The Geography of the Internet Industry

Venture Capital, Dot-coms, and Local Knowledge

Matthew A. Zook

Blackwell Publishing

The Geography of the Internet Industry

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Contents

Figures

Tables

Maps

Series Editor's Preface

The economy of the Information Age is not placeless, in contrast with the superficial predictions of futurologists. The production of information and knowledge is in fact rooted in specific places that Peter Hall and myself theorized as milieus of innovation years ago. The Internet has a geography, and the geographic location of Internet domains is one of the most spatially concentrated location patterns. The geography of an Internet-based economy and society is made of nodes and networks that criss-cross the planet. Thus, it is neither spatial dispersion nor spatial concentration that characterizes the new geography but the interaction between both processes, what I have named the "space of flows."

Our knowledge of the geography of the Internet has benefited a great deal from the decisive contribution of Matthew Zook's pioneering research. Although a number of scholars have worked in this field for some time, as Zook points out in his careful list of bibliographic references, in my personal assessment the study by Zook is the most complete empirical analysis to date of the spatial patterning of Internet-based production of information. He developed, years ago, a statistical mapping of a representative sample of Internet domains worldwide, and kept updating this sample, catching up with the speed of development of the Internet (I must say he was probably helped by the recent slowdown of Internet diffusion). He thus showed the high level of concentration of Internet domains by country, by region, by metropolitan area, and even by specific locations within metropolitan areas. He showed that the production of Internet content closely follows the geography of information and knowledge. But he went beyond that, explaining the formation of some of the highest nodes of Internet-based activities, including the San Francisco Bay area,

through careful case studies and in-depth interviewing. He argued, with solid data in hand, that the location of venture capital firms has a very strong influence on the development of Internet innovation and Internet-based production of information. Should we accept this analysis, as I do, there are extraordinary consequences for regional and local development policies. Financial institutions of innovation are probably more important for economic growth in this knowledge economy than the location of research universities.

The importance of Zook's work goes beyond the substance of his findings. It is the style of his research that brings innovation to the field of social sciences. He moves freely across disciplinary boundaries, as one should do in dealing with the analysis of information technology-related processes, since this is a transversal phenomenon that affects every domain of society. He also mixes, always with rigor and scholarly care, various methodologies and traditions of inquiry, statistical analysis as well as interviewing, computerized geographic techniques, and documentary work. He also knows, and combines, various relevant theoretical frameworks, escaping from the iron cage of a nonexisting unified theory. He challenges established knowledge, but knows the research and thinking that preceded his. He is a representative of a new generation of young scholars, ready to study and understand our new economy, and our new geography, in continuity with the best tradition of social sciences, opening new ground when it becomes necessary to do so. As with all innovators, his work does not fit easily in one academic field, but it connects geography, and the study of spatial transformation, to the analysis of the new economy, to technologic change, to the institutional environment of innovation, and to the dynamics of producing and distributing knowledge and information.

Matthew Zook's book is the first systematic assessment of the relationship between the Internet and the geographic dimension of the network society. It also proposes a new style of research, and blends existing theories of the geography of innovation in an original analytic framework. I am convinced that reading, and critique, of this book will contribute considerably to our understanding of processes of local and regional development, and to our ability to act upon them.

Manuel Castells
Barcelona/Los Angeles
July 2004

Acknowledgments

Although the process of writing a book is largely solitary, I marvel at the number and range of people to whom I am indebted. From the first months in Berkeley, California, to the final edits made in Lexington, Kentucky, I have relied upon those around for input, critique, and support. Without such help, this book could not have been completed.

My thanks go first to Manuel Castells for including my work in *The Information Age* series. His scholarship and mentoring have been instrumental in shaping my conceptualizations of the information age and research agenda. I greatly appreciate the time and energy that he has offered, and I look forward to passing his influence to future students. I am also profoundly grateful to my other advisors at Berkeley whose invaluable training and guidance made this book possible. In particular, AnnaLee Saxenian chaired my dissertation, introduced me to the exciting arena of high technology and regional development, and provided me with a foundation for future projects. Dick Walker engaged me with wonderfully probing questions on the theoretical implications of this work and helped me to place it in context with economic geography. I offer my deepest thanks to all of you.

I further acknowledge the tremendous benefit of input and interaction with fellow researchers at Berkeley and elsewhere. Thanks to the global regions group, Ted Egan, Sean O'Riain, Balaji Parthasarathy, and Gerald Autler for wide-ranging discussions. Many thanks to Gary Fields, Peter Hall, and Larissa Mueller, who gave invaluable feedback, even in the early and highly disorganized stages. Similarly, I am indebted to Anthony Townsend, Martin Dodge, and Sean Gorman, my fellow venturers into the geography of the Internet, with whom I could discuss the finer point of domain name versus host counts versus bandwidth to my heart's content. I am grateful to Karen Chapple, Yuko Aoyama, and John Thomas who provided vital suggestions on both my research and personal life. In addition, I am grateful to all my

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A number of friends and family have generously contributed their time and homes to my research. Special thanks to Chris and Alison Ney, Mike Johnson and Greg Gould, Dena Beltzer, Larissa Mueller, and Doug Webster who allowed use of their apartments and office space as I conducted fieldwork and writing. I also wish to thank the people who gave generously of their time to be interviewed. This book would not have the same depth if not for your insights and sharing of experiences. I wish to thank my entire family, especially my parents Gordon and Bonnie Zook, for raising me to be intellectually curious and encouraging me to pursue education. Special thanks to my daughter, Maara, who constantly reminds me what life's real priorities are. And finally, all my love and heartfelt thanks to my wife, Eva Ensmann, for being my true partner in life and work. This book (which you have experienced from its earliest to latest versions) is dedicated to you.

Map 2.1, ARPANET 1971, and Map 2.2, ARPANET 1980, are from Internet Archive's ARPANET paper collection http://www.archive.org/texts/arpanet.php.

Parts of this book have previously been published in solely authored journal articles, and I should like to acknowledge the following for permission to reproduce this material: versions of Map 3.6 and Map 3.7 first appeared in M. A. Zook (2000) "The web of production: the economic geography of commercial Internet content production in the United States," *Environment and Planning A*, 32: 411–26, permission granted by Pion Ltd, London; sections of chapters 4 and 6 are based on edited extracts of M. A. Zook (2004) "The knowledge brokers: venture capitalists, tacit knowledge and regional development," *International Journal of Urban and Regional Research*, 28(3): 621–41, permission granted by Blackwell Publishing; and sections of chapter 5 are based on M. A. Zook (2002) "Grounded capital: venture financing and the geography of the internet industry, 1994–2000," *Journal of Economic Geography*, 2(2): 151–77, permission granted by Oxford University Press.

1

Uncovering the Geography of the Internet Industry

The Internet has revolutionized the way the world communicates. In less than a decade (see figure 1.1) it has transformed from a relatively obscure computer network into a global system of hundreds of millions of networked computers (hosts) and tens of millions of formal sites for interaction and commerce (domains). Contacting someone on the other side of the world is as simple as a mouse click and billions of web pages offer a cornucopia of content, commerce, interaction, services, and products. Paralleling the expansion of the size of the Internet were the fervent efforts by individuals and companies to harness the perceived power of the growing network for personal enrichment and commercial gain. The activity surrounding these efforts was extraordinary as measured by any number of variables, including media attention and stock-market investing. In short, the Internet at the *fin de siècle* represents a time of historic change and frantic endeavors to establish footholds in this new medium.

Particularly intense were the energies and capital directed toward the dot-com companies which made up the Internet industry. The factors and dynamics behind the creation, clustering, and retrenchment of this new industry from 1994 to 2003 is the focus of this book. Beginning with the founding of Netscape Communications in April 1994 and extending through the market downturn in April 2000, it was a time of big plans, loose capital, and hot hyperbole. Companies frenziedly pursued a variety of new business models designed to make them the ascendant corporations of the 21st century. The world was changing and everyone wanted to be at the center of it.

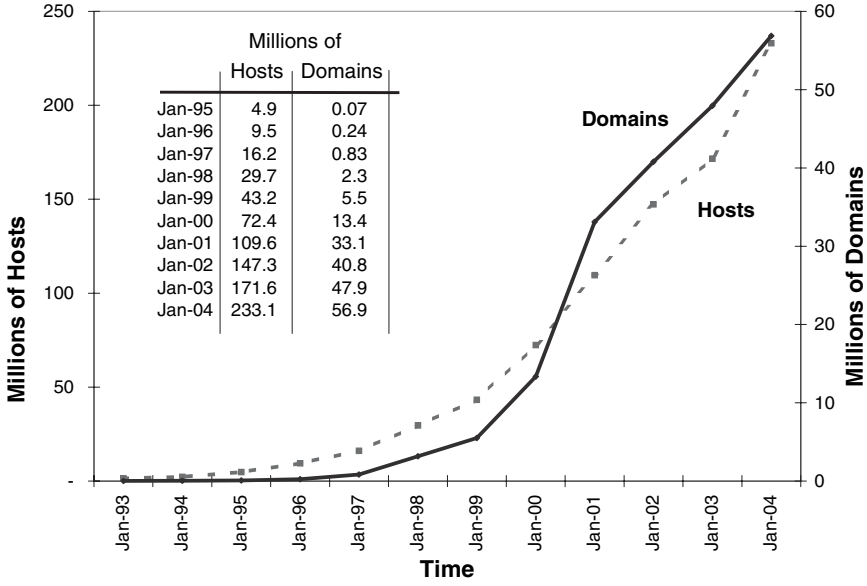

Figure 1.1 Number of Internet hosts and domains (generic top-level domains and country code top-level domains), July 1992 to January 2004.
Source: host counts based on data from the Internet Software Consortium (http://www.isc.org/); domain counts 1992–98 (Zakon, 1999), 1998–2004 (author's survey).

The market downturn beginning in 2000 showed that the grandiose expectations associated with most of these dot-com business plans were simply not going to come to pass. Companies that eagerly pursued the dot-com moniker in the late 1990s found themselves struggling for survival and in many cases simply disappeared. However, despite very real negative economic consequences of this shakeout, an Internet industry backed by venture capital did coalesce during this time. Multibillion dollar companies such as Yahoo!, eBay, and Google remain central to how the Internet is used worldwide and demonstrate that this industry is not simply smoke and mirrors but a continuation of a historical and geographic process of technological and economic development.

The Persistence of Geography

This story also shows the fundamentally geographic nature of the development of the Internet and contrasts sharply with commonly

held assumptions that physical locations would become irrelevant. In the mid-1990s pundits predicted the "death of distance" and the "end of cities" and confidently envisaged a world where social and economic interactions would increasingly take place in virtual space. As the 20th century came to a close, however, the rhetoric of "spacelessness" became increasing difficult to reconcile with reality, particularly within the heavily clustered Internet industry. As this book documents in its primary case study, the milieu of the San Francisco Bay region was and is a key location for the Internet industry and the companies that form it.

The reasons behind this paradoxical clustering of a "placeless" industry are tied to the fact that the creation of successful companies depends not simply upon a supply of business plans, skilled labor, infrastructure, or capital, but also relies on the way in which these resources are marshaled and organized. Ironically, precisely because the Internet made certain types of information more widely available, regional environments that facilitated the creation, organization, and use of unique knowledge were central in the development of the industry. Equally paradoxical, a key mechanism behind the clustering of this so-called "placeless" industry was capital investing.

Capital is often perceived as freely flowing to the location of the greatest opportunity for return, but the venture capital investing that was central to the Internet industry was much more than simply money. As Martin (1999, p. 11) argues, "money is not just an economic entity, a store of value, a means of exchange or even a 'commodity' traded and speculated in for its own sake; it is also a *social relation*." Many venture capitalists have strong local orientations when seeking portfolio companies in order to maximize their key tool in risk management, i.e., unique knowledge about new technologies, entrepreneurs, and competitors' actions. Venture capitalists rely upon this knowledge, built up through social and professional interaction, to make investments in situations of great uncertainty.

Therefore, venture capitalists can be characterized as knowledge brokers who acquire and create intelligence through personal (and generally local) networks about industries, market conditions, entrepreneurs, and companies through a constant process of interaction and observation. While capital in the most general sense of the word, i.e., money, provided the fuel for many Internet companies, it was the transmission and use of tacit (noncodified) knowledge that in many ways was more valuable. The ability of venture capital to quickly supply this type of value-added input is dependent upon the quality

of its networks and is greatly assisted by geographic proximity, which in turn contributed to the clustering of dot-com firms.

However, the knowledge and local networks created and used by venture capitalists do not emerge overnight. Rather venture capital systems develop alongside and concurrent with the industrialization and development process. Crucial to the operation of these regional financing systems are the feedback loops that emerge over time as venture capitalists, entrepreneurs, and labor come together in various new ventures. Even if the new firms do not succeed, valuable information, experience, and contacts develop during the process. These new or strengthened connections within a regional system provide the basis for subsequent efforts to form innovative firms. The case of the Internet industry illustrates the advantage that accrues to firms and regions with the ability to move and adapt quickly to new innovations. In particular, the San Francisco Bay experience demonstrates how regional venture capital systems are built through a process of incremental steps that lay the foundation for subsequent rounds. As a result, firms within the region (such as Yahoo! or eBay) were able to move quickly when the opportunity of the commercial Internet emerged in the mid-1990s.

This advantage also had its downside as the initial wave of investing and new company formation turned into a frenzy of money chasing bad business models. The great advantage of venture capital investing at the start of the era, i.e., access to unique knowledge to select technologies and firms, was diluted in a wave of bloated capital funds, inflated and copycat investing, and a preoccupation to "get big fast" at any cost. In most cases, investment decisions were individually rational but built upon irrational expectations surrounding the promise of a new technology. The end result was a large influx of capital without much oversight or direction. Money was spent, market share was garnered, publicity was gathered but despite these temporary successes, many dot-com companies were unable to transition into lasting business models.

Precisely because the San Francisco Bay region was a center for the early Internet industry, it was also ground zero for this later period, albeit with negative results in terms of relevance and longevity of the new firms. However, as tempting as it may be to stereotype the dot-com era as 20-something chief executive officers (CEOs) wasting millions of dollars on Superbowl ads, expensive office chairs, fussball tables, and parties, the impact of dot-com boom and bust has much more complex implications in the short and long term. Even in the face of numerous bankruptcies, accounting scandals, and a weak economy,

the dot-com era is not without its upside. Moreover, the rise of dot-com firms is not so much an anomaly but the most recent manifestation of Schumpeterian creative destruction.

Thus, despite telecommunications technologies and global capital flows that have vastly expanded the geographic range of economic interaction, regional milieus remain central to economic development in the 21st century. The development of the Internet industry is fundamentally embedded in geography and defies simple expectations of diffusion and the demise of cities and instead illustrates the continued importance of particular regional and urban nodes in an increasingly globalized economy. It is, however, neither a short-term nor straightforward process to create the conditions for innovative regional development. As the Internet industry shows, simply injecting money indiscriminately can lead to ill-advised investments and short-lived companies. Nevertheless, the ability to adapt to the changing dynamics of the economy will continue to be relevant in the future as regions attempt to reinvent their economies, enter new industries, and innovate.

Defining the Internet Industry

The decision of what to include in the working definition of the Internet industry (referred to interchangeably as the dot-com industry) is difficult. Although an instantly recognizable and widely used term, it cannot be easily reduced to a specific sector, business model, or firm type. In fact, at the most basic level, it is simply an indication that a company uses the Internet in some form. As the use of the Internet by businesses becomes increasingly common, the distinction of being an Internet-using company has begun to have as much significance (or lack thereof) as being a phone-using or fax-using firm. In short, the Internet has become an essential part of conducting business in the USA and the world.

Despite this imprecision, the term "Internet/dot-com firm" invokes a certain kind of enterprise that emerged in the closing years of the 20th century when companies first began experimenting with the Internet as a part of business. The promise of the Internet in the mid-1990s was so compelling that people confidently predicted the wholesale transformation of sectors as diverse as grocery retailing and the purchase of steel and chemicals. While these businesses are continuing to evolve with their use of the Internet, the immediate changes hoped for by dot-com companies and their investors were not forth-

coming. Today, with the increasingly widespread use of the Internet it is more problematic to refer to companies as Internet companies simply because they use the Internet. Nevertheless, for the period of time examined by this book it remains a useful term.

In practice, this book defines its object of study on the basis of three interlinking criteria. The first is the possession of a business model that was primarily Internet based and/or whose operation would not be possible without the Internet. A majority of these companies were founded or completely restructured between 1994 and 2000 with the Internet as a central component to business. These business models could include any number of foci, e-commerce, content generation, advertising, community, or information services and be oriented toward consumers, businesses, or government both locally and worldwide. While this definition encompasses a wide range of companies, it accurately reflects the enormous range of experimentation taking place during the closing years of the 1990s.

The second criterion for inclusion as an Internet firm is the expectation of extraordinarily fast growth through the creation of new markets or the disintermediation of existing markets and value chains. While in retrospect these expectations seem unreasonable, conventional wisdom at the time within the business community was that dot-com companies were poised to reinvent and dominate their markets.[1] This expectation also led to a reliance on nontraditional metrics such as growth in users rather than profitability for evaluating these companies. Dominating a changing market quickly became many dot-com companies' primary goal and was pursued with little regard to cost and with the full support of investors.

This potential for fast growth raises the third and final criterion for inclusion as a dot-com company, i.e., financial backing from risk investors interested in high returns. Often referred to in the early stages as venture capital, this type of financing encompasses a much wider range, from individual seed investments by the entrepreneur, family, and friends, investments made by corporations in spun-out divisions, formal venture rounds by limited partnership venture capitalists, to initial public offerings (IPOs) oversubscribed by institutional and small investors around the world. At the height of the boom it also included millions of small investors worldwide using discount online brokerages to secure a piece of the dream.

In short, Internet companies were young, fast-growing, risk-capital backed companies which used the Internet as an integral part of their business model. While any number of companies cross these defini-