Towards a Better Understanding of Information Needs and Use Issues Within the Citizen-Government Digital Divide

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Extended Abstract

The President's Information Technology Advisory Committee (PITAC) Panel on Transforming Government issued a critically important report in August 2000 -- *Transforming Access to Government Through Information Technology* -- which presented analysis and recommendations regarding the use of information technologies (IT) to improve citizen interactions with government. Part of the impetus for this report was the "Vision of Government Access Transformed" contained in the PITAC Committee report of February 1999. That vision depicts citizens interacting with government in much more flexible and convenient ways than they do now, and in a location-independent manner. Digital access to government in this vision includes the ability to retrieve documents and forms and initiate automated processes for obtaining services, carrying out registrations, updating records, and communicating with officials.

Among the findings of the *Panel on Transforming Government* was that major barriers to government information still exist, but that information technologies can be used through process redesign to bridge these barriers. Among the panel's recommendations for achieving this goal was a call for research in increasing the understanding of the "[s]ocioeconomic implications of government uses of information technology," including examinations of how new technologies might impact citizen-government relationships.

Ongoing research on the digital divide represents a key area of activity which can increase our understanding of citizen-government relationships, given that these relationships are being mediated increasingly by information and communication technologies. Research on the digital divide has begun to describe the demographics of those likely and unlikely to interact with government through these technologies. Further, these studies are beginning to describe how people gain access to these technologies and what they do when they are online. Our understanding of the digital divide is, however, far from complete.

The design and deployment of improved digital government will depend on a vastly improved understanding of our citizens' relationships to information and communication technologies and the needs and potential uses they have for information that is to be made available through these technologies. This paper will discuss the development of a

comprehensive social science model for the study of the citizen-government digital divide. The results of such a study are expected to be generalizable to a broad understanding of the digital divide.

A Chasm in Digital Divide Studies

There have been by now a significant number of important studies of the digital divide. (A number of these will be discussed in the paper) The overall body of results produced by these studies has told us a lot about the characteristics of people on either side of the divide, but they remain inadequate for providing a full understanding of their various information needs, uses, and information seeking strategies. We argue that this is due to the perspective from which most of these studies have been designed: that of the observer. The designs for most digital divide research instruments reflect a strong bias toward the researchers' relationships to ICTs. This is evident in the categories of questions selected for these instruments and, more specifically, in the Internet activities about which subjects are asked. Questions about access to the Internet have historically dominated these surveys and questions about the activities of those who have access are limited largely to actions which are typical of users who are intimately familiar with this technology. The overall effect is to treat the actual needs of subjects as secondary by focusing mainly on access to information technologies and not on actual information needs and the broad spectrum of possible information uses.

The phenomenon of observer bias has long been familiar to social science researchers. Communication research, in particular, has identified the dynamics of this type of bias with regard to research in information needs and uses. Dervin (1989) pointed out -- even before wide-spread use of the Internet -- that quantitative studies of information use are often based on traditional categories of questions developed from "the observer's perspective." These categories, according to Dervin, usually contain questions that have "market utility" in that they "reveal where to market" by treating the need for the existing technologies as implicit. They focus instead on the use of the functionality offered by them, and less on revealing specific life problems or situations that these technologies might address. These characteristics can be seen in the early proposals for Internet research models (Newhagen and Rafaeli 1996; December 1996) and in the studies that have subsequently appeared.

Most of the digital divide studies assume a consumer-oriented perspective when information is sought from subjects about specific activities performed on the Internet. Human desires -- to play games, play the stock market, or the undifferentiated activity of expressing one's feelings through e-mail, -- are often implicitly equated with and taken to represent the totality of human needs in the discourse around the digital divide. This happens, perhaps, because it is a perspective that is familiar or possible for the designers of these research projects. The designers of these studies, for example, are more likely -- as indicated by their own results -- to be users of such on-line services such as *Amazon.com* or *etrade.com*, or to use e-mail. Examples of this type of bias in these surveys are the categories of questions which are limited mostly to commercial activities on the Internet.

Some of the more recent digital divide studies have begun a trend toward seeking other than non-commercial uses. The third study issued by the National Telecommunications and Information Administration (NTIA 2000), for example, contained categories of Internet usage dealing with on-line education; and a recent study by the Children's Partnerships (Lazarus and Mora 2000) was able to identify very specific content area needs and issues. These studies are discussed below, among others.

The categories of questions in the survey instruments for most of the digital divide studies discussed below overwhelmingly emphasize the collection of data pertaining to the ability of subjects to access the Internet and the level at which they are able to access it. The question about the need to access the Internet is usually implied and, therefore, not addressed in a detailed way. It is assumed that access to the Internet should be available for everyone due to various factors such as the possibility for social mobility and equal access to information and advanced means of communication (see McIver 2000, for example). This assumption is justifiable, but it is not sufficient for establishing a clear picture of information needs. Questions about why someone does not have Internet access, for

example, are often designed to elicit only monolithic possibilities such as "costs too much" and "don't want it" (Lenhart 2000; NTIA 2000:26). It is critically important to go beyond such questions, for example, to understand subjects' perceptions of the cost of Internet service, the cost of service relative to other needs they have, and the potential for cost offsets that might be afforded to them if they had Internet access (e.g. the elimination of certain transportation costs). In understanding why Internet service is not wanted, more in-depth questions must be asked regarding perceptions of possible uses, material needs that a potential user has which might be met by having access, and, conversely, questions which might identify no objective need for Internet access.

A number of studies have begun to address attitudes of users and non-users and new psychological research by Jackson et al. (1999 & 2000) is seeking to identify cognitive aspects of the digital divide; nevertheless, more research is warranted to understand social processes that underlie the digital divide. Inductive survey research methods which rely solely on fixed categories and questions are not sufficient. Survey methods have their strengths, but must be married with deductive methods that are better suited to eliciting information about underlying social processes which drive information needs and uses, and information seeking strategies. This project, therefore, will develop a multi-method approach for understanding information needs.

This project

The purpose of this project is to design a new research model and agenda for understanding the digital divide. The particular context for our work will be digital government. The model we envision -- which is to be further developed in this paper -- will depart from access-oriented models by emphasizing three dimensions: information needs, information uses, and information seeking strategies. These will be integrated in the model with the dimensions of access to technology, interest in obtaining access, and attitudes toward technology. The development of this research model will be informed by research models developed in the areas of communication and information science. We discuss each of these dimensions in the paper.

Kling points out (2000:3) that social informatics research can take analytic, normative and critical approaches. The collection of studies surveyed in the previous section cover both the analytic and normative approaches. They are analytic in that they attempt to construct or support theories about the digital divide and they do so largely through quantitative means. Some of the studies are normative as well in that they make policy recommendations. A critical approach is a research paradigm in which the subjects' perspectives are central to the formation and conduct of research activities. This includes the identification of the units and means of analysis, as well as determining the points of focus within the units of analysis. Such approaches generally fall within the category of social science research methods known as critical theory, which evolved out of the well-known Frankfurt School (see Morrow 1994).

There have long been disputes in the social sciences about which research methods are appropriate for a given research problem. Many researchers now accept that some research methods offer possible solutions to the shortcomings of other methods (see Brewer and Hunter 1989). A set of methods is chosen for a given multi-method approach based not only on their applicability to a given problem, but also such that they have non-overlapping weaknesses. The manifold characteristics of complementary methods yield overall findings that can have added significance. The convergence of results achieved through multiple methods can give added confidence to the overall findings; whereas, a divergence of results can often more clearly identify aspects of a problem requiring major rethinking.

A diverse array of research methods accepted by significant communities of scholars have evolved since at least the 19th century when scholars such as Auguste Comte, John Stuart Mill and Emile Durkheim began to adapt the positivist approach to the natural sciences to create tools for understanding social problems; and with the creation of the interpretive school of thought by scholars such as Max Weber as a means of understanding subjective aspects of social contexts (Neuman 2000: 63-86). Quantitative survey research and experimentation in the social sciences

evolved out of the former school, while qualitative field research (e.g. ethnography), phenomenology and critical theory evolved mainly out of the latter.

We are interested in the coordinated use of three of the major methodological legacies of this evolution: quantitative survey research, ethnographic research and critical theory. Each of these methodological areas is widely recognized (even if not accepted by all) with well-understood strengths. Each technique offers advantages particularly suited to addressing our current gaps in understanding the digital divide.

The long term goal of this project is to conduct a longitudinal multi-method study of the digital divide composed of a quantitative survey and an ethnographic study. The results of this type of research will enable more effective customization and deployment of emerging technologies, and a continuous pursuit of solutions to meeting citizens' information needs and uses.

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