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Introducing the Global Diffusion of the Internet Series

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INTRODUCING THE GLOBAL DIFFUSION OF THE INTERNET SERIES

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ABSTRACT

While there is no shortage of commentary on the nature and impact of the Internet, a deep understanding of this phenomenon and its diffusion must go beyond the collection of factoids, such as the number of hosts and users, to capture the context within which the Internet evolves. This paper introduces a CAIS series entitled "The Global Diffusion of the Internet," which seeks to promote research efforts that contribute to our understanding of the diffusion of the Internet throughout the world, that create and apply analytic frameworks that permit comparative analyses, and that capture the rather perishable history of the Internet as it unfolds. Contributions by scholars from parts of the world that are under-represented among the AIS membership are particularly encouraged.

Keywords: internet, global diffusion, CAIS series, contributing to series

I. INTRODUCTION

In 1969, the experimental ARPANET being developed by the Advanced Research Projects Agency of the U.S. Department of Defense consisted of four host computers, all located in the United States. England and Norway were added in the early 1970s. In 1980, 213 host computers in fewer than a half dozen NATO countries were connected. By 1989, only a few years after the ARPANET migrated out of the Department of Defense and became the Internet, connectivity jumped to more than 20 countries and 100,000 host computers.

During the 1990s, annual worldwide growth of both hosts and users was often in the neighborhood of 100 percent, and much higher in some countries. The millionth host was connected in 1992. Today over 200 countries enjoy full TCP/IP connectivity, and by some accounts, over 500 million users access the Internet regularly ["Internet Domain Survey," 2002].

The diffusion of the Internet is one of the most rapid and extensive of any advanced technology in history. Like any widely adopted technology, the Internet is not just technical, but also involves

social, political, and economic dimensions. The Internet is fertile ground for commentators and visionaries with rich imaginations and often contradictory viewpoints. For example, claims include that the Internet will bring about world peace and harmony; foster the growth of special-interest groups with anti-social agendas; greatly expand global commerce and economic opportunity regardless of geographic location; widen the divide between the "haves" and the "have-nots"; expose to a global audience the misdeeds of tyrants; be the battlefield of information warfare from which nobody who is anybody will be safe; promote free expression by anyone; homogenize cultures throughout the world; bring about the end of the sovereign state. In fact, the Internet experience globally is diverse enough that it provides both supporting and refuting evidence for most such claims.

While it is indisputable that Internet-facilitated changes to individuals, organizations, and countries take place, the Internet does not touch the lives of most inhabitants of the planet. In spite of its growth over the last decade, the Internet is used by less than 10% of the world's population, making it less widespread than the telephone or television or radio. Moreover, its growth is non-uniform. In the vast majority of countries, fewer than one percent of the population uses the Internet. The majority of the world's Internet traffic at some point flows across a node located in the United States [Cohen, 1999], and only within the last few years does more of the Internet exist outside the United States than inside it.

II. STUDYING THE GLOBAL DIFFUSION OF THE INTERNET

The need to study the global diffusion of the Internet in a timely fashion is strong [Wolcott *et al.*, 2001]. Any analysis of a complex phenomenon relies on the existence of accurate data about that phenomenon. Analysis of the Internet depends on recording the story of how the Internet takes hold in different places at different times. Unlike many significant developments of the past, whose essential facts are captured in relatively stable paper documents, the Internet's story frequently exists only in the form of highly perishable electronic documents and data, or unwritten recollections. Research efforts on the diffusion of the Internet are valuable if for no other reason than that they establish a strong historical record.

A study of the Internet offers important policy-making benefits. The recent proliferation of various "e-readiness" and similar indexes, and an initiative by the World Bank's InfoDev unit to fund such studies [InfoDev, 2001], underscores the strong interest of policy makers and business people alike. Researchers who are studying how the Internet is influencing and changing the economic, political, and social systems of various countries have pointed out the need for measures that offer richer insights into the phenomenon than the simple number of Internet hosts in a country [Menou, 1999; Wilson, Daly and Griffiths, 1998]. An understanding of the factors that promote or hinder the development of the Internet can assist policy makers within individual countries bring about change to their nation's economic, social, and political systems.

Measuring the state and impact of the Internet is exceedingly difficult. When the growth of the Internet is tracked, it is often measured in very simple metrics such as number of hosts, number of hosts per capita, number of users, or whether TCP/IP connectivity exist within a county (yes/no). [Landweber, 1997; "Internet Domain Survey," 2002; "How Many Online," 2002]. Other organizations capture performance and connectivity statistics, often presented in attractive visual forms [CAIDA Web Site, 2002; Matrix Maps Quarterly (MMQ), 1999; Telegeography Resources, 2002]. While useful, interesting, and relatively easy to grasp, such measures do not capture the richness and variety of countries' experiences with the Internet throughout the world, nor do they shed any light on why the patterns of diffusion of the Internet are what they are. The underlying methodologies for these studies are often obscure. They lead both to confusion and to a false sense that we know what is going on.

A deeper understanding of the Internet and its diffusion requires research methodologies that go beyond the collection of factoids, that capture the context within which the Internet evolves. In justifying their ethnographic approach, Miller and Slater point out: "contrary to the first generation of Internet literature – the Internet is not a monolithic or placeless 'cyberspace'; rather, it is numerous new technologies, used by diverse people, in diverse real-world locations" [Miller and

Slater, 2000]. While the Internet is a global phenomenon, how an individual person or organization perceives and uses the Internet depends heavily on local legal, technological, economic, political, and social conditions. Though some argue that the Internet and other trends related to globalization are diluting the sovereignty of national governments and blurring national boundaries, governments still make policies that can have a dramatic effect on the diffusion and absorption of the Internet [Greenberg and Goodman, 1996]. The work of the MOSAIC Group underscores the utility of studying the Internet with the country as a primary unit of analysis (http://mosaic.unomaha.edu/gdi.html) [Wolcott *et al.*, 2001].

III.A NEW CAIS SERIES

By its very nature--international, multi-faceted, evolving, complex--the Internet cannot be adequately studied by any single group of researchers. Any hope of achieving a comprehensive understanding of this important phenomenon will depend on research that is itself international, multi-faceted, and evolving. To encourage such research, the Communications of the AIS created a series devoted to studies of the global diffusion of the Internet (GDI). The series is under the editorship of Peter Wolcott and Seymour E. Goodman.

Through this series, CAIS hopes to facilitate, encourage, and publicize research efforts that contribute to our understanding of the diffusion of the Internet in as broad a variety of countries as possible. The three primary objectives of the Global Diffusion of the Internet series are:

1. To encourage research that can capture the state of the Internet within one or more countries, regions, or ethno-cultural areas over time and shed light on the factors shaping its diffusion.

2. To create and apply analytic frameworks which permit comparisons of the diffusion of the Internet in different parts of the world, over time, or both.

3. To capture the rather perishable history of the Internet as it unfolds.

Thanks to the Internet and the electronic nature of journals such as CAIS, a greater diversity of contributions to the research stream can be accommodated than in paper-based publications. The set of possibilities for contributions is not tightly circumscribed; the following list offers some suggestions.

1. **Stand-alone, formal case studies of individual countries**. Case studies may be extensive, comparable to a monograph in size. Or they may be more limited, comparable to a single journal article. They may be highly polished, peer-reviewed, and academic in nature, or represent a work-in-progress. Each contribution will be appropriately titled.

2. **A sequence of studies focusing on the same part of the world over time**. Such studies would not necessarily be as strongly stand-alone as individual country studies. They might include updates to one or more portions of a previous work. With appropriate web-links, such contributions could be appropriately referenced from or integrated with previous works. Individual contributions within a sequence would not necessarily be written by the same authors or research teams. Updates to existing studies, or alternative examinations of the same countries or regions are welcome.

3. **Comparative analyses**. Comparative analyses that examine the similarities and differences in Internet diffusion among different countries or regions play an important role in developing our understanding of the phenomenon. Analysis of countries that are similar or different along particular characteristics (e.g. size, demographics, development status, history) are welcome, as are analyses of groups of countries (e.g. Persian Gulf, former Soviet republics, Latin America).

4. **Theoretical frameworks and models**. Contributions may propose, extend, apply, or debunk theoretical frameworks or models that offer deeper insight into the nature

of Internet diffusion. It is our hope that analytic frameworks developed by some researchers may be applied and tested by others as they examine different parts of the world.

In his address to the Association of Information Systems (AIS) membership, AIS President Phillip Ein-Dor [Ein-Dor, 2002] underscored both the AIS vision of truly becoming a global community of scholars and the reality that the AIS membership reflects the digital divides that exist within and between countries. The success of the Global Diffusion of the Internet series of CAIS will depend to a great measure on the contributions of scholars throughout the world. Scholars in parts of the world under-represented among the AIS membership are uniquely positioned to contribute to the discussion of the global diffusion of the Internet. We solicit their contributions in particular.

IV. INITIAL CONTRIBUTION

The first contribution in the Global Diffusion of the Internet series is *"Is the Elephant Learning to Dance? The Diffusion of the Internet in the Republic of India"* (Volume 11, Article 32). This contribution represents one extreme of the range of possible contributions. A large and comprehensive treatment of the Internet within the world's second most populous country, this stand-alone case study (category 1. above) applies an analytic framework developed by the MOSAIC Group [Wolcott et al, 2001] to capture the evolution of the Internet in India from its inception in 1986 through 2002. India is an excellent example of a country that pursued a variety of forward-looking policy and regulatory changes to foster the growth of the Internet. These changes set in motion forces that have greatly expanded Internet usage within the country.

V. SUBMITTING ARTICLES TO THE GLOBAL DIFFUSION OF THE INTERNET SERIES

Authors who wish to submit articles to the Global Diffusion of the Internet series should submit them either to Prof. Peter Wolcott (pwolcott@mail.unomaha.edu) or to CAIS directly (cais@cgu.edu).

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Peter Wolcott is Associate Professor of Management Information Systems at the University of Nebraska at Omaha. He has long-standing interests in the international dimensions of information technologies. His current research projects examine the global diffusion of the Internet and electronic commerce, particularly in such countries as India, Pakistan, Turkey, Jordan and Israel. Other research interests have included high-performance computing export control, high-performance computing of the former Soviet Union, and data warehousing. His work is published in Communications of the ACM, IEEE Computer, Journal of the AIS, The Information Society, The Journal of Data Warehousing, and other journals and proceedings. He earned his Ph.D. at the University of Arizona in Business Administration (Management Information Systems) in 1993.

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