena under investigation to interpret the long-run implications of intermediate outcomes. Finally, with a sharper understanding of the linkages between technology and governance, researchers will be better prepared to employ the massive social experiment represented by the Internet to clarify and further democratic theory itself.

This project extends well beyond the scope of a single paper, and our aims here are accordingly modest. We do not present a grand theory of

communication technology and governmental reform. Rather, we define the necessary elements of such a theory and elaborate these elements employing existing concepts from communication studies, political science, and other disciplines. The paper proceeds as follows. We begin by noting five empirical observations that must shape theory. Then we proceed to define and discuss three necessary elements of a theory of communication technology and democracy. Conclusions follow.

I. THEORETICAL PREREQUISITES: EMPIRICAL AND THEORETICAL

Any theory of the Internet and democracy must be tempered by the long and rich history of the interplay between governance and communication technology. We find five generalizations of particular importance.

First, advances in ICTs are neither sufficient nor necessary to bring about changes to systems of governance. If James Madison were suddenly reincarnated, he would certainly remark on the many changes in American democracy such as the importance of television to campaigning, but more importantly, he would easily recognize the main institutional outlines of the federal republic he helped design. As Barber puts it, historically technology and democracy have had a "deeply ambivalent relationship".[3] The evolution of the American democratic system has been propelled forward by reforms such as the Progressive movement and the extension of suffrage, that are not directly associated with the rise of a new communication technology. Conversely, innovations in ICTs often have had little if any perceivable effects. The rise of cable television that led to the wired cities of the 1970s and early 1980s is a prominent example.[4]

Second, when governance institutions and technology jointly evolve, the causal links between the two resist distillation into simple, unidirectional relationships. Numerous studies have documented how technology shapes political systems by restructuring communication patterns. Examples include the manner in which television-based electoral campaigns have weakened American political parties and how media fragmentation affects national consensus.[5] At the same time, it is clear that political and social institutions play a significant role in the form and development of new technologies. The development of commercial television in the United States, for example, reflected a prevailing free enterprise ethic that contrasted sharply with the state controlled models developed elsewhere.[6] Similarly, Pool has demonstrated how governments have addressed free speech rights quite differently for traditional versus electronic media. Debates over encryption technology, copyright, government provision of

information over the Internet, and domain names are just a few of the political battles that will shape the Internet.

Third, the Internet is being introduced into a political system in which actors are already connected by a rich web of communication links. The existing quantity of political coverage by traditional media already induces complaints of saturation coverage and information overload. Telephones, the post, faxes, associational contacts, and face-to-face conversations provide citizens and officials numerous avenues to gather information and communicate with others. In addition, numerous institutional reforms—the Administrative Procedures Act, the Freedom of Information Act, open meeting laws, and formal participation requirements—have facilitated access to information and citizen input to the policy making process.

Fourth, unlike existing communication technologies the Internet is inherently multidimensional.[7] The telephone, for example, is mainly employed for one-on-one, real-time conversations. Television technology and cable networks have been designed to support one-to-many broadcast applications. In contrast, the Internet is a generic platform on which numerous distinct applications can be and have been easily developed. These include information retrieval, multimedia, telephony, chat rooms, video conferencing, and broadcast.

Fifth, democracy likewise is a multidimensional concept. As Dahl put it, the problem facing democratic scholars is not so much the theory of democracy but rather reconciling the many competing theories of democracy.[8] Theorists introduce a range of norms including equality, liberty, the prevention of tyranny by the majority, citizen participation, responsiveness, and the effective resolution of collective disputes. Differing emphases lead to contrasting analyses of what democratic systems are and what they should be. Democratic systems are also composed of a complex set of institutions. The formal structures of the executive, legislative, and judicial functions operate at national, regional, and local levels within an environment influenced by political parties, interest groups, and the media.[9] Changes in communication technology will not have identical effects on these dimensions. For example, broadcast coverage of decision-making processes has had a greater influence on legislative than judicial processes and has expanded the audience much more for national as compared to local deliberations.[10]

These five empirical generalizations place two broad demands on any theory linking the Internet to democracy. The first two observations argue against either a strong technological determinism or an overriding emphasis on the social shaping of technology.[11] Theory must engage the difficult middle ground in which causation is multidirectional and conditional.

Second, the last three generalizations indicate that due to the multi-faceted natures of the Internet and democracy, researchers must consider diverse causal paths linking technological change, systems of political communication, and democratic governance. The literature has already identified a plethora of such relationships. Researchers have linked the rise of the Internet to greater citizen empowerment and to the reinforcement of existing divisions of power; to increased social fragmentation and to the rise of new forms of community; to reinvigorated democratic discourse and to Internet road rage that poisons civic engagement; to a new golden age of participatory democracy and to threats of ever greater surveillance and control of individuals; to an interactive age of democracy that overcomes voter apathy and to a commercialization of political life that marginalizes democratic concerns. This list could be extended, but it suffices to illustrate the range of causal links that have already been considered.

In response to these two dictates, we propose that a research program on the relationship between the Internet and democracy requires progress on three fronts. First, theory must explicate how the Internet advances and changes politically relevant communication processes. Second, theory must provide a framework for understanding the role of communication and information in politics. These two elements are necessary to clarify how specific advances on existing communication capabilities made by the Internet map into potential effects on democratic institutions and processes.

Third, theory must explicate the causal mechanisms that link technological innovation to changes in governance institutions and processes. The Internet can insinuate itself into political along a number of avenues depending on the diffusion of the technology, its design, and its use by political actors. Attention to the specific nature of causal processes is useful for clarifying causal links and for understanding the ways that alternative theories interrelate.

While a full synthesis of these three threads is a major project, an important first step is delineating the structure of the problem. This structure can then serve as a road map directing research questions, clarifying theoretical issues, identifying contradictory hypotheses, and suggesting empirical tests for such contradictions.

II. INTERNET AND COMMUNICATION CAPABILITIES

An analysis of causal relationships within complex social systems must be based on a clear understanding of the quality and magnitude of the shifts in the causal variables. Unfortunately, the changes wrought by the Internet are frequently confounded. Some theorists make the error of attributing

almost all advances in the technology of political communication to recent innovations. Grossman, for example, states that "[u]ntil the past decade, the technology on which democracy had operated for some 2,500 years had not changed much".[12] While recent advances are clearly significant, this perspective discounts the upheavals brought by the telephone, radio, television, and satellites, thereby conflating the effects of the Internet with previous advances and overestimating the incremental impact of the Internet.

Other scholars have advanced broad typologies of communication capabilities provided by new technologies. Abramson, Arterton, and Orren emphasize five dimensions: the quantity of information, communication speeds, decentralization, interactivity, and demassification.[13] A propositional inventory of the effects of new ICTs collated by Neumann includes these and several others: cost, security, complexity, and convergence. Finally, Rogers adds asynchronicity to this list, while Katz would add globalization.[14]

These categories are widely employed, but they are lacking for the purposes at hand. By focusing on technological attributes and treating all forms of communication uniformly, they fail to illuminate the disparate effects the Internet has on specific communication activities. In addition, they lack a mechanism with which to map communication activities into political processes, confounding the link between technological change and democracy.

To provide this additional link, we propose a typology of communication activities based on the number of individuals who produce and receive messages. The number of individuals who send a message ranges from a single person, as in a speech, to a small group, as in a petition, ending in a large number as in a national election. Similarly, messages are received either individually, as in a letter, by a few people as in a group discussion, or by many people, as in television broadcasts. As seen in Fig. 1, crossing these dimensions yields four politically relevant classes of communication: conversation, information aggregation, broadcast, and group dialogue.

A. Extant Technologies

A discussion of the political relevance of each communication form is deferred to the next section. Here we describe existing technological supports for these four forms of communication. Then, we turn to the manner in which the Internet shifts technological capabilities.

1. Conversation

Despite the ongoing technological revolution, much conversation between individuals or within small groups remains an unmediated, face-to-face

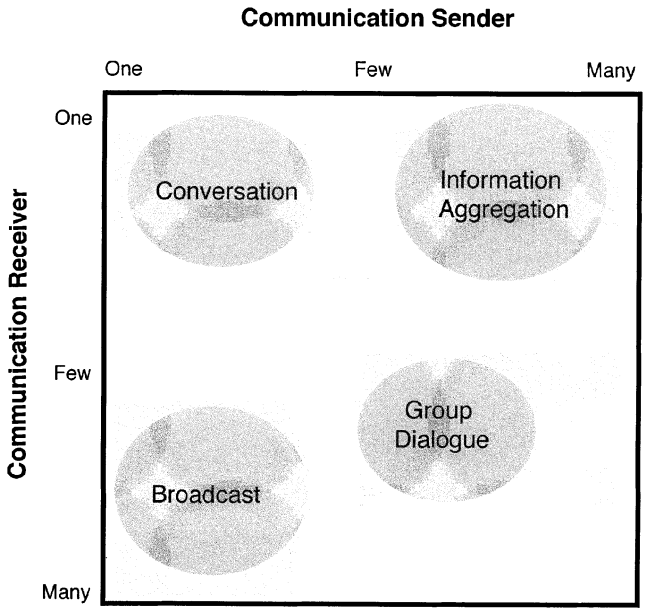

Figure 1. Communication forms.

process. The endurance of face-to-face conversation reflects the extent to which individuals prefer the rapid, richly nuanced, and interactive exchange of information afforded by direct contact. Pre-Internet technological advances have, nevertheless, expanded the temporal and spatial bounds of conversation. The post and then the telegraph expanded its reach and speed. Telephony added interactivity to the expanded realm of conversation and satellites effectively made telephones global. Answering machines and fax machines have also expanded the possibilities for asynchronous and interactive communication.

2. Information Aggregation

Information aggregation entails the collection, analysis, summarization, and transmission of information from groups to individuals or agencies. Given the interests of governments in the activities within their domain, it is not surprising that many traditional forms of information aggregation are political institutions. The census mandated by the U.S. Constitution, for example, aggregates information on citizens and apportions representation.

Similarly, the vote is a vehicle for transmitting the preferences of citizens to political elites. The bureaucracy, political parties, and interest groups gather information concerning constituent demands and social problems on an on-going basis. Surveys, polls, and petitions perform similar, though informal, functions. Finally, the media enables citizens and political elites to survey the political environment.

Twentieth century technological advances have had significant effects on information aggregation. The telephone and other channels have radically increased the speed and lowered the costs of collecting data and have been integral to the development of scientific polling. Electronic computing has had similar effects on the tabulation and analysis of data such as votes and census results, transforming these activities from highly centralized, elite processes to decentralized and common activities. Reapportionment of voting districts, for example, has become a more open process as more groups have access to the computing capabilities to analyze large quantities of voter registration, geographic, and census data.

3. Broadcast

Broadcast communication is most commonly associated with the dominant forms of mass media: newspapers, radio, and television. Messages were, nevertheless, conveyed to wide audiences prior to these relatively recent innovations. Darnton has charted the importance of pamphlets, books, gossip, and song in pre-revolutionary France, and these same modes remain vital, though less powerful, modes of communication today.[15] Recent technological advances, such as fax machines, satellites, and cable television have altered the mass transmission of messages, lowering costs, decentralizing access, and driving the de-massification of the media. Nevertheless, the mass media has remained a highly concentrated industry with a small number of firms controlling a large share of significant media outlets.

4. Group Dialogue

Interaction among a large number of senders and receivers is the most difficult form of communication to sustain due to the number of links involved. For example, while a broadcast to N receivers only requires N one-way links, an N-member discussion involves N^2-N one-way links. Consequently, group dialogue requires a higher level of coordination, which limits its scope. It is best supported by small groups, such as social

gatherings, graduate student seminars, or New England town meetings in which discourse rules to coordinate communication can arise organically. In fact, knowledge of such discourse rules can be thought of as one dimension of the social capital that Putnam argues is developed in small group interactions.[16] As group size increases, group dialogue quickly becomes cumbersome, requiring the formalization of communication rules. As class size increases, lecture-based pedagogical styles dominate over seminar-based class discussion. Similarly, larger organizations find it necessary to formalize communications through task specialization (limiting the group size within which many-to-many communications occurs) and routinization of information flows.

Technological advances prior to the Internet have had some effects on group dialogue. Newspapers and radio have expanded the scope of group discussion through letters to the editor and call-in talk shows. Conference telephone calls also enable a small number of individuals to interact at a distance. Early experiments in electronic democracy, for example, demonstrated that conference calling possibly facilitated consensus building and increased political effectiveness.[17] Nevertheless, these applications either have had limited capacity or have only gained limited acceptance, leaving group dialogue as the form of communication least affected by technological advances prior to the Internet.

B. The Effects of the Internet

The Internet is overlaying a new communications infrastructure onto these existing communications processes. It will be a widely available, high bandwidth, computer network controlled by decentralized and open protocols that supports multiple applications. While it changes the technological underpinnings and inherent biases of all communication, it has disparate effects on specific forms of communication. Fig. 2 illustrates three major impacts. First, depending on extant technological supports, the Internet introduces new capabilities and qualities to each communication form. Second, as illustrated by the arrows, it expands the scope of certain communication activities, linking new combinations of senders and receivers. Third, these disparate forms of communication are increasingly linked by technological convergence.

1. Conversation

Seen within the context of existing technologies, the impact of the Internet on conversation must be viewed as more evolutionary than

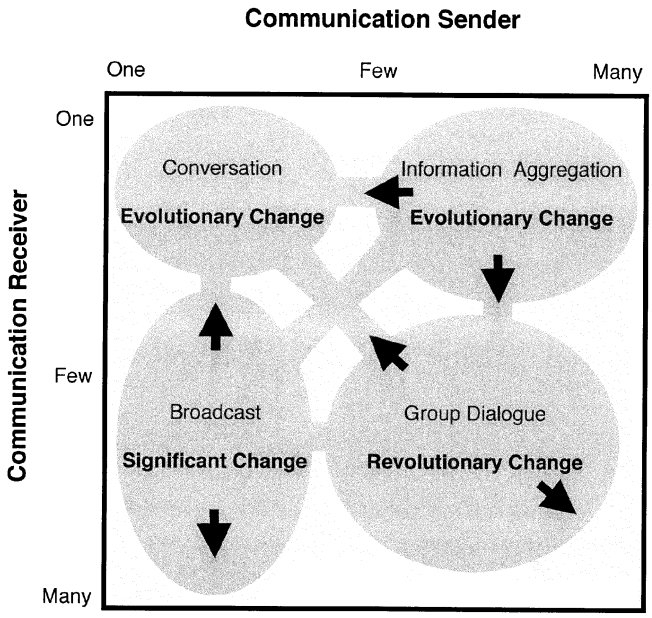

Figure 2. Internet's effects on communication forms.

revolutionary. E-mail, Internet telephony, and video-conferencing create new methods to mediate conversations. With lower costs and global reach, they widen the geographical scope of one-on-one contacts. In addition, these modalities can lead to new conversational styles. For example, researchers have found that e-mail, with its rapid exchanges and abbreviated style, tends to foment misunderstandings and hampers dispute resolution.[18]

The impact of the Internet, however, is easily exaggerated. The continuing importance of direct contact to support conversational exchange limits the impact of any new mediating technology. Moreover, the telephone and other existing technologies already supported fast, interactive, global, and asynchronous, conversations. Thus, the incremental effects brought about by the Internet are likely to be limited.

2. Information Aggregation

The effects of the Internet on information aggregation should also be considered evolutionary in nature. Polls, surveys, and potentially elections

will become more rapid, more frequent, and less costly to conduct. The potential for technology to alter the character of these activities, however, is limited. Internet voting is less costly, but convenience is only one of many factors influencing turnout. The fact that increased use of absentee ballots has not significantly altered historical trends toward lower turnout suggests that voter apathy and ignorance are more significant barriers than convenience. While the Internet may increase the number and variety of political polls, it is not likely to increase their overall quality. Polling, based on scientifically random samples, is already a mature science with a long and mostly successful track record of gauging public opinion. In fact, new technology poses risks to the quality of information gathering. SLOPS (self-selected listener oriented public surveys) linked to radio talk shows, for example, have created biased, misleading results, and have proliferated on the Internet. Also, answering machines and other filtering technologies that enable Internet users to limit their attention to only particular messages (e.g., e-mails, news channels) make random sampling increasing difficulty, thereby increasing the cost of collecting information concerning certain groups.

The Internet has a greater potential to reshape other forms of information aggregation. Surveillance activities will change as message receivers gain greater power to collate information from multiple sources. Consequently, the Internet is likely to decrease the influence of traditional information aggregators such as major news organizations and empower new aggregators, such as interest groups that collect news of interest to their members. By continuing the trend toward decentralized data processing, the Internet also increases information access. Small and medium sized organizations and citizen groups, in particular, will be better able to gather, analyze, and present information more effectively, thereby extending the scope of information aggregation in terms of the type of information gathered and of the political actors who employ the information.

3. Broadcast

The Internet represents a more significant shift in the technological underpinnings of broadcasting. It will increase the speed and volume of information, though these incremental effects are not particularly consequential when compared to the dramatic leaps brought about by the rise of radio, television, and satellites. The Internet's potential for interactivity and support of asynchronous communications will affect the manner in which audiences consume broadcast content. These

changes, however, merely continue trends in asynchronicity and interactivity begun by videocassette recorders and call-in radio and television broadcasts.

The Internet's real legacy will be the extent to which it shatters long-standing constraints on media access and ownership. Already, an individual's web site has the potential to challenge major network broadcasts for audience attention. As seen in Fig. 2, these developments dramatically shift the scope of broadcasting as a communications activity. New competition in broadcast leads to segmentation as messages are targeted to niche audiences and simultaneously leads to globalization as producers strive to create content that appeals to as wide an audience as possible.

4. Group Dialogue

The relative paucity of extant technological support for group dialogue and the particular capabilities of the Internet communication suggest that it can induce revolutionary changes to group dialogue. Usenet groups, listservs, chatrooms, and group web sites all create fundamentally new ways to mediate group discussions that benefit from several of the Internet's positive attributes. They are inexpensive and decentralized, enabling new groups to be easily formed and for new members to join existing groups. They provide a rich and interactive media with which groups can maintain constant contact with members and recruit new members. Finally, their global reach and support of asynchronous communication enables widely dispersed communities of interest to remain in contact.

These technological capabilities should greatly expand the scope of group dialogue beyond the constraints of public meetings or call-in shows. The low costs and advanced capabilities allow smaller groups to maintain membership interest and facilitate collaboration. At the same time, global reach allows larger and more disperse groups to form and work together productively. Even at this early age of the Internet, there is plentiful evidence of the transformative power the Internet. Anti-globalization protests targeting transnational organizations and disease support groups are just two recent examples of disperse groups united by common interests that have been able to effectively coordinate and act with the aid of Internet communications. Another indicator of the rapidity with which Internet conferencing technologies are facilitating group dialogue between geographically dispersed individuals is that the original version of this paper was presented at an on-line conference.

As with conversation, critics contend that the impact of the Internet will be limited. They argue that because face-to-face contact remains essential to maintaining group cohesion and member commitment, communities cannot be based solely on mediated communications. This criticism certainly contains some truth. Nevertheless, it neglects the fact that the Internet-based communications are a powerful complement to direct contact and that the Internet mediates forms of group dialogue that extant communication technologies either did not support at all or only supported quite poorly.

5. Convergence

The convergence between voice, data, video, point-to-point, and broadcast communications technologies are also blurring the distinctions between these four communication activities. Personal e-mails may quickly become global broadcasts simply by being forwarded numerous times. Broadcast messages, such a newspaper articles, can be captured and edited into personal messages. Internet postings in group discussions may be tracked and analyzed to distill the pulse of a group.

The main effect of this convergence is to create new combinations of communications that can produce more significant effects than any single activity on its own. E-mail conversations concerning an issue can link a discussant to information on the Internet, and the process of information retrieval, in turn, can lead the individual to issue organizations groups that they may wish. Alternatively, individuals watching broadcasts can be linked to opportunities for information retrieval and group dialogue, thereby promoting political activity.

6. Summation

The Internet clearly represents a major advance in communications technology. Nevertheless, it does not equally affect all communication activities. Conversation was already well supported by existing technologies, implying that the Internet only offers incremental advantages in this regard. Similarly, electronic voting and electronic surveys only represent marginal changes from their pre-Internet counterparts. In contrast, the Internet introduces much greater shifts in the underlying technology of broadcasting and group discussions. It also furthers the convergence between communication activities. Thus, for example, information aggregation, broadcasting, and group dialogue may occur concurrently, as in a "real time" Delphi method.

This typology illuminates one of the weaknesses of current theory development. Much writing by techno-optimists centers around new

opportunities for political participation, the possibility of plebiscitory government and the promise of electronic voting.[19] These changes, however, rely on conversational communication and information aggregation, two communication forms for which the Internet will not have a significant impact. A closer look at different communication processes suggests in contrast that the Internet has a greater potential to influence the structure of media industries and the formation of communities.

III. COMMUNICATION AND POLITICS

The next causal link to explicate is the relationship between the technological changes discussed in the previous section and changes in politics. One cannot map how shifts in communication capabilities affect governance without understanding their current functions. As such, this link requires a theory of the role information and communication play in democratic governance.

Unfortunately, this area of theory remains underdeveloped. Ironically, researchers interested in the nexus between government and communication are faced simultaneously with both an over abundance of theories and a dearth of relevant theory. Political Science as a discipline has traditionally not focused on communication and information; rather, power has been its central unifying concept. Moreover, within the power framework control over information is viewed as only one of many political resources and not even the most important.[20]

Over the last twenty years, the emerging field of political communication has largely focused on campaign communication and mass media effects.[21] It has not adequately integrated other relevant literatures such as those on participation, interest groups, and legislative and bureaucratic politics. Another line of research pursued by rational choice theorists examines the role of information in politics more broadly. It views politics as a series of transactions between actors (e.g., voters and elected officials, Congress and the bureaucracy) and attempts to explain the structure and process of the transactions in terms of efforts to overcome information asymmetries.[22] Within this latter tradition there has been some attention to the manner in which shifts in communication patterns associated with the Internet alter the results of rational choice models.[23] Its narrow transactional perspective and high degree of formalism, however, has limited its influence because it gives little attention to the broader social effects of interest to communication scholars. In sum, researchers interested in the nexus of communication and politics find a patchworked theoretical

landscape. Some of the areas, such as campaign communication, are fecund, while others of equal or greater importance lay fallow.

From a broader perspective, electronic democracy research is confounded by the profusion of competing and often contradictory theories if democracy. As Dahl puts it, "... there is no democratic theory, there are only democratic theories".[24] Marxist, pluralist, elite, and bureaucratic theories paint very different pictures of the distribution and uses of political power. Moreover, alternative visions tend to emphasize differing relationships between technology and democracy. Laudon has argued different types of ICTs imply different forms of democracy.[25] Computers imply the bureaucratic politics of managerial expertise. Broadcast technologies suggest populism, and interactivity involves pluralism. Similarly, Musso, Weare, and Hale have argued that pluralistic, communitarian, and service-provision models of local governance argue for differing uses of Internet technologies.[26]

This state of affairs poses both a dilemma and an opportunity. The dilemma is that researchers glean insufficient guidance from established theory relating the role of ICTs to governance. Analysts work from different, often contradictory, and frequently unexamined theoretical traditions within political science, which in turn results in a profusion of contradictory propositions.

The opportunity lies in understanding that the rise of the Internet offers political scientists and communication scholars a valuable natural experiment. This experiment provides the impetus for developing theories that clarify the connections between communication and all aspects of democracy. Moreover, the Internet provides a test bed for comparing alternative theories of politics, enabling communication scholars to make a significant contribution to political science. Pluralistic versus elite theories of democracy, for example, lead to quite different predictions of the consequences of an Internet-induced redistribution of informational political resources. Pluralist theory would predict that the Internet may shift the relative power of certain groups, for example by reducing the costs of participation. In contrast, elite theory may predict that elite control of technology would structure communication channels in a manner that reinforced existing elite control.

A number of efforts at developing more systematic, communication-based theories of governance provide a springboard with which to address this opportunity.[27] Instead of viewing communication and information as only one of many political resources, these theories see communication as the infrastructure of government or the nerves (as opposed to the muscle and bone) of the body politic. Communication "... not only comes 'before' politics, it is present in every part of the political process".[28] These theories

have not been influential, possibly due to their broad scope and difficulties in operationalizing constructs to examine specific questions. Nevertheless, by framing governance as a communication process, they contribute a number of useful analytic concepts, linking communication to specific dimensions of governance. Although their terminology differs, they all see governance composed of four communication processes: socialization, channels, networks, and steering.

A. Socialization

Social integration is a prerequisite for political life. Citizens must share political meanings and a common political language to engage in the negotiation at the core of politics. The creation of shared meanings is forged by the complex of legal, economic, and social interrelationships between citizens, and the character of these interrelationships is mediated by the biases of dominant communication systems.[29] In fact, Deutsch suggests that the level of social integration can be measured purely in communication terms: the degree to which the members of a political system are able to transmit messages with more or less error and distortion.[30]

Divergent threads of the political science literature have emphasized different roles of communication in socialization. Media scholars focus on the mass media as the central driver of this process.[31] Others have emphasized the importance of interpersonal communication.[32] Social capital theorists, in contrast, emphasize the role of organizational communication and place-based social contacts.

The Internet will potentially have profound influences on all three levels of socialization. By simultaneously fragmenting and globalizing the media, the Internet disassociates media structures from the contours of nation states. Groups within nations will increasingly rely on divergent media systems while groups across nations will increasingly have access to the same systems. These shifts raise the possibility of increasing social fragmentation within states at the same time as certain groups begin to form global identities that span borders. The manner in which the Internet will restructure conversation and group dialogue is illustrated by current debates concerning whether Internet use leads to social isolation.[33]

Given that the Internet may dramatically shift these communication patterns, this natural experiment can be leveraged to advance and integrate these divergent perspectives. In particular, the degree to which political attitudes within nations remain stable will provide valuable insight into the relative importance of unmediated over mediated interactions in the socialization process. In addition, because the Internet's impact on

conversation, broadcast, and group dialogue activities differs, researchers have a opportunity to examine their relative importance and interrelationships. For example, Putnam's contention that the stock of social capital has been depleted by the displacement of interpersonal dialogue by broadcast television can be further examined as the Internet supplants the television.[34]

B. Channels

Channels mediate between society and the polity and between political actors. The polity performs numerous functions through downward communications (e.g., broadcast) to citizens. It mobilizes support, legitimizes its authority, informs citizens of rules and policies, and adjudicates disputes. Through upwards communication (e.g., information aggregation) citizens inform the polity of their demands and provide feedback. Political actors employ horizontal communications (e.g., conversation) for debate, deliberation, and negotiation. The structure of, access to, and utilization of these channels shapes the power and clarity of feedback and the manner in which governments exercise their powers.

The concept of a communication channel can be fruitfully applied to a number of areas of political science. Campaign communications with its focus on the role of mass media is an obvious example and a dominant field of inquiry.[35] Nevertheless, the manner in which channels operate and interrelate plays an important, though less prominent role, in other areas including citizen participation in the form of contacting public officials,[36] democratic deliberation,[37] interest group feedback,[38] the implementation process,[39] and the provision of government services.[40]

The Internet will increase the volume and speed of information travelling through channels, thereby changing the mix of feedback moving up through channels and information moving downward. Interactivity combined with the convergence of differing forms of communication will also strengthen the interrelationship between channels. For example, downward communication of information through the Internet can lead to direct and rapid e-mail feedback. At the same time, countervailing effects may impede existing channels. The fragmentation of the mass media will make it harder to reach a national audience and filtering technologies allow users to shut out unwanted messages. Over all, the changes in communication channels will alter the quantity and distribution of political information, thereby altering processes and outcomes. For example, legislatures may find it increasingly difficult to include secret riders to bills as their activities are more rapidly disseminated.

It is important, nevertheless, to place the study of the impacts of the Internet within the context of existing channels. As Galnoor points out, the core communication channels in developed democracies are institutions rather than technologies.[41] The bureaucracy projects and implements state power while mobilizing resources. Political parties and other mediating organizations generate feedback and facilitate legitimization. Voting conveys feedback and demands. New communication channels will complement and at times substitute for existing institutional channels. Nevertheless, the impacts of the Internet on feedback channels must be compared to those brought about by administrative means, such as open meeting laws.

The effects of increased channel capacity are also constrained by the capacity of actors to utilize the information. Davis, for example, documents that e-mail has greatly increased the amount of feedback received by Congressional members, but the feedback has been largely ignored.[42] Similarly, increased downward information flows will not necessarily overcome the low levels of interest in politics displayed by much of the populace.

C. Networks

Networks are systems of established communication channels. They are differentiated from channels in that they connect a stable set of actors that share common goals and coordinate their actions. As such, the study of networks parallels the study of institution building and institutional decline.

Political parties, interest groups, issue networks, and the iron triangles of policy making are all examples of political institutions that can be conceptualized as networks. In addition, an understanding of the extent of networks and competition between networks is central to the study of the boundaries between the public, private, and non-profit sectors as well as the boundaries between nation states and supranational organizations.

Through its influence on group dialogue, the Internet will significantly alter the role of networks in political life. The Internet will facilitate new links and reinforce existing links, changing the number and types of networks active in governance. Such changes are presaged by the restructuring of the economy with the rise of electronic commerce and network-based business organizations. The restructuring of governmental institutions is limited by the political constraints imposed by opposing interests and the indivisibility of many government services such as criminal justice. Nevertheless, greater change will occur in non-governmental networks. The power of political parties, for example, resides in their maintenance and control of an established communication network linking

voters and elected officials. Their power has already diminished because television provides candidates with an alternative link to their constituents. The Internet should continue this trend. In addition, the types of groups active in politics should change as technology advantages disperse communities of interest relative to place-based communities.

As with channels, technology is only a partial substitute for existing institutional structures. Extant institutions (e.g., networks) retain important advantages over Internet-based networks: face-to-face contact between members, stable task definitions and coordination mechanisms, and access to resources. The Internet will foster the formation of new networks due to decreased communication and coordination costs. Nevertheless, the ease of entry and exit into on-line communities and the inescapable impediments to collective action constrain the influence of the Internet, making it more of a complement than a substitute to traditional institutional forms.

D. Steering

The concept of steering is derived from cybernetics and refers to the role of communication and control in the responsiveness of political systems. The historic parallel between steering and political responsiveness can be seen in the dual meaning of the term governor, referring to the political executive of a state and to the control mechanism for a steam engine or car.[43] Steering involves the crafting of rules, rule application, and rule adjudication. As such, it depends on the ability of governing systems to interpret feedback, to maintain a memory of its actions, to have self-knowledge of its own system, and to be able to convey understandable messages. This concept relates directly to the fundamental issue in political science of how governments allocate resources and adjudicate disputes.

Advancing communication technology produces counteracting effects on the steering capacity of governments. On the one hand, it creates the danger of information overload. Critics have argued, for example, that the creation of formal participation mechanisms in great society programs led to excess demands on government, leading to failure and alienation.[44] Similarly, new technologies risk short circuiting reasoned deliberation of issues by increasing the speed of information flows.

On the other hand, the Internet enhances the information processing capabilities of governmental institutions. The ability to filter and preprocess information and the use of knowledge management systems can improve information management and institutional memory. The Internet also facilitates the creation of new forms of decision making mechanisms such as regional coordination, plebiscitory systems, and new forms of markets that

strengthen governments' capacity to address problems. Finally, many outputs of governments are information based, such as rule enforcement, education, and financial transfers. The Internet can improve the efficiency of all such services.

The balance of these counteracting forces will be mediated by existing institutional structures. The willingness and ability of legislatures and bureaucracies to enhance their information management capabilities will be balanced against the willingness and ability of interest groups and other mediating organizations to aggregate and communicate demands. The hopes of Internet optimists can only be fulfilled if all parties effectively employ new technologies. If legislatures and bureaucracies lag, information overload will ensue. Conversely, if mediating organizations lag, increased bureaucratization and centralization are likely results.

In addition, the effects of new technology will depend on the degree to which actors identify and address real deficiencies in existing steering mechanisms. Inattention to existing structures, for example, explains the failure of early technological experiments in plebiscitory governance, such the QUBE trial.[45] These experiments emphasized speed over deliberation and their votes were not binding. Citizens apparently saw few advantages compared to existing models for voicing their concerns.

E. Summation

The conceptual categories provided by communication theory are a useful device for deriving the theoretical connections between technology and governance and can further our understanding of the basic roles of communication and information in democratic processes. Several governmental processes can be analyzed as combinations of these basic forms of communication. Kingdon, for example, developed a model of agenda setting that depends on the interaction of three independent streams of actions: 1) the problem stream, consisting of public and elite perceptions of issues requiring public action, 2) the policy stream of potential solutions advocated by political actors, bureaucrats, and researchers, and 3) the political stream involving the manner in which the national mood, interest group pressures, and government affect the likelihood of action.[46] Reconceptualizing these streams as communication processes clarifies the potential effects the Internet may have within Kingdon's model. The problem stream depends on feedback channels, and the scope of problems vying for attention in the agenda-setting process is likely to increase with the proliferation of channels and fragmentation of broadcast media. The policy stream is a function of policy and issue networks, and as the Internet reorders existing networks,

the mix of solutions commonly considered will also change. Finally, the political stream entails steering and socialization. The Internet's impact on this stream will depend on the degree to which it changes decision-making practices and leads to consequential shifts in political moods.

IV. TECHNOLOGY AND DEMOCRACY: THE MEDIATING LINKS

The factors discussed in the preceding two sections influence the *potential* of the Internet to change governance. The last link required for the study of *actual* changes in political outcomes is an understanding of the causal mechanisms by which changes in underlying technologies affect political behaviors, processes, institutions, and attitudes. These causal mechanisms often remain implicit which unfortunately confounds differences over *what* are the Internet's effects with differences over *how* the Internet enters into political life. A clearer recognition of the differing causal mechanisms underlying alternative analyses is useful for unpacking how these analyses complement and contradict one another. It is also necessary for discerning the extent to which empirical observations support theoretical + propositions.

The main fault line that divides the cyberdemocracy literature is delineated by the causal direction of the relationship between politics and technology.[47] Technological determinists focus on technology as the causal variable. Advocates of a social-shaping perspective, in contrast, view the causal relationship in reverse, where pre-existing social conditions shape the development, acceptance and design of new technologies.

The debate between the mobilization hypothesis and the reinforcement politics hypothesis illustrates these alternative perspectives.[48] The mobilization hypothesis has a strong technological determinism bent. It predicts that the open, decentralized and interactive nature of Internet communications will enfranchise marginalized sectors of the electorate by making political information more easily accessible and more germane to their concerns and improve the openness of government by equalizing access to information. The reinforcement politics hypothesis, in contrast, derives from the social shaping tradition. It predicts that even if the Internet has the potential to open up and decentralize communication patterns, it will still largely benefit existing elites because they will have greater access to the technology, and they will design applications in ways that preserve their informational advantages.

A less often discussed, but equally important fault line is defined by the *types* of impacts that are discussed. Certain propositions focus on instrumental effects, the manner in which technologies enable individuals

and groups to attain their goals. In contrast, other propositions focus on constitutive effects, changes in beliefs and perceptions that transform the goals individuals and groups pursue. For example, one thread of the mobilization hypothesis focuses on how lower communication and networking costs will improve citizens' ability to intervene successfully in the political process. In contrast, another thread argues that the interactive nature of the Internet may counteract the alienation and malaise afflicting citizens, thereby inducing them to pursue new political goals.

As illustrated in Fig. 3, this pair of dichotomies can be combined to define four distinct causal links between technology and the polity. Each describes a different mechanism by which technology shapes and is shaped by politics. In addition, each suggests a different course of inquiry to test theory.

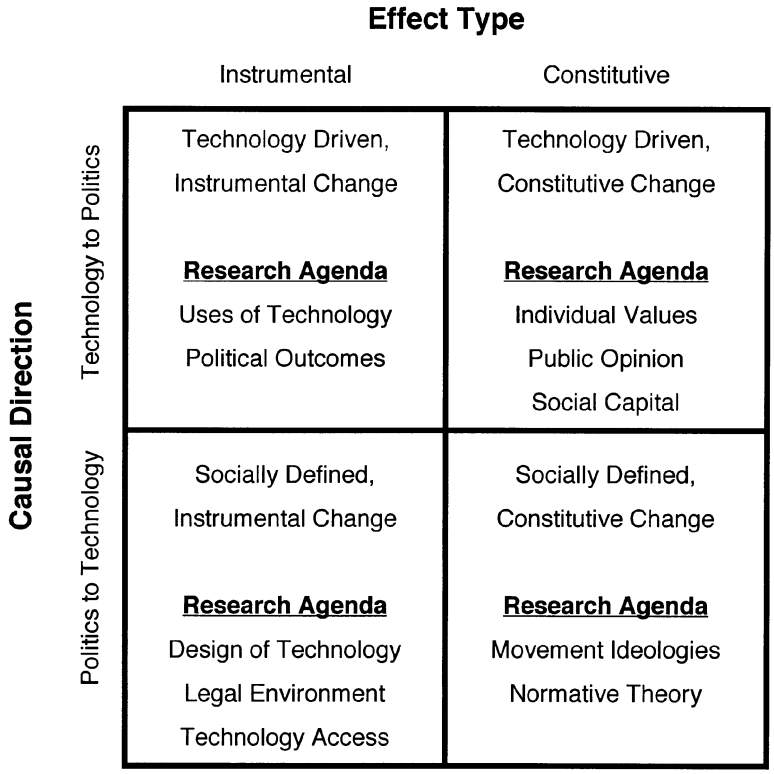

Figure 3. Typology of casual mechanisms.

A. Technology-Driven, Instrumental Change

This causal story predominates in the analysis of technology and society. It assumes that exogenous changes in technology affect the structure and operation of political channels, networks, and steering processes. Strong versus soft theories vary in the degree to which technology is a dominant determinant, where strong versions propose that technology dictates political processes and structures and softer theories only claim that it is one of many factors. In all cases, nevertheless, the focus is on the manner in which technology affects communication flows and the availability of information. These shifts, in turn, act upon basic political processes (e.g., participation, group formation, policy-making, etc.) to change the ability of individuals and groups to pursue their political goals. In the long run, shifts in communication patterns can also lead to more fundamental institutional changes, such as the structure of campaigns or the role of political parties.

This causal story suggests the need for two main research programs. Instrumental changes necessarily entail changes in political activity such as voting, interest group activity, and political participation. Thus, the first area of study is the *uses* of the Internet by governments, organizations, and individuals and whether these uses can be related to changes in political activity. Second, consequential instrumental changes to political processes will alter the balance of power, suggesting the need to examine changes in policy and political *outcomes*.

Due to the newness of the Internet, existing research has focused on uses rather than outcomes.[49] There remains, nevertheless, much room for additional work to disentangle the complex manner in which the Internet may compliment and/or substitute for existing communications. Eventually, studies relating technology use to policy outcomes will provide more conclusive evidence of the existence or lack of instrumental effects, but such studies remain premature given that the full effects of new technology on political communication activities are unlikely to be observable for many years.

B. Socially-Shaped, Instrumental Change

While this paradigm also emphasizes the instrumental impacts of technology, it differs in that technology is not treated as an exogenous causal factor. Rather, it is treated as a political and social outcome in which the conscious design of technologies and their diffusion condition subsequent effects. This causal framework is most often associated with theorists who argue that the Internet will lead to little or no change. Even if

new technologies have the *potential* to alter political channels and networks, they argue that this potential is thwarted by the social, legal, and economic design of the technology. For example, elite preferences are likely to be disproportionately represented in the design of technologies because they tend to be early adopters and early adopters are inordinately influential in the design and success of new technologies.(50)

Testing theories based on this causal paradigm involves a quite different research program. This perspective dictates that research on the *design* and *diffusion* of technology should precede research on uses and outcomes because uses and outcomes must be understood within the context of the technology that is actually deployed. Case studies of the commercial development of the Internet and of political efforts to craft the legal, technical, and economic rules that will govern the Internet will be important areas of study for understanding the social shaping of this technology.

The question of who uses the Internet has already been the subject of numerous studies of the diffusion of Internet technologies among individuals, organizations, and countries.(51) These studies uniformly find a digital divide in current access to the Internet, differentially empowering existing elites. These early studies, however, provide at best an incomplete picture of the eventual effects of access patterns. The divide is narrowing, and as later adopters get on line, the mix of Internet users will change dramatically, becoming more representative of the population as whole. In addition, as late adopters join the Internet community, their interests and preferences will have an impact on the design and mix of services offered by the medium.

C. Technology-Driven, Constitutive Change

Beyond any changes to processes or institutions, technology can also alter political socialization. The Internet may affect politics by changing the agents with whom we interact, how we receive information, and how information is presented. These shifts, in turn, may alter what we know, what we learn, and what perspectives we employ to interpret events. In the short run, these changes can alter the relative salience of policy problems and solutions, and in the long run, they may strengthen or weaken fundamental tenets of the democratic creed. As with political socialization, technology's constitutive effects may be mediated through individual, organizational, and social communications. Changes in the scope of individuals' political conversations may alter the interpretation of mass communications. Increases or decreases in associational activities may influence the accumulation of social capital, and the restructuring of mass

media can have multiple affects. More fundamentally, the manner in which people are organized and interrelate is a central determinant of political culture and preferences.[52] Consequently, to the extent that the Internet affects all forms of social organization and interaction, it will have indirect constitutive impacts.

Attitudinal surveys and political ethnographies that chart the introduction of the Internet into political and social life will be the main methods to analyze these trends. This research program has hardly begun and promises to be challenging especially considering that individual, organizational, and social level effects can either reinforce or counteract one another, requiring multiple studies to sort out overall impacts. In addition, researchers face a serious selection problem making it difficult to disaggregate the effects of Internet use on political attitudes from the political attitudes that lead people to turn to the Internet for political discussion, information, and action.

D. Socially-Shaped, Constitutive Change

This causal path is anomalous in that it only peripherally involves technology. Rather, this class of causal theories examines how social constructions of technology underlie political ideologies or provide the mobilizing identity that propel social movements.[53] The numerous, disjointed Luddite revolts against early industrial revolution machines, for example, were only united by their (ultimately unfounded) fear of technology as threat to their economic existence. Similarly, much of the early writing and activism surrounding Internet democracy share the characteristics of social movements. Freenets, early experiments in local electronic democracy, arose out of existing community activism that sought broad reforms of government.[54] Visions of the democratizing potential of technology simply refocused and reinvigorated these existing movements.

Normative theories of the role of technology in democracy often rely on this form of causal reasoning to support empirical predictions. Percy-Smith, for example, argues that change will require "... a will on the part of central and local government to democratize politics".[55] Similarly, Grossman concludes his argument of the instrumental impacts of ICTs by acknowledging that these changes also depend on educating citizens on "the fundamental requirements and responsibilities of citizenship and the importance of fulfilling their civic responsibilities".[56] Such statements undermine notions that the Internet will have independent effects. Rather they hinge on the hope that the social construction of the Internet as an

engine for progress will lead to reforms by instilling democratizing aspirations in citizens, educators, and political authorities.

The possibility of socially constructed, constitutive change suggests that it is useful to study the Internet as a social movement that can be compared with such movements as the environmental, women's rights and civil rights movements. The rise of the Internet could be opening up a policy window in which substantive reforms such as Internet-based voting and more open decision making processes are effected. Such reforms may or may not be supported by subsequent instrumental changes, but it will be an important task for Internet historians to disentangle movement politics from technological change, and to recognize that the direct effects of the Internet may be less significant than the movement ideologies it inspired.

E. Summation

This thumbnail sketch of the causal paths linking technology and democracy leads to two important insights. First, interactions between technology and the polity occur simultaneously on multiple levels. As individuals and groups attempt to employ the Internet for political advantage, public and private actors are making design decisions that further or hinder these efforts, and the changes in media systems may be altering the very directions in which the polity wishes to move. Consequently, the larger debate over the eventual effects of the Internet cannot be resolved by narrow studies focusing on a single causal relationship. For example, while studies indicating that the Internet has diffused mostly among social elites shed doubt on the mobilizing potential of the technology, such results must be confirmed with studies on the instrumental uses of the Internet and its constitutive effects.

Second, studies explicitly placed within a specific causal category offer the greatest promise for clarifying the many conflicts between propositions in the literature. Here causal stories are mutually incompatible. Concerning socially-shaped, instrumental impacts, for example, government-designed Internet applications cannot simultaneously preserve elite power and promote new political participation. Thus, such studies will provide critical data for resolving larger theoretical debates.

V. CONCLUSION

Scholars who enter the cyberdemocracy debate encounter a dense thicket of theories and propositions that attempt to decipher the complex

relationships between technology and politics. This paper has striven to develop a framework within which one can assess and build upon this growing and often contradictory literature. This framework provides a coherent theoretical basis with which to guide a research program and identifies two important areas for further research. The first is the manner in which the Internet affects communication behaviors and communication systems. This preliminary research program builds the necessary groundwork to consider how changing communication patterns may affect political processes. The second avenue of research will consist of reinterpreting existing political science theories in terms of basic communication concepts – socialization, channels, networks, and steering. Stated in communication terms such theories can illuminate the possible effects of the Internet and can be tested against data concerning the uses, design, and impacts of the Internet.

The framework also highlights the ways that cyberdemocracy research may deepen our knowledge of the fundamental role information and communication play in democratic governance. These literatures face an interesting anomaly. While most cyberdemocracy researchers are drawn to the subject by their intuition that the Internet will effect democratic governance, mainstream political science has only recently made tentative steps to analyze issues concerning information and communication that arise with the Internet. Accordingly, a tighter linkage between traditional political science theory and cyberdemocracy studies can yield mutual gains for both areas of study.

Finally, by identifying the multiple causal paths linking technology and governance, the framework provides a means for understanding and reconciling the contradictory nature of the many propositions advanced concerning cyberdemocracy. These contradictions are often driven by either divergent normative assumptions or real differences in predictions of the positive implications of the Internet. Other contradictions derive simply from the different causal mechanisms implicitly employed by researchers. Continued advances in cyberdemocracy research requires such a broader appreciation of the interrelationships between the many on-going lines of inquiry. Only then will researchers will be able to identify and appreciate the grand patterns that can be woven together from disparate theoretical and empirical threads.

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