Preface

The term Web 2.0 technologies, also known as *social software,* was coined by Rohit Parikh in a paper that appeared in *Synthese* in 2002. At the time, Parikh did not provide a precise definition of the term, but rather attempted to suggest what it means through a series of provocative examples demonstrating procedures that structure social realities in a very broad sense. The term caught on and began to refer to a second generation of Internet technologies and a new generation of Web applications providing an infrastructure for more dynamic user participation, social interaction and collaboration. Thanks to the applications of this software, as well as open source software-- which makes source code available to the general public with minimal copyright restrictions and with resulting participation and interaction-- a variety of facts and content previously in the possession of experts traditionally seen as the only legitimate sources of knowledge can be created, accessed and shared almost instantly by any user with an Internet connection. Among applications of this kind of software are blogs, Wikis, MySpace, Twitter, Vkontakte, Facebook, Flickr, Odeo, Google Video, Google docs, Partyflock, Wasabi, YouTube, and other communication tools such as social bookmaking, peer-to-peer social networking, instant messaging, podcasting, etc. While computer scientists like to point out the differences between social software and open source software, this collection assumes a conceptual area of overlap between the two terms, as well as 'open source' as a philosophy, referring to computer mediated platforms enabling and encouraging forms of user participation, modification and interaction.

Web 2.0 technologies make it easy for members of the public previously considered readers or audience to contribute ideas and content to the public sphere of discourse and thus enlarge the existing body of knowledge in various ways. These technologies are bringing about a change in the production and definition of knowledge as well as affecting the direction of future knowledge creation and dissemination. The phenomenon of *mass amateurization* of knowledge-- the emergence and increasing availability of so called user-generated online content enabled through the rise of Web 2.0 technologies and its associated applications-- carries broad implications for future concepts of expertise.

The new forms of collective intelligence powered by the digital media invite redefinition of expertise traditionally defined as mastery of facts and content of a certain subject. They encourage collaboration, ongoing revision, interdisciplinarity, and a new understanding of knowledge as a process of inquiry, rather than simply its product. This aim of this collection is to present preliminary findings and generate a discussion on how older models of expertise are adapting to the new cultural and media-driven environment and on the emerging forms of expertise shaped by digital media.

To be an expert traditionally means to know a lot of content and to have a great deal of prepositional knowledge *that*… (such and such is the case). Accreditation by public or reputable private institutions continues to be the dominant way of distinguishing experts from non-experts. However, degree grant-

ing structures and the narrow disciplinary orientation of most graduate programs, where professional values are most firmly shaped, have encouraged a narrow view of knowledge and expertise. In 1990, Ernest Boyer, the president of the Carnegie Foundation for the Advancement of Teaching, pointed out that the doctoral dissertation, thought of as original research, is usually written on an increasingly isolated, narrow topic disconnected from the concerns of the world beyond the university or often even other disciplines, in a language understood by a limited number of equally narrowly specialized readers; consequential assertions made in the dissertation are often footnoted, and creative, integrative thinking often discouraged (Boyer, p. 68).

Boyer's statements echo the criticism of narrow specialization made by the Nobel laureate physicist, Philip Anderson who said, "the more the elementary particle physicists tell us about the nature of the fundamental laws, the less relevance they seem to have to the very real problems of the rest of science, much less to those of society" (Anderson, 1972). More recently, Lauglin and Pines (2000) note, referring to the Theory of Everything (in use at the particle level in physics): "we have succeeded in reducing all of ordinary physical behavior to a simple, correct Theory of Everything only to discover that it has revealed exactly nothing about many things of great importance" (pp. 28-31).

Some aspects of this situation have changed over the last couple of decades as the number of interdisciplinary programs at universities and colleges has expanded globally, seeking to approach various topics of inquiry from a wider set of perspectives. The increasing appreciation of interdisciplinarity has been influenced in part by the rapid spread of ubiquitous computing and global connectivity, both of which make visible the complex interdependence and simultaneity of most research questions. However, the results of the orientation toward narrow specialty are still embedded in dominant cultural notions of what constitutes expertise.

The largely subject-based conception of knowledge, as a body of information and ideas to be transmitted from expert to laypersons, rests on the widely-held belief that to be an expert means to know a lot of content and to have a great deal of prepositional or factual knowledge within a narrow area of specialization. This definition of expertise conceives of knowledge as a product of inquiry processes rather than a process in relation to the products. Experts traditionally belong to small, exclusive groups that make up the social structures of authority when it comes to producing and distributing knowledge, information, and opinion. The concept of knowledge in this paradigm has been understood implicitly as a more or less closed or exclusive set of ideas or facts relating to different subject areas, and *meaning* was seen as a set of predetermined nuggets of particular knowledge transferred from experts to the laity. These views gained a cultural stronghold partly because they imply that there is something tangible and quantifiable that distinguishes expert from non-expert, which justifies the experts' position and privilege. The assumptions on which this conception of expertise rest is that knowledge is something that one "receives, holds, and then releases in highly controlled environments, with the underlying message that knowledge is preexisting and that the world is more or less static and unchanging (also Takseva Chorney, 2010).

That things have begun to change is indicated by a number of factors. Last year, for example, the Modern Language Association (MLA), the main professional US association with international scope for academic scholars, professors, and graduate students who teach and study languages and literatures, started considering radical changes in the dissertation, the dominant model of scholarship required from graduate students granted a Ph.D. The association found that the traditional model of producing a several-hundred-page analysis based on a linear argument that still dominates language doctoral programs is overused and frequently ineffective, governed by out-of-date conventions, and leading to the

production of "proto-books" that may do little to promote scholarship, and may not even be advancing the careers of graduate students. It was pointed out that the nature of scholarship in the 21st century is changing and that degree granting institutions need to reexamine the criteria on which their credentialing is based (also Jaschick, 2012).

Key global trends concerning higher education and the nature of the student body point to the fact that interaction and collaboration are becoming increasingly relevant in the context of teaching and learning. This is not surprising given that most students belong to the so-called Net Generation, those who have never known life without digital media. It has been said that they tend to gravitate toward group activities that promote social interaction, and they prefer to learn and work in teams; they value connectivity and interactivity, learn better through inductive discovery than by being told, often find peers more credible than teachers, and are more likely to use the Internet for research than the library. In many cases, often resulting from the combination between increasingly cross-cultural contexts of instruction and the instantaneous access the digital media provide to a staggering amount of resources and information, expert teachers find themselves in a position where their students have knowledge that they may not.

What is perhaps more surprising is that faculty members in all disciplines are increasingly relying on Web 2.0 technologies both in and outside the classroom. A recent study of 940,000 college professors conducted by Pearson Learning Solutions indicates that 91% of college professor use social media, such as Youtube, Facebook, blogs, Linkedin, Wikis, Twitter, and Flickr (in that ranking) for professional development and as teaching aids (Knight, 2011). A series of recent focus groups conducted by the Canadian Research Network at a number of Canadian universities, mine included, aimed at assessing the impact of digital content on research and scholarship across different disciplines, revealed that the way research is conducted and scholarship in general is profoundly influenced by digital networking technologies in a number of ways. The most significant changes noted were ease of access to a variety of materials, reduced travel, a more rigorous interdisciplinarity, the ease of creating networks as well as other forms of collaboration. While collaboration among scholars has always been part of academic life, the ease and speed of access to resources and colleagues enabled by the new technologies has brought this dimension of scholarship to the forefront of scholarly interaction.

The implications of social software for knowledge creation, dissemination and expertise within academic institutions are especially great due to the fact that it is academic institutions that are the 'producers' of future experts. One of the most significant changes to scholarship now is the combination between ease of access to a variety of materials that previously required extensive time and travel, and the consequent speed of producing scholarship. These developments raise important questions about the nature of scholarship in the future: if a scholar finds accurate and verifiable data needed to build his/her argument very quickly and easily though Google and Wikipedia, does that by default diminish the quality of his or her scholarship? Does quality in traditionally-understood scholarship depend on where and how the data was obtained, or does it depend on the skill of argument, or a combination of both? These and other related issues challenge the traditional academic notion that good scholarship should and does take much time and effort, thus also suggesting that, perhaps, the scholar's set of skills is also changing under the influence of digital technologies.

These are only some indicators that the impact of digital media and social software on the process and shape of traditional scholarship and scholarly activity within academic institutions is significant and ongoing. The proliferation of user-generated content combined with open-access content models is changing the way academics think about scholarship and publication, and highlights the emergence of collective wisdom and knowledge creation as a social activity with much greater speed and scope than

before. Some academic journals and magazines use shared editing tools such as *Google Docs* and wikis to create online books that allow readers to comment sometimes even at the paragraph level, opening up the process of writing to ongoing collaboration between experts and non-experts. Many hobbyists and amateur scholars are engaged in data collection and field studies that make a significant contribution to many areas, and whose work is available on blogs and photostreams.

It is developments such as these that have led Glen Reynolds, law professor, founder of the American political blog "Instapundit," and author of *The Army of Davids,* to claim that we are on the brink of the amateur century, where technology confers upon every individual the power traditionally available only to "nation-states, superheroes, or gods" (Reynolds, 2006, p. 237). While this near –mythical prophecy is not completely self-evident, it seems clear that in different ways and differing degrees Web 2.0 technologies tend to blur the lines between expert and amateur; that they change the structures of authority for producing and distributing knowledge, information and opinion (Lemann, 2006), and so challenge traditional notions of expertise. The creation and dissemination of knowledge is no longer exclusively controlled by a relative minority who acted as its gatekeepers.

The participatory, open, and socially-constructed models of knowledge creation and dissemination encouraged by Web 2.0 highlight the need for responsiveness to an active and constantly changing landscape of knowledge in which amateur contributions in many areas cannot be discounted. These new paradigms are influencing a number of important areas of public life, effecting a change in how knowledge, information and opinion is produced and distributed.

There are several representative examples. The paradigms underlying journalism and newspaper publishing are changing under the influence of social software. News "is evolving from a lecture into a conversation" (Gillmor, 2009, p. 5). The traditional model is being extended into a two-way communication, where readers can re-broadcast the "editorials and articles by superimposing their viewpoints and observations along with the original" (Babu, 2007), as well as publish news independent of the traditional media outlets. This shift in the creation and distribution of news has been referred to as "democratization" of the media. Professional journalists and editors, who have traditionally been the gatekeepers of the profession by providing a necessary or desirable social function, were also the ones controlling that function; that is, they were the ones deciding what is and is not newsworthy (also Shirkey, 2008, pp. 63-65). The mass amateurization of publishing undoes the limitations that were inherent in having a small number of traditional press outlets (Shirkey, 2008, p. 65). Control over the media and over decisions of what constitutes news is now less completely in the hands of expert journalists and editors. Even though the change is often decried as evidence that amateur journalism will replace professional journalism, the reality is probably closer to what Dan Gillmor, a journalist and a blogger, calls the "diversification of the journalist ecosystem," not professionals vs. amateurs, not one or the other, but rather, a world of one and the other" (Gillmor, 2009, p. 5).

In the area of economics and business, recent research regards it important for new media companies to find ways of making profit with the help of Web 2.0, suggesting that the economy of the "new web" depends on collaboration. The Internet-based economy has been termed "Wikinomics" and is based on principles of openness, peering, sharing and acting globally (Tapscott and Williams, 2006). In this business model, companies relinquish traditional ideas of expert knowledge by "designing and assembling products with their customers, and in some cases customers can do the majority of the value creation" (p. 89). Employees, business partners, and even competitors "co-create value in the absence of direct managerial control, demonstrating the nature of interdependence in the business world" (p. 55). In this case, traditionally passive buyers and those on the margins of the decision process become equal partners

in product value creation. Wikinomics illustrates that "peer to peer models and seeping into an industry where conventional wisdom favors the lone super star stock advisor" (p. 24).

Social software, for example, also increasingly plays a role in the area of social work. Community organizers use interactive Web technologies to identify services in traditionally disadvantaged neighborhoods, and social workers use chat programs to provide real-time online therapy. More significantly, however, social software allows for self-directed treatment through web-based modules (see Singer, 2009). Self-directed treatment places patients in the position of 'expert' as it allows them to develop their own resources, acquire control over crucial aspects of their own treatment and so become their own therapist. The design and implementation of self-directed treatment with the help of social software compels social workers, counselors and therapists to redefine and rethink their position of expert in important ways.

More generally, wiki projects, built on collaborative computer software used to create collaborative websites, are a good example of Web 2.0 applications "comprising of the perpetual collective work of many authors" and allowing "anyone to delete or modify content that has been placed in the website using a browser interface" (Webpoedia). For an increasing number of digital users, Wikipedia provides answers to a wide range of questions formerly associated with encyclopedic or expert knowledge, and is cited as a credible source of encyclopedic knowledge in many scholarly publications (one of which is the *Cambridge Handbook of Expertise and Expert Performance*, 2006).

Wikibooks and Wikiuniversity, provide examples of social software in the service of education. Wikibooks, established in 2003, hosts collections of open-content textbooks written collaboratively by students, teachers, and interested members of the public. The site is described as a community for collaborative writing of textbooks and manuals, and uniquely suited for use in classroom collaborative projects. The Wikiuniversity, built on the open source software model, was officially begun in 2006 with the aim of creating and hosting a range of collaboratively-created free content, multilingual learning materials and resources for all age groups in all languages. These developments challenge some models of expertise understood in a traditional sense, and raise the question as to how will expertise and knowledge be redefined in an age where important facts and informed opinions are easily accessible from a variety of sources often created collaboratively by experts and non-experts alike?

While the answers to these questions are still imprecise, the articles in this collection suggest that some trends are becoming visible. On the whole, they suggest that the challenge to some models of expertise does mean that we will be able to dispense with experts in general. What the challenge means, rather, is that experts in many fields such as medicine, law and academia, need to rethink their roles vis-à-vis a changing media landscape, reexamine how new technologies enable new ways of doing their work, and redefine the manner in which they think about and act on their expertise. While it is unlikely that the experts' "epistemic leadership role" (Sanger, 2009, p. 60), will be made obsolete, it is likely, and probably inevitable, that the ways in which they conduct that leadership role will change. For example, rather than relying on the collection and management of information and knowledge as the basis of their credibility and expertise--something that is now very efficiently done by many non-experts-- the new kinds of expert leadership will be concerned with "what information ought to be collected, reported and highlighted" (Sanger, 2009, p. 60), as well as in what ways it might be brought together into meaningful narratives.

One of the main implications of the mass amateurization of knowledge or the "aggregation of public opinion" (Sanger, 2007, par. 2) driven by technological networks is that it compels us to reevaluate the nature of expertise itself. While prevalent definitions of expertise traditionally default to the expert's factual knowledge within a narrow area of specialization, it is less frequently acknowledged that experts regularly perform process-oriented tasks based on mastery of cognitive, critical, and theoretical skills

that can be said to constitute the hidden, tacit aspects of expertise, harder to articulate and impossible to quantify. The performance of expertise always depended on the relationship between factual knowledge and process-based cognitive tasks. In other words, prepositional or content-based knowledge on the one hand, and forms of critical thinking and judgment involved in identifying main problems, classifying, evaluating, and making relevant connections on the other, were always interdependent aspects of expertise. Knowing the "what" always went along with knowing "how" in any line of expertise.

The so called rise of the amateur, and the instant and almost ubiquitous access to seemingly infinite specialized information and relevant facts relating to any form of existing knowledge, are redefining expertise in that they challenge the relationship between content based knowledge and the cognitive, process based skills involved in expertise. That is, since the expert no longer has exclusive control and mastery over content-based knowledge and information, it may suggest that the new forms of expertise will gradually become less associated with mastery of facts and content, the "what," and more with "how," that is, those tacit aspects of expertise having to do with the performance of complex cognitive tasks that assume knowledge of content but cannot be equated with it.

This redefinition of expertise does not minimize the valuable contributions that many well informed and knowledgeable amateurs make to any field; to the contrary. It is useful to recall that an expert is someone "who is very skillful and well-informed in some special field" (*Webster's New World Dictionary*, 1968, p. 168), as well as someone who is "widely recognized as a reliable source of knowledge technique or skill whose judgment is accorded authority and status by the public or his or her peers. Experts have prolonged or intense experience through practice and education in a particular field" (*Wikipedia)*. By not making accreditation the primary or only criteria for establishing expertise, these two definitions point to the great conceptual and practical overlaps that may exist between the traditional expert and the knowledgeable amateur. Furthermore, while in some domains, such as chess, the medical profession, and musical performance, there are objective criteria for finding experts who are consistently able to exhibit superior performance for representative tasks in their respective domain, in other areas it is difficult to identify experts without relying on peer-nominations by professionals in the same domain, and even then, they are no better than novices when it comes to some essential tasks (Anders Ericsson, 2006, par. 3) . Examples of these would include selecting stocks with superior performance, the treatment of psychotherapy patients, forecasts, or expert auditors' assessments, which have been found to differ more from each other, than the assessments of less experienced auditors (Anders Ericsson, 2006, par. 3).

2.0 technologies encourage forms of interdisciplinary inquiry, ongoing epistemological revisionism and a new approach to knowledge and expertise in the widest sense. Instant access also means access to various relevant bodies of knowledge across disciplines, which thus enables and indeed encourages the pursuit of any line of inquiry without extensive travel. As Manuel Castells (2004) points out, the key dimension of social organization and social practice has become the network, as in his concept of the network society. While networks are an old form of human organization, digital networking technologies characteristic of the Information era are powering social and organizational networks into endless expansion and reconfiguration, and thus overcoming the traditional limitations of networks to manage complexity beyond a certain size (Castells, 2004).

Emphasizing interconnectedness, interdependence, and collaboration, the new forms of knowledge creation and dissemination are dynamic and dialectical, rather than static and uncontested, and as such they suggest that the boundaries of specialization itself may become elastic and permeable. In an interconnected, complex world, wired for instantaneous access to information and interaction, divisions between disciplines appear to loosen, showing that only interdisciplinary approaches can effectively

tackle complex issues. Revisionism and fluidity of approach become traits of the new expert, who is able to revise and quickly but accurately evaluate current findings in light of new information. The environment fostered by the new technology encourages a horizontal or generalist, rather than only a vertical or specialist approach in so far as the generalist is inclined to detect systemic patterns across various subject areas. Deep knowledge of issues is still required; however, in this new paradigm, knowledge is moving away from being a product, to becoming an ongoing and a rather fast paced process of inquiry inviting participation, interaction, and ongoing evaluation.

What this means is not that expertise will become obsolete, but rather that it will adapt from being a relatively closed system to a more open one. Since facts on any subject now likely exist somewhere in the public domain and are being refined and augmented as we speak, in addition to being easy to find and access, the new expert will be the one who does have content-based knowledge as well as good research skills, but who combines them with a skill that is increasingly gaining relevance: that is the monitoring of and bringing together of information from other disciplines and sectors, as needed and as they relate to the project at hand. The new climate of knowledge creation and dissemination demands that experts be able to seek out relevant knowledge from a wide variety of sometimes disparate and seemingly unrelated sources and disciplines, and perceive how parts of new information combine to illustrate a new aspect of a given subject. They thus need to have the ability to place their own specialties into a larger context, interpreting data in a revealing way and fitting them into a larger pattern (also Boyer, pp. 18-19). In a climate where data and opinions abound, knowledge of systems and their functioning become increasingly valuable, which means that synthesis and integration may be at the heart of newly redefined forms of expertise. Through this process of purposeful integration the new experts would also facilitate and organize the process of turning information into knowledge. In a world where we often speak of the overload of information, the ability to sort, select, evaluate, and provide a coherent view is one of the faces of future expertise.

Similarly, the new form of specialization may increasingly become functional specialization, specialization arising from a close, purposeful and detailed engagement with a changing subject matter upon which the expert would bring to bear all of her or his tacit forms of expertise related to the successful performance of cognitive tasks. In this new environment, experts will be more likely to enter into collaborative relationships with non-experts, and to engage in public discourse as their findings will be placed within a larger context, relevant to a broader spectrum of people, not just a small group of other experts.

The 19 chapters in the present volume address the changes in the production and definition of knowledge powered by digital technologies and the direction of future knowledge creation and dissemination. They investigate the implications that the emergence and increasing availability of user-generated online content enabled through the rise of Web 2.0 technologies and its associated applications have for the notions of expert and expertise, now and in the future. The aim of the volume is not to suggest that the issues here considered are comprehensive and cover all possible areas of inquiry; rather, it is to begin a conversation on the issue of how expertise is being redefined, and lay some of the groundwork for future consideration of this important topic.

The authors of the chapters bring to the discussion a unique international blend of perspectives on the issue of expertise. Their backgrounds vary greatly, from philosophy, archival studies, and communication and media studies, to library science, business management, research science, as well as those who are knowledgeable field practitioners. The chapters reflect both qualitative and quantitative approaches in addressing the topic. To the extent that the authors' approach to the subject matter is informed by their diverse disciplinary backgrounds, the essays in the collection approach the subject in an interdisciplinary

way. At the same time, however, the collective outcome of their contributions as well as the approach of many of individual contributions can more accurately be described as transdisciplinary in orientation.

Transdisciplinary research tries to overcome the mismatch between knowledge production in academia and demands for knowledge to contribute to real-world engagement, and participatory constructive problem solving with importance to real social issues in a way that destabilizes disciplinary boundaries and responds to the needs of the knowledge society in the 21st century (Hirsch Hadorn et.al., 2008). Thus many authors in this volume explicitly engage not only with academic sources but also with materials from the popular press and their own experience in an attempt to investigate the subject of expertise in a context wider than academia. Others base their findings on interviews with field practitioners as well as personal experiences with the issues they analyze. And while the chapters look at the issue of changing expertise with respect to many different issues and contexts, there is a thread common to all. All authors are in agreement that there are changes in the nature of expertise brought about by recent technological developments; that our cultural expectations from experts and expertise are changing; and that forms of "collective," "distributed," or "interactional" expertise are becoming a reality in many professional arenas.

Although there are conceptual overlaps among many of the chapters, based on their dominant context of inquiry, the volume is divided into 4 sections. The 4 chapters in Section 1 provide a broad theoretical framework against which to explore expertise and the changing nature of knowledge creation and dissemination in the context of social software applications and the Web 2.0 environment. In "Collective Narrative Expertise and the Narbs of Social Media," Ananda Mitra engages the fundamental epistemological question, *how do we know what we know?* and locates some of the answers in theories of narrative. More specifically, his chapter proposes that social software applications and social media in general, offer opportunities for unique forms of narration that utilizes *narbs,* a term he coins to describe narrative bits that collectively could and do sometimes form into a grand narrative about a particular issue and where expertise is located in the collective. The chapter offers a lexicon for categorizing narbs and provides an analytical framework for examining them. Mitra demonstrates that since as users we live at the confluence of the real and virtual, we are immersed in different knowledge paradigms requiring different and emergent expertise of narrative construction and interpretation.

In "Wikipedia's Success and the Rise of the Amateur Expert," Christopher Sweet adopts a conceptual approach to the investigation of Wikipedia, whose short but successful history encapsulates many of the benefits and some of the drawbacks of Web 2.0 technologies, as well as the changing attitudes toward expertise and knowledge creation in the context of encyclopedic knowledge. The chapter examines some of the empirical research regarding Wikipedia's accuracy and reliability. It also discusses the issue of who creates knowledge on Wikipedia, the major problems associated with this online encyclopedia, as well as the implications for objectivity, open source scholarship and the rise of the amateur expert.

In "Understanding and Evaluating Source Expertise in an Evolving Media Environment," Rebekah A. Pure, Alexander R. Markov, J. Michael Mangus, Miriam J. Metzger, Andrew J. Flanagin, and Ethan H. Hartsell, provide a conceptual framework for examining the origin of information created through social software applications, where the quality and veracity of that information is sometimes unclear. The authors contend that under conditions where knowledge is diffused among many individuals and depends on a situational understanding, it is often the case that the most reliable information is not found in a traditional source, but rather from a diversity of individuals lacking the traditional markers of expertise. They propose new forms of expertise rooted in the experience of individuals rather than based on their formal credentials, and put forward several approaches to judging and conceptualizing expertise that attempt to address the challenges and opportunities presented Web 2.0 technologies.

In the final chapter of Section 1, "Connection, Fragmentation, and Intentionality: Social Software and the Changing Nature of Expertise, "Christopher Watts examines the philosophies underlying social software design, arguing that they facilitate an environment where it is data itself, rather than people, that makes connections across other data and assumes a theoretical primacy. Watts identifies features in the current set of social software applications and the forms of collective intelligence they encourage that tend to fragment and decontextualize information in a way that undermine intentionality, weakening the connection between the individual and the content he or she creates. Watts examines the way in which social software designs affect human interaction and the relationship to knowledge and its production and consumption, and advocates a human-centered technology design, reminding that the relationship between information and knowledge is very complex. The chapter also reimagines expertise as not being replaced by new models of knowledge creation and dissemination but complemented and enhanced by them.

The 6 chapters that make up Section 2 of the collection deal with changing expert environments in the university and in the areas of research and scholarship. The opening chapter, "Should we Take Disintermediation in Higher Education Seriously? Expertise, Knowledge Brokering, and Knowledge Translation in the Age of Disintermediation," by Carlos A. Scolari, Cristobal Cobo Romani, and Hugo Pardo Kuklinski, identifies knowledge production and knowledge distribution as the two areas of academic work that have been affected the most by the new models of information exchange and knowledge sharing, and that are challenging traditional academic practice and the role of experts in education. The authors analyze the appearance of disintermediation practices in higher education, defining the term to mean "cutting out the middleman," a process that threatens to make highly specialized professionals obsolete. The main objective of the chapter is to explore how disintermediation is reshaping the role of faculty and administrative mechanisms that support higher education in the 21st century. The authors propose knowledge brokering and knowledge translation as categories that can help map a new territory promoting disintermediation, innovation, and openness in higher education settings, and help redefine the traditional role of faculty.

Laurie Craig Phipps, Alyssa Friend Wise, and Cheryl Amundsen, the authors of "The University in Transition: Reconsidering Faculty Roles and Expertise in a Web 2.0 World," explore the potential of Web 2.0 technologies to support dialogue as a core activity for learning in higher education in relation to the changing role of faculty members as their expertise shifts from "teller" to that of a "guide." Conceiving of this metaphor as encompassing activities such as scripting, translating, introducing, and co-exploring, the authors propose technology-based methods of reimagining an educational paradigm in this context, thus responding to the need for collaborative and constructivist practices in teaching and learning that may be enabled by various social software applications. One of this chapter's main informing contexts is the investigation of a transitional period of unprecedented scope and impact affecting the university as an institution as it is repositioning its place in an environment of emerging information and communication technologies, ubiquitous access to information and increased social connectivity.

In "Between Tradition and Web 2.0: E-Laborate as a Social Experiment in Humanities Scholarship," Anne Beaulieu, Karina van Dalen-Oskam, and Joris van Zundert consider the contrast between the values of openness of participation with regard to traditional markers of expertise associated with Web 2.0 technologies, and traditional forms of knowledge creation in academic contexts, where expertise, institutional affiliation, and restriction on access and circulation have been important. Rather than seeing this contrast as a dichotomy, they investigate the rise of hybrid forms of scholarly collaboration and participation that combine the two models. The chapter explores in some detail one such hybrid form, "e-Laborate,"

a virtual research environment targeting both professional scholars and volunteers and offering tools to transcribe, annotate, and publish scholarly editions. By investigating the changes in the digital humanities resulting from the intermediate models between academic exclusiveness and Web 2.0 openness, the authors demonstrate that hybrid forms are powerful agents of change.

In "Google Scholar as the Co-Producer of Scholarly Knowledge," Jose van Dijck argues that Google Scholar, as a search engine but also a social software application whose efficacy depends on the activity of its users, is not a neutral tool for research and a mediator of knowledge, but in fact a significant co-producer of scholarly knowledge. Unlike library search engines, in Google Scholar, sources are ranked on the basis of *popularity* rather than truth-value or relevance, and there is no clear peer-review system or citation analysis system that publicly lays out its ranking principles. The author points out that the engine takes into account not just peer-reviewed scholarly papers, but also working papers, unpublished material, documents in preprint repositories, power-point presentations published on university websites, and lecture notes, and that ranking academic sources through Google Scholar is like ranking celebrities: you get what most people voted for, or rather, clicked for. The chapter considers the implications of this process for the dissemination of scholarly knowledge, the issue of quality and relevance, as well as cultural ideas of expertise, and argues for an enriched kind of information literacy that would include an understanding of the economic, political and socio-cultural dimensions of search engines.

Lilian Landes in "Reviewing in the Age of Web 2.0: What Does Web Culture Have to Offer to Scholarly Communication?" considers the scholarly book review, a genre she argues is inherently suited for online publication due to the benefits of speed, flexibility, and detectability. She investigates the potential of review models based on the concept of Web 2.0 technologies, and discusses in detail one such model, recensio.net, a European project whose aim is to increase the speed with which reviewing happens, facilitate rating and commenting, and enable commenting functions so as to encourage interdisciplinary reviewing of scholarly work even in its pre-publication phases. The chapter explores the concept of collaborative reviewing enabled by the platform recensio.net in light of a general confidence in collective intelligence and the ability of the masses of users with varying degrees of traditional subject expertise to exchange recommendations and provide constructive criticism.

In "The Effect of Social Software on Academic Libraries," Maria Cassella and Licia Calvi present the results of a study conducted in Italian and Dutch academic libraries. The study aims at assessing how libraries reposition themselves and their traditional expertise in a more complex informational context, increasing number of remote users, and widespread adoption of social software applications for professional use. The authors focus on the adoption rate and Facebook use-patterns in academic libraries, as a social tool for attracting new users, for advertising library services and events and for facilitating research. The study also considers the level of expertise of librarians in terms of using Facebook for professional purposes, and identifies some of the challenges associated with the adoption of a social networking tool such as Facebook in this context.

Section 3 of the volume is comprised of 5 chapters that reimagine pedagogical expertise in light of recent technological affordances and examine some of the pros and cons of bringing social software applications into the classroom, as well as the new demands for media literacy. In "Teaching Political Science Students to Find and Evaluate Information in the Social Media Flow," Megan Fitzgibbons argues that the advent of social media applications necessitates new pedagogical approaches in the field of political science, a discipline where both primary and secondary materials are now found in increasing abundance, ranging from politicians tweets to blogs and organizations like Wikileaks, as well as pundits' blogs. She asserts that students of political science must understand how information and knowledge is

produced and disseminated as a part of their study of international power structures, government and local politics, and extend their awareness of the relationship between social media and civic participation. The chapter focuses on ways in which educators in political science can facilitate students' skills for evaluating information that in the flow of social media has become an iterative, constant process, and teach the competencies required for finding information produced through social conduits.

In "The Net Generation and Changes in Knowledge Acquisition," Werner Beuschel traces a methodological approach to knowledge production and acquisition among undergraduates in the context of social software applications. Beginning with the assessment of recent literature that presents various visions about the aptitudes and capabilities of the so-called Net Generation and their strategies for coping with information challenges, Beuschel provides the results of a longitudinal, exploratory study conducted over two years in a German university on what kinds of social media students actually use and in what way. Based on this empirical framework, Beuschel puts forward a tentative model of how students collect, assemble and disseminate knowledge, as well as the changes in expertise acquisition and competency that may be expected in the future.

Mary J. Snyder Broussard, Rebecca A. Wilson, Janet McNeil Hurlbert, and Alison S. Gregory's research in "Faculty and Undergraduate Perceptions of Expertise within Social Media" is based on the results of two surveys administered by the authors to faculty and undergraduate students in the sciences, social sciences, fine arts, and humanities at two small liberal arts institutions. In the context of the new generation of Web applications allowing for user participation, instant collaboration and ongoing revisionism by volunteer experts, one of the surveys assesses how students view these new forms of expertise, how they define expertise in terms of writing college papers, and whether they perceive a difference in the information offered via various social networking sources. The other survey, addressed to faculty members, aimed at identifying faculty views on the new forms of expertise and their suitability for use in research as well as teaching.

Highlighting the pros of using instant text messaging in the composition classroom, in "Textperts: Utilizing Students' Skills in the Teaching of Writing" Abigail Grant identifies text messaging as a unique genre whose character limitations and other physical limitations in some respects make it similar to the writing of poetry or short prose. Considering through a number of examples the pros of implementing text messaging into the composition classroom, Grant argues for the adoption of this form of writing mediated through technology as a way to motivate students to practice and experiment with writing by utilizing a skill and an aptitude for which they may already be considered "experts." The chapter explores the theoretical and practical implementation of this genre into the classroom, including a careful consideration of the potentially negative aspects relating to the adoption of this strategy and tool, as well as a discussion of how text messaging thus employed may provide a useful transition to writing longer genres.

In "Working toward Expert Status: Love to Hear Students Go 'Tweet, Tweet, Tweet," Tamara Girardi sees Twitter as a type of classroom of collective intelligence that represents an epistemological shift in which the "experts" in the exchange are not traditional teachers. In the chapter, she argues that this social software application may be used as an academic tool of instruction that offers students the opportunity to engage in a discourse related to their subject of study beyond the traditional classroom, and to acquire the status of "expert" by gaining confidence in their knowledge and gaining influence they may not have gained in the narrower context of the traditional classroom. The chapter considers issues such as knowledge sharing, and building/maintaining a reputation as an expert through consideration of audience. The author presents an overview of the use of Twitter in academic contexts, and situates its potential for instruction in its capacity to act as an outlet for a more dynamic classroom discussion,

encouraging educators to consider in more innovative ways how the social and cultural contexts of Twitter may suit their instructional goals.

The final section of the collection, Section 4, presents 4 case studies of collective or decentralized expertise at work in the context of ICT, technical support community forums, a music archive, and the creation of a 3D movie. In "Professional ICT Knowledge, Epistemic Standards, and Social Epistemology," Frederik Truyen and Filip Beukens demonstrate within a philosophical framework that the knowledge required to perform professional tasks related to expertise in the ICT profession has become a dynamic network of insights spread over a network of sources and other experts. They argue that, on the one hand, an ICT manager increasingly needs to rely on organizational procedures and professional standards to assess that he has the right people with the right competencies for the job. On the other hand, the ICT expert increasingly relies on pools of collective intelligence in the ICT area to establish and maintain his expertise. The chapter shows how ICT professionals perform their work as experts in the context of the ICT community's innovative ways of sharing knowledge collaboratively, using social software and other technologies.

Steven Ovadia's chapter "Decentralized Expertise: The Evolution of Community Forums in Technical Support"examines open source applications such as community forums in technical support, and their implications for the changing nature of expertise. It investigates Linux support forums to illustrate the decentralized nature of authority structures within them, contrasting them to the more hierarchical technical support systems seen in closed-source operating systems, like Microsoft's Windows and Apple's OS X. The chapter demonstrates that users now have access to technical support communities beyond whatever is offered by the entities responsible for the production of the operating systems and that expertise and authority now rest within these communities.

Emily Clark considers the new possibilities offered by newly developed Web 2.0 content management software for contextualizing archival objects though the contribution of many users, rather than a few established experts in her "Interaction and Expertise in an Appalachian Music Archive." Clark documents the development of her MSIS thesis project based on designing a Web exhibit for a collection of North Carolina folk songs—the Bascom Lamar Lunsford Collection—that utilizes the user-contribution capabilities afforded by the new technologies with the purpose of reflecting the populist values of the North Carolina musical tradition. Clark shows the ways in which the Lunsford Collection Web exhibit not only displays the songs collected over the course of the musician's life, but relies on user-contribution to contextualize the songs as part of a living and still evolving populist tradition. She argues that the site facilitates the creation of community expertise that calls into question the role of the expert in a traditional archive.

Last but not least, in "Rethinking Expertise in the Web 2.0 Era: Lessons Learned from Project Durian," Ilias Karasavvidis focuses on project Durian, and the creation of Sintel, a 3D open content movie, to address the new notions and practices of expertise defined by new technologies. Karasavvidis analyses all instances where the Durian artistic team enlisted community feedback and support. He draws on multiple sources to discuss how Web 2.0 technologies facilitate a spatial and temporal distribution of expertise, and the consequent pooling of expertise from among interested members of the community, many of whom have no formal kind of expertise related to this work. The chapter shows that the pooling of expertise from experts in many different domains also facilitated interdisciplinary and transdisciplinary types of collaboration that resulted in questioning and re-negotiating expertise.

In its scope and orientation, this volume will be of interest not only to members of the international academic community, but also to professionals, administrators, and managers in many fields. One of the

questions that remain to be answered by future research is whether emergent paradigms in relation to expertise can be effectively described or assessed based on criteria that predate them. The point relevant to expertise in general is that sometimes the expert outlook can become a disadvantage, "preventing the very people who have the most at stake—the experts themselves—from understanding major changes in the structure of their professions" (Shirkey, 2008, p. 58). In that sense, the authors in this collection stand at the forefront of a new kind of thinking about expertise, one that is based on understanding of the major changes in many professions and important areas of our social and cultural lives, and a willingness to examine what those changes may mean for the future. The collection thus hopes to provide a starting point for further inquiries into this subject.

Tatjana Takševa
Saint Mary's University, Canada

REFERENCES

Anders Ericsson, K. (2006). An introduction to the Cambridge handbook of expertise and expert performance: Its development, organization and content. In N. Charness, R. R. Hoffman, & P. Feltovich (Eds.), *Cambridge handbook of expertise and expert performance*. Cambridge, UK: The Cambridge University Press. Retrieved from: http://lib.mylibrary.com.library.smu.ca:2048?ID=56761

Anderson, P. (1972). More is different. *Science*, *177*, 393–396. doi:10.1126/science.177.4047.393

Babu, M. (2007). The changing paradigms of newspaper publishing. *Ubiquity, 8*(1). Retrieved from http://www.acm.org/ubiquity/views/v8i31_mohan.html

Boyer, E. (1990). *Scholarship reconsidered: Priorities of the professoriate. Report for the Carnegie Foundation for the Advancement of Teaching*. San Francisco, CA: Jossey-Bass Publishers.

Castells, M. (2004). *Rise of the network society*. Blackwell Publishing.

Gillmor, D. (2009). Introduction: Toward a (new) media literacy in a media saturated world. In Papacharissi, Z. (Ed.), *Journalism and citizenship: New agendas in communication* (pp. 1–11). New York, NY: Routledge.

Hirsch Hadorn, G., Hoffmann-Riem, H., Biber-Klemm, S., Grossenbacher-Mansuy, W., Joye, D., & Pohl, C. … Zemp, E. (Eds.). (2008). *Handbook of transdisciplinary research*. Springer Science: Business Media B. V.

Jaschick, S. (2012, January 9). Dissing the dissertation. *Inside Higher Education*. Retrieved from http://www.insidehighered.com/news/2012/01/09/mla-considers-radical-changes-dissertation

Knight, C. (April 14, 2011). Top 7 social media sites, ranked by professors: Special report. *Education Tech News*. Retrieved from www.educationtechnews.com

Laughlin, R. B., & Pines, D. (2000). The theory of everything. *Proceedings of the National Academy of Sciences of the United States of America*, *97*, 28–31. doi:10.1073/pnas.97.1.28

Lemann, N. (2006, August 7, 14). Amateur hour: Journalism without journalism. *The New Yorker*.

Parikh, R. (2002). Social software. *Synthese*, *132*, 187–211. doi:10.1023/A:1020391420768

Reynolds, G. (2006). *The Army of Davids: How markets and technology empower ordinary people to beat big media, big government and other Goliaths*. Nelson.

Sanger, L. (2007). Who says we know? On the new politics of knowledge. *Edge: The Third Culture.* Retrieved from http://www.edge.org/3rd_culture/sanger07/sanger07_index.html

Sanger, L. (2009). The fate of expertise after Wikipedia. *Episteme*, 52–69. doi:10.3366/E1742360008000543

Shirkey, C. (2008). *Here comes everybody: The power of organizing without organizations*. New York, NY: The Penguin Press.

Singer, J. (2009). The role and regulations for technology in social work practice and e-therapy: Social work 2.0. In Roberts, R. A. (Ed.), *Social workers´ desk reference* (2nd ed.). New York, NY: Oxford University Press.

Takseva Chorney, T. (2010). Knowledge and expertise redefined: *Consensus sapientia* in the digital era and reframing the modalities of teaching and learning. *TRANS: Internet Journal for Cultural Studies, 17*(7). Retrieved from http://www.inst.at/trans/17Nr/7-9/7-9_chorney7.htm

Tapscott, D., & Williams, A. D. (2007). *Wikinomics: How mass collaboration changes everything*. New York, NY: Penguin.