Preface

Working together collectively as communities to address shared problems is necessary if individuals in societies need to quickly reach certain goals and attain specific outcomes. Communities are social systems intended to serve specific purposes. They serve as environments for discussing and tackling important issues in societies such as reduction of crime rates, the reduction of pollution, the eradication of poverty and diseases and housing problems, economic crisis and only to mention a few. In tackling any of these issues, communities are used as platforms for developing social mechanisms, encouraging the spirit of cooperation and collaboration among their populace and instilling and fostering a sense of community, within a geographical neighbourhood, to improve the quality of life.

Throughout history, communities have demonstrated various ways to help their members achieve immediate and long term goals. The most successful communities often foster cordial and collegial relationships among their members, by building awareness, establishing shared understandings, cultivating trusting relationships and encouraging members to follow a certain shared set of social protocols.

Dating back to the Stone Age, the notion of a community was limited to a particular geographical location and it was predominately characterized by collocation, co-presences and shared social and cultural values. It was also characterized by shared beliefs, norms and traditions. The Hunters and Gatherers communities typically served as a good example of one of the oldest forms of human communities. Hunters and Gatherers primarily used communities as protective shields and silos for survival—for gathering and sharing limited resources in what had been very harsh environmental conditions. Furthermore, the Hunters and Gatherers also used communities as military barricades for defence and for protecting their environments in order to maintain territorial integrity. Throughout the Palaeolithic time, humans used communities to socially and politically distinguish one group from another, one tribe from another, one band from another, one clan from another and so on.
The academic discourse on communities has a long tradition in sociological theory, reflected in the work of Durkheim, Marx, Weber and Tonnies among others. These early scholars were primarily concerned with the loss of place-based community and the weakening of the face-to-face relations of “Gemeinschaft”—or an association. However, the discourse around the decline of face-to-face communities and the growing sociological concerns about their implications to contemporary societies did not gain much traction until the beginning of the 1990s. This is when the idea of communities based on geography or place shifted dramatically to communities based on common interests formed among distributed groups supported by various kinds of online technologies.

Similar to their predecessors, modern communities are social systems, manifesting certain shared characteristics; but the ultimate nature of their goals might not be the same. For example, some communities are goals specific (e.g. communities based on preservation of language, culture or traditions) while others might not have clearly stated goals to achieve. More specifically, communities defining membership along professional lines (such as research communities) might not have collectively defined goals and their members might not necessary live in the same location, work in the same building, or share the same culture or language. But members in these kinds of communities might be collectively interested in advancing knowledge and science in their respective disciplines or areas of research. Communities with members sharing certain ethnic characteristics such as language, culture and systems of beliefs might not have clearly immediate stated goals to achieve, but members might still be strongly united by their tribal or nation bond.

The permeation of new technologies into mainstream societies facilitated new forms of communities that are not restricted to physical dimensions, but they are rather situated in virtual space. Perhaps the most profound success of the new technologies in facilitating communities online is their ability in fostering synchronous and asynchronous communication and their power to deliver information in various formats (videos, audios, text and graphic images).

Furthermore, the emergence of these new forms of communities (virtual communities) has not only challenged our thinking about the meaning and purposes of communities, but they also present new grounds for exploring new forms of social relationships online. Many researchers, scientists, practitioners, community architects, software developers, and educators are becoming increasingly aware of the fact that the health of any community is intimately connected to the way people relate to each other.

For more than two decades, researchers have employed different approaches to examine and describe various types of relationships among people in communities by using social capital as a conceptual and theoretical tool. Social capital, the stock of productive social relationships among people, lies at the heart of any community,
and it is the most important mechanism for creating and maintaining useful and productive social ties, binding people together in communities.

BOOK MOTIVATION

Social capital is arguably the most critical theory to emerge in the Social Sciences and the Humanities in the last two decades. Social capital emphasizes the importance of social networks, communication, trusts, shared understanding, collective social protocols and the symbolic and immaterial exchanges of information and relationships that strengthen communities. This book represents a landmark consideration of the origin, diverse meanings, types, dimensions, components, measurements methods, sources, and positive and negative consequences of social capital, with a particular emphasis on how to model social capital within virtual communities. Informed by past and ongoing research, social capital in virtual communities is an evolving concept, one that includes constructs such as social networks, trust, various forms of awareness, engagement, shared understanding, and social protocols. In many writings, the fundamental message social capital attempts to convey is that some value can be derived from productive social relationships and that the extent to which people are embedded within social networks and communities can help to enhance their lives.

Most of the ideas presented in this book are based on a decade of research into social capital and virtual communities. The guiding philosophy motivating this work is founded on the belief that social capital holds a great potential for understanding social and technological development in virtual communities. It is a glue that keeps people together in communities, creating a stronger zeal for building a healthier, more tolerant communities built on respect of individual differences, valuing and recognising individual achievements and celebrating diversity and community success. Among other benefits, social capital enables people to collaborate and learn from each other in a collegial community spirit.

Furthermore, in a society with much information overload, social capital serves as a pipeline for channelling useful information and as a filter for processing and transmitting information and knowledge to community members. Widely applied in many areas of research, social capital helps to ease transaction costs in business by encouraging a trusting environment, loosening communication surfeit and speeding the flow of information within a community. In education, social capital enables students to collaborate with each other, teachers to work together with communities and effective parental involvement in school affairs. Furthermore, a plethora of research has demonstrated that communities with a high stock of capital are healthier, have lower crime rates and the people within these communities tend
to be more respectful of each other. Within the civic discourse, when people are actively involved in community activities, they are more likely to participate in voting, become involved in community peace corps and volunteer in most important community projects.

Furthermore, one of the globally growing issues that perhaps had some negative impact on the rate development on a global scale is the gap between those who possess technology skills and those who do not. This is known as the “digital divide” and the “digital dividend”. For many years, international organisations such as the Organisation for Economic Co-operation and Development (OECD) and the World Bank have explored ways of bridging the divide. In communities with high social capital, when people work and learn together the “digital divide” and the “digital dividend” can be increasingly reduced; the more people exchange information among themselves and support each other as a community, the better they can build from each other’s strengths.

These few instances of the benefits of social capital demonstrate the growing attraction to the theory in addressing critical problems in communities. This book aims at exploring the underlying mechanics of social capital in order to accurately understand the theory and to better extend it to virtual communities. While it is too soon to conclude that social capital is an accurate analytical “paradigm” for addressing social issues in virtual communities, it is fair to suggest that social capital provides a potential framework, that once properly defined can help us accurately analyse and improve the quality of life in virtual communities.

ABOUT THIS BOOK

James Kouzes, Chairman Emeritus of the Tom Peters Company, Business 2.0 in September 2000 stated that, “the new currency won’t be intellectual capital. It will be social capital - the collective value of whom we know and what we’ll do for each other”. He pointed out that when social connections are strong and numerous, there is more trust, reciprocity, information flow, collective action, happiness and greater wealth.

The main purpose of this book is to bring to the table a discussion on “the new currency”, to introduce social capital theory as a way to think about social issues that are critical to effective social engagement, social networking, knowledge sharing and community building in virtual communities. The book aims at engaging scientists and practitioners from diverse disciplines, to explore the potential of social capital in virtual communities. The insights presented in the book are essentially interdisciplinary, drawing from applied Artificial Intelligence, Human Computer Interaction, Educational Technology, and the disciplines of Economics and Sociology, thus, providing a broader perspective on the issues addressed. The book is founded
on research and offers an original solution to the problem of refining the concept of social capital in order to utilize it in the examination of social issues in virtual communities by constructing a formal Bayesian Belief Network model.

WHY A BOOK ON SOCIAL CAPITAL IN VIRTUAL COMMUNITIES?

Why not open up a dialogue on social capital in virtual communities? There are essentially many reasons to write this book at this time. Some of these reasons are highlighted in the following paragraphs. First of all, this is the first complete and comprehensive book solely devoted to analysis of social capital in virtual communities. Beginning with the context of the analysis of the issues presented in the book, virtual communities are becoming increasingly accepted and useful social structures in modern societies.

They are especially popular in the areas of Business and Education. Business organisations deploy many virtual communities to offer support to their customers for them to be able to discuss product issues. In July 2008, researchers at Deloitte carried out a study of more than 100 businesses ("Tribalization of Communities") to investigate the state-of-the-art and the business purpose of virtual communities in these organisations. They found that businesses tend to support virtual communities to enable members to connect with likeminded people and to help others in the community.

With the permeation of technological dimensions into social interactions, Web technologies are increasingly empowering customers with powerful platforms, providing them with a collective voice for evaluating products and making recommendations to others interested in the same products. For example, Amazon effectively utilizes Web 2.0 technologies to provide to its virtual communities of users a platform for product reviews and recommendations of products for other customers.

Furthermore, businesses are now adopting various Web technologies as part of a broader business practice to forge tighter relationships with customers and suppliers and engage employees more successfully. In addition, now not only are they using more technologies, they are leveraging them to change management practices and organizational structures.

Second, businesses have also begun to use virtual communities to engage with customers and employees for brand discussions, idea generation, and product development and innovation. They are not only being used to solicit product development ideas but they also serve as an early warning system for product issues. The added value of virtual communities to business then is beyond doubt.
Third, in academia, researchers are not only able to easily keep up to date in their respective fields but they are also able to share important data through virtual communities. For example, allowing for synchronous or asynchronous collaboration, virtual communities can increase the awareness of the value of research, share visions of excellence and build the culture of science among researchers in different disciplines.

Looking at the exponential growth of virtual communities and their immediate application to many areas, it became clear that a book on social capital in virtual communities was not only desirable, but also necessary. Extending social capital to the analysis of virtual communities helps us to understand the nature of social and knowledge networking and networks and how social capital informs our understanding of information flows among members.

Fourth, the literature to date on social capital and virtual communities is partial and can be found in collections of book chapters, journal articles and conference papers. It is time for a complete and hopefully a useful book on the topic to assist those interested in exploring social issues in these communities. Bringing together volumes of information regarding social issues in virtual communities in one comprehensive volume, this book is also one of the few that provides a complete and comprehensive introduction to two major types of virtual communities in education and business (distributed communities of practice and virtual learning communities) in which the context of discuss of social capital is situated in the book.

Finally, while social capital is a growing research area, with fascinating contradictions and ambiguities, there is no precise scientific definition of it. This poses many challenges for extending the concept to virtual communities. The challenges are: (1) the existence of many surrounding components, each of which operates variably in relation to other components. (2) Each of the various components which constitute social capital influences the level of social capital differently depending on the type of the community. (3) Identifying the key components constituting social capital and factoring in those more influential components is critical to our understanding of how to improve virtual communities. However, it might not be possible to accurately understand the various constituents of social capital in virtual communities using traditional Social Science scientific methods, some which are already under substantial criticism.

THE APPROACH TAKEN IN THIS BOOK

This book broadly examines what constitutes social capital in place-based (geographical) communities and extends this understanding to virtual communities, providing an in-depth description of the nature of social capital in virtual communi-
ties. This book begins with a description of social capital, followed by delineation of its fundamental components in place-based communities. Components unique to virtual communities are then identified. These discussions serve as a basis for the construction of a Bayesian Belief Network model of social capital. Described in detail is the procedure for modelling social capital as well as the processes involved in validating the procedure.

**BOOK AUDIENCE**

Primarily intended for advanced undergraduate and graduate courses on virtual communities and social capital, this book will be useful to applied computer science or educational technology programs. However, since virtual communities and social capital are research issues gaining traction across disciplinary borders, the Social Sciences and the Humanities might find some materials relevant. The materials in the book are primarily targeted at university/college professors, graduate students and Educational Technologists; researchers in the areas of Human Computer-Interaction, Social Media and Applied artificial Intelligence.

The Bayesian Belief computational modelling approach presented will primarily appeal to those interested in Bayesian and modelling computational techniques to analyse and model complex social systems. The chapters on social capital and virtual communities will appeal to those interested in social capital in place-based and virtual communities.

**ORGANIZATION OF THE BOOK**

Due to the diversity, breadth and depth of debate on the theory of social capital, the book is divided into four sections. Section I is concerned with theoretical analysis of social capital in place-based/conventional communities. There are five chapters in Section I. The chapters are intended to provide the reader with a broad outlook of the theory, debate, and classical work on social capital. The section does not pretend to cover all the research done on social capital, a goal which is impossible to achieve given the rising popularity of the theory and the vast amount of research conducted and situated in many applied sciences. Instead, this section covers the most important work on the theory leading to the motivation to extend the debate to virtual communities.

Section II provides a detailed description of virtual communities, focusing mainly on two types of virtual communities; virtual learning communities and distributed communities of practice. Work on these two types of virtual communities is drawn
from prior research. The section also discusses more recent technologies currently used to support virtual communities. Overall, there are three chapters in this section, all of which are intended to provide the reader with context in which the discussion on social capital in virtual communities is situated. The section also aims at familiarising the reader with more cutting edge social software supporting virtual communities. The section also presents emerging areas in knowledge management where social capital has many underexplored opportunities.

Having understood the theory behind social capital and all debate on what it is, in addition to gaining more knowledge on the context in which social capital is discussed in the book, Section III delves into basic mechanics of Bayesian belief networks and establishes a foundation for building computational models. This section is particularly critical to those readers who are interested in understanding Bayesian belief networks and basic knowledge of modelling. Three chapters are covered in this section. It is assumed that chapters presented in this section prepare the reader to understanding materials presented in Section IV.

Section IV covers materials that constitute the main theme of the book; computational modelling of social capital in virtual communities. This final section of book presents the ideas, procedures and techniques used for building a model of social capital. The sections also include discussions on processes involved in conducting sensitivity analysis and model validation. This section also concludes the book and it includes discussion on some of the implications of the theory of social capital in virtual communities.