Building Virtual Communities

Building Virtual Communities examines how learning and cognitive change are fostered by online communities. Contributors to this volume explore this question by drawing on their different theoretical backgrounds, methodologies, and personal experience with virtual communities. Each chapter explores the different meanings of the terms "community," "learning," and "change." Case studies are included for further clarification. Together, these chapters describe the building out of virtual communities in terms that are relevant to theorists, researchers, and practitioners. The chapters provide a basis for thinking about the dynamics of Internet community building. Consideration is given to the role of the self or individual as a participant in a virtual community and to the design and refinement of technology as the conduit for extending and enhancing the possibilities of community building in cyberspace. *Building Virtual Communities* will interest educators, psychologists, sociologists, and researchers in human-computer interaction.

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Building Virtual Communities

Learning and Change in Cyberspace

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Series Foreword

This series for Cambridge University Press is becoming widely known as an international forum for studies of situated learning and cognition.

Innovative contributions are being made by anthropology; by cognitive, developmental, and cultural psychology; by computer science; by education; and by social theory. These contributions are providing the basis for new ways of understanding the social, historical, and contextual nature of learning, thinking, and practice that emerges from human activity. The empirical settings of these research inquiries range from the classroom to the workplace, to the high-technology office and to learning in the streets and in other communities of practice.

The situated nature of learning and remembering through activity is a central fact. It may appear obvious that human minds develop in social situations and extend their sphere of activity and communicative competencies. But cognitive theories of knowledge representation and learning alone have not provided sufficient insight into these relationships.

This series was born of the conviction that new and exciting interdisciplinary syntheses are underway as scholars and practitioners from diverse fields seek to develop theory and empirical investigations adequate for characterizing the complex relations of social and mental life and for understanding successful learning wherever it occurs. The series invites contributions that advance our understanding of these seminal issues.

Roy Pea
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Preface and Acknowledgments

This volume is unique in its focus on the learning and change that takes place in the building of communities in cyberspace. Knowledge and resources for knowledge building are central to both virtual and physical communities. Members, or participants, in any community are engaged in learning that is critical to the survival and reproduction of that community. This learning may be even more true for virtual communities than it is for physical communities. For those concerned with building virtual communities and those who are working to understand the impact of virtual communities on participants, clarity about the nature of learning and change that is enabled by the Internet is of particular importance.

At first glance, identifying the nature of learning and change that takes place as a virtual community builds out may seem a straightforward-enough proposition. A dearth of literature has supported the importance of community to learners of all ages (Barab & Duffy, 2000; Bellah et al., 1985; Bransford, Brown & Cocking, 1999; Brown & Campione, 1994; Lave, 1993; Wellman & Gulia, 1999; Wenger, 1999). Through community participation, learners find and acquire models and have the opportunity themselves to be models and apprentices. In community participation, activities such as asking questions and providing the person with whom one is talking with background information are both supported and socialized.

The task of identifying what to watch (the indicators to be studied) in building an online community is not at all straightforward, however. There are many potential indicators but no clarity about which apply to all communities. Moreover, studies of community, learning, and/or change typically draw on different fields of specialization. Community, for example, can be studied in terms of its design, who its members are,

how learning is facilitated, whether learning occurs, why learning occurs, and so forth. A further complication is the wide range of computer-mediated formats being used to enable community development. These formats range from complex organizations that have budgets for programmers, project staff, and Web persons to build out a community in response to participants' needs; to MOOs that have an anarchistic form of community in which people come, "hang out," and leave; to discussion lists that have designated leaders and focus on a specific agenda or topic.

At present, there tend to be two types of conversations about building community online. One conversation is occurring among those in the learning sciences, including those trained as educational psychologists, educational technologists, computer scientists, and cognitive scientists. This discussion focuses on the design of communities and the ways in which users or participants work with and learn from the experience of community participation. Another conversation is taking place among sociologists, anthropologists, and linguists. This discussion focuses on the nature of participants' collective imagination and feelings of identity as a tool for understanding belonging and attachment to particular virtual communities. It also details the social interaction necessary to describe communication and sociability. Presumably because these groups do not tend to ask the same questions, they do not attend each other's conferences, nor do they tend to cite each other's work.

The present volume extends both of these conversations by engaging the reader in examining the interdependence of the forms, structure, and possibilities for facilitating the building-out of communities in cyberspace. Contributors to this volume include a widely divergent group of authors, all of whom are working to understand and build out communities online. They vary in the questions on which they have focused, theoretical backgrounds, methodology, and computer-based format with which they have worked.

The opening chapter traces the use of the term "community" to describe physical and virtual space. It suggests that computer-mediated formats in particular may enable what might better be understood as the myth of community to be realized by community participants. The chapters that follow have been assigned to one of three sections: types of community, structure of community, and possibilities for community. Like all typologies, the chapters in each section could also have been included in each of the other sections. The chapters are juxtaposed to highlight the tension between differences of theoretical and methodological perspectives

on the situated and universal aspects of learning enabled by and in the development of online communities.

In "Types of Community," the first section, learning and change are described as being contingent on the kind of virtual community that has been constructed, its purposes, its fluidity, and its given informational resources (e.g., conversations among professionals, archives, etc.). In "Structure and Community," the second section, learning and change is understood to be enabled by both the design features of particular communities and theories about how people learn. The communities described highlight the relation between community structure and identity. The structure of community can be seen as both a constraining and an enabling possibility. In "Possibilities for Community," the third section, opportunities for learning and change are described as emerging from the existing type and structure of community. The possibilities for a community may not be predictable.

Thinking across theoretical and methodological differences such as those represented by the range of chapters included here involves work but should offset the limitations of any particular world view (Cole, 1996). To assist the reader, definitions of community, learning, and change are included in each, and case examples are provided as illustration. Conversations that arise from this volume might take numerous directions. A volume such as this is expected to hold a different meaning for each reader. In fact, each reader is likely to find his or her own favorite or most useful chapters, and these might be expected to differ from those of the next reader.

Together these chapters describe the building-out of virtual communities in terms that are relevant to theorists, researchers, and practitioners. The theoretical and methodological differences reflected in the chapters suggest a need for a common language and conceptual context for describing learning and change as part of community building. No grand theory is offered, however.

The chapters provide readers with a basis for thinking about the dynamics of Internet community building across a variety of computer-based contexts. This includes consideration of the role(s) of the self or individual as participants in virtual community, and the design and refinement of technology as the conduit for extending and enhancing the possibilities of community building in cyberspace.

K. Ann Renninger
Wesley Shumar

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Foreword

Virtual Communities for Learning and Development – A Look to the Past and Some Glimpses into the Future

Michael Cole

The reader is in for a treat in the highly knowledgeable and varied chapters that follow. The volume includes authors from a wide range of disciplinary and theoretical perspectives, all of whom have experience working directly with computer-mediated communication and community building. Each chapter provides a different perspective on the many ways that human interactions are being mediated in some fashion by the Internet. Each chapter also makes suggestions about the implications of this new set of technological capacities for the social organization of learning and development in contemporary society. This vast territory is unusually well explored in this volume.

As the comments of several of the authors indicate, memories of becoming involved in computer-mediated communication (CMC) as a medium of intellectual communication have something of a "flashbulb" character to them. Not unlike my memory of where I was when John Kennedy was shot, I remember the conditions that led to my use of CMC and my discovery that it could be a resource for community building.

The year was 1978. I had just moved to the University of California at San Diego (UCSD) with a joint appointment in Psychology and Communication. These two academic units were located on different parts of the campus. To complicate matters, my major research project was the study of classroom lessons in a school located approximately 20 miles from the campus, but my research laboratory was part of an organized research unit located near the psychology department. Burdened with heavy administrative duties in Communication, I found it very difficult to coordinate with my research team on the one hand and my colleagues in Psychology and the Center for Human Information Processing (CHIP) on the other.

Luckily for me, Jim Levin, whose work appears in this volume, joined our laboratory. Jim had been a graduate student in Psychology and had

worked with faculty members in CHIP. He introduced our lab to the idea that we could have terminals connected to an electronic network that would store and forward messages from one account to another and would create a common message space where we could coordinate as a group. Our lab was quickly outfitted with the needed terminals (the first PC was still three years over the horizon) and we began to use them with a view toward coordinating our movement in time and space.

It did not take long for us to learn that sprinkled among our instrumental coordinating messages, various academic ideas began to make their appearance. Moreover, since graduate students and postgraduate students involved in our research were part of the network, it was not long before our communications served the multiple functions of coordinating meetings in time/space and engaging in CMC education/research online.

Our curiosity was also attracted by the potential uses of CMC for opening up classrooms to the outside world. Jim Levin took the lead in this effort, setting up connections between San Diego and Alaska using satellite-based telecommunications facilities that were filtering into the public sector from the military. Physical separation, we discovered, could, under propitious conditions, lead to promising reorganization of children's writing during the school day.

Nor did it take long for us to begin using the computer-to-computer store-and-forward systems that grew out of the Advanced Research Projects Administration (ARPA) net to extend our own intellectual activities beyond UCSD. Our laboratory has long been a place where scholars from different parts of the United States and different countries spend a year or two, engaging with us in our research and introducing us to new perspectives. Once habituated to easy online discussions while they were living near UCSD and attending our weekly lab meetings, those who remained behind, as well as those who moved on, began exploiting a combination of telephone-line-based and satellite-based CMC to continue our discussions. Thus it came about that, in the early 1980s we began what later came to be known as a list serve, which continues to this day (see www.lchc.ucsd.edu/mca for the history and current state of this activity).

As the Internet expanded to become the World Wide Web and graphic capabilities became common, the use of computers and telecommunications networks became an increasingly pervasive focus of our research attention. They served to organize educational activities that link our university with its surrounding communities, enabled the formation of distributed consortia of researchers, and changed the way we teach our

university courses. As I am sure is true of many, my daily activities have been transformed by the new technologies of communication, for better and for worse.

It is from this experiential background and a long-standing interest in issues of learning and development as processes of joint, mediated, human activity, I approach the task of writing a foreword to this volume. In particular, I focus on a few broad themes that this volume has enabled me to reflect on.

First, I am reminded by many of the authors that any discussion of virtual communities, whether organized in the service of education or for any of the other myriad uses to which they are put, is helped enormously by viewing our current conceptual understandings in terms of their histories. This general orientation applies with special force to the concept of community, which came into the English language relatively recently in its history and has been changing rather rapidly in the past 150 or so years.

Williams (1973) notes in his analysis of the history of the concept of community that the term "community" entered the English language in the fourteenth century from Latin by way of French. "Community" referred primarily to a geographically localized group of people until approximately the seventeenth century (the terms *commune* in French and *Gemeinde* in German retain this meaning to the present day). But beginning between the seventeenth and nineteenth centuries, "community" expanded to include the idea of a group of people who hold something in common (as in community of interests) or who share a common sense of identity even if they do not live in a single locale. This expansion of meanings was accompanied by a self-conscious separation between the idea of a community and the idea of a society. As Shumar and Renninger note in their introductory chapter, "On Conceptualizing Community," the distinction between community and society has come down to us from the work of the German sociologist, Tonnies (1887/1940), as a contrast between a more direct, more total, and more emotionally charged set of relationships (community/gemeinschaft) and the more formal, abstract, and instrumental relationships associated with the idea of society (gesselschaft), which in turn is closely related to the concept of nation state and its bureaucratically mediated institutions.

The conceptual differentiation of community and society in the nineteenth century coincided with, and was enabled by, a series of changes in technologies in general and technologies of communication in particular. At the beginning of the century, most people lived on the land in small

communities and grew or made by hand the vast majority of their worldly goods. Schooling was nowhere a general social phenomenon. The fastest mode of transportation was on water. By the end of the century, there was, in many parts of the world, a major shift in modes of living away from the land and residence in small communities toward manufacturing and residence in ever-growing cities. Schooling was made mandatory. Railroad networks became extensive, and electricity was brought under control to enable telegraphy and telephony, as well as skyscrapers and mass production. People viewed escape from the confining circumstances of small communities with their absence of choice and privacy to the bright lights of large cities as liberating. An old German proverb captures this eagerness to escape the intrusive nature of small town life quite nicely: "Stadtluft Mach Frei" (City air sets you free). With these social changes, it appeared that the ideology of the Enlightenment, with its emphasis on reason and individual initiative, was attainable as a general condition of life.

This generally "upbeat" characterization of historical change had, of course, its dark underside. Not only were cities liberating, but they were also alienating. Additionally, they were, until public health innovations of the late nineteenth century, dangerous to one's health, either from disease or violent crime. Moreover, whatever virtues these demographic/lifestyle changes had, their virtues were by no means equally distributed. The technological have-nots were subjected to levels of political and economic exploitation that were previously impossible on a mass scale. In addition, the technological marvels of the new modes of life were evenly matched by technologically mediated mayhem. At the very time that the European powers succeeded in dividing up control over the rest of the world, and Tonnies was formulating the distinction between community and society, these same European powers began to turn on each other with a murderous efficiency that depended critically on just those technologies that made the new modes of life possible. By the mid-twentieth century the world had witnessed a level of human carnage never before seen, and, with the advent of control over atomic energy, humanity literally reached the threshold of annihilation by its own hands. The formally colonized countries of the world had won their de jure independence, but their de facto dependence on their former masters remained. By the end of the twentieth century, those countries that had taken literally the idea that enlightened human reason could create a scientifically guided, bountiful, and just society had crumbled, leaving a return to religious fundamentalism or the invisible hand of the free market as the leading ideological and political economic world views.

It is fascinating to me that as the mid-century form of modernism that I grew up with seemed to be collapsing all around me, a new form of technology arose that promised to undo the mischief of its predecessors. The previous technological toolkit and its associated patterns of life promoted mass society and a countervailing individualism, with its loss of personal community and alienation. The new forms of technology promised to reform and remediate human activity, restoring the lost sense of community that was ever more frequently commented upon.

This vision was not new. Consider, for example, the following early promise of a return to community through new technologies which would make the

> Nation a neighborhood. . . . The electric wire, the iron pipe, the streetrailroad, the daily newspaper, the telephone . . . have made us all one body. . . . There are no outlanders. It is possible for men to understand one another. . . . Indeed, it is but the dawn of a spiritual awakening. (William Allen White, 1910, quoted in Putnam, 2000, p. 376)

Rheingold, initiator of the Well, an early and famous virtual community, illustrates this new form of personal/community regeneration when he writes,

> My flesh-and-blood family long ago grew accustomed to the way I sit in my home office early in the morning and late at night, chuckling and cursing, sometimes crying, about words I read on the computer screen. It might have looked to my daughter as if I were alone at my desk the night she caught me chortling online, but from my point of view I was in living contact with old and new friends, strangers and colleagues. (Rheingold, 1994)

It is a salutary characteristic of the chapters in this volume that, without denying the transformative affordances of CMC, they do a thorough job of deconstructing the one-sided, techno-optimism of the promoters of a brave, new world in the World Wide Web. Yes, there are potentials for creating community using the Internet, but achieving that potential is not automatic, easy, or necessarily enduring. Like freedom, it is a fragile accomplishment that must be constantly worked at and watched over.

I will have more to say about the real complexities of community mediated by CMC with respect to the chapters of this book shortly. But first, here are a few words about the term "virtual," which also has a history. Curiously, "virtual" came into the English language from Latin and French about the same time as did "community." Initially it referred to things that had special and effective physical capacities, linking it closely to our ideas of virtuous. But in the seventeenth and eighteenth centuries, like

"community," the meaning of "virtual" underwent changes. *The Complete Oxford English Dictionary* (1971) identifies this new meaning as something "That is so in essence or effect, although not formally or actually, admitting of being called by the name so far as the effect or result is concerned" (p. 3639). At the same time, virtuality became associated with optics, referring to an apparent image created by refraction upon rays of light.

Rheingold, who appears to have coined the term "virtual community," provides a definition that accords reasonably well with the "so in essence or effect" of virtual in extending the term to apply to communities when he wrote, ". . . People in virtual communities do just about everything people do in real life, but we leave our bodies behind. You can't kiss anybody and nobody can punch you in the nose, but a lot can happen within those boundaries" (Rheingold, 1994).

Ekblad (1998), who studied the virtual academic community that my colleagues and I initiated in the early 1980s, captures the "existing in effect, but not in actuality" sense of virtualness that appears to apply to this kind of community. She wrote that the community linking participants is "most obviously virtual in nature" when it displays the characteristics of "being transient, recurrently emerging and distributed over the network of the system." Here the "being so in essence" and the "apparent image" notions of virtual come together in a propitious way that seems to capture what is required to create and sustain computer-mediated communities and, perhaps, given the nature of contemporary societies, communities of all kinds (see hem.fyristorg.com/evaek/index.html).

When we combine the special characteristics of community in the mobile, distributed, electronically mediated, and globalized conditions of modern life with the particular characteristics of virtualness that enable and constrain these characteristics, one of the most striking features of virtual communities, even that subset of virtual communities that is self-consciously designed to promote learning and development, is their enormous heterogeneity.

This heterogeneity stands out clearly even within the relatively restricted projects focused on learning and development described in this book. I think it is fair to say that while every one of the projects the authors describe contains a "virtual" component, each is unique in the combination of institutional arrangements, educational content, forms of Internet communication, and participant goals that it embodies. For example, the initiators of MediaMOO had exploration of new media environments for education as their topic; several years of intense interest and involvement

were followed by fractionation and gradual disintegration. They conclude their hunt for a lost community with some strong hunches about factors that builders of virtual communities need to take into account, including focus on continued shared goals and continuity of leadership (see Bruckman & Jenson, this volume). To take a different example, the initiators of an online forum for elementary school children demonstrate that when girls' interests are highlighted, they are as interested as boys (in this case, more interested) in using computers as a medium of communication. But the students' community is almost as much mediated by face-to-face interactions as it is by their computer-mediated interactions (see Davidson & Shofield, this volume). To take yet another example, sustainability remains an open questions for a site on which teachers of mathematics are given access to expertise and ready-to-hand high-class curricular materials that produce real advances in teaching and learning (see Renninger & Shumar, this volume).

Hunter (this volume), who has more experience than most in seeking to use the Internet to promote learning and development, makes the essential point that the success of such efforts depends crucially upon the institutional frameworks of the face-to-face communities where people are physically located. While the Internet has the *potential* to create a sense of global community among American children of military personnel scattered around a large air force base in northern Italy, that potential is not realizable owing to such debilitating facts as that all communication in the schools which are in locus sites of communication are subject to military surveillance.

Of course, nonmilitary school children in regular schools are also subject to surveillance, and their access to the "freedom" of the Internet is circumscribed by software and social injunctions to prevent their minds from being virtually polluted by material deemed inappropriate. Nonetheless, so long as the materials they can access are made sufficiently interesting, and their teachers are willing to create and maintain a virtual community of Internet-using educators, the relative isolation of the classroom can be broken, and projects that draw them into authentic, developmentally productive learning can be arranged, as Levin and his colleagues have been showing for years. Yet one should not expect such activities to be constantly running at a high pitch. Rather, they are (as a rule) enrichment activities that require planning and much maintenance work. Like the MediaMOO, they have a typical rhythm of growth, activity, and decay. But, unlike the MediaMOO, which did not have a larger network of

participants for whom joint activities that break the isolation of the classroom are an ongoing source of educational and professional enhancement, the larger "virtual community" of teachers in the case of Levin and Cervantes (this volume) make the regeneration of new activities a constant resource for sustaining virtual interaction. Some of these interactions will be more productive than others, and all of them hold out hope based on the experience of repeated success despite the knowledge that some projects die in their early stages.

I urge the reader to pay as close attention to the failures reported here as to the successes. Despite the enormous hype attached to the World Wide Web as the harbinger of a new educational/world order, we know far too little about the various hybrids of Web-mediated, book-mediated, institutionally constructed and constrained forms of interaction that are talked about in terms of virtual community and that promise (or it is threaten?) to become the norm in the decades to come.

Questions on which I am still thinking include:

- Are we entering an era in which communities of interest/choice will come to dominate modern life?
- Will threats to the environment from current living patterns force a disaggregation of human living patterns back into smaller communities, trading virtual travel for the real thing?
- Will the decentralizing, democratizing affordances of the Internet win out, or will it result in new forms of centralized, top-down control?
- And finally, with respect to learning and development, will a rising tide of Web-mediated learning and development bring about productive forms of deschooling or serve, instead, as a tool for high-class, inquiry-based learning for a small class of knowledge haves, and the realization of some form of Aldous Huxley's distopian nightmares for a brave new world?

If contemporary social theorists are correct, the modern era faces us with unprecedented new ways of being in the world and, with it, new dangers, new opportunities, and new forms of community in which we, along with others, will face those challenges. Human interaction has always been, in some measure, virtual. That successive waves of technological innovation increase the density of mediation between individuals and groups can be expected to remain one of the major sources of changes in human life and, along with it, changes in the nature of learning and development. The pages to follow offer the reader a variety of glimpses into that uncharted future.

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