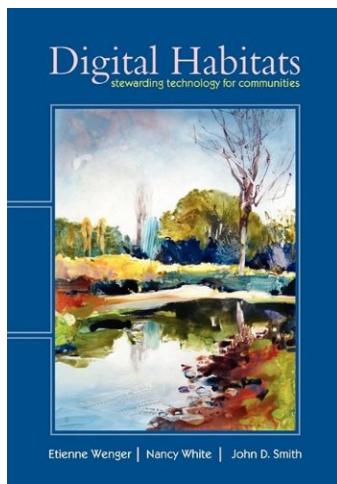


## Book Reviews

### A Review of *Digital Habitats: Stewarding Technologies for Communities*

written by Etienne Wenger, Nancy White and John D. Smith  
reviewed by Alice MacGillivray  
published by CPsquare  
ISBN 9780982503607 (2009)



**D***igital Habitats* is the fourth book authored or coauthored by Etienne Wenger about communities of practice. Communities of practice (CoP) are self-organizing groups with blurred boundaries. Members who are passionate about a topic or field interact so they can learn from others and improve their work.

*Digital Habitats* is the first published, collaborative effort by Wenger, John D. Smith and Nancy White. It also marks CPsquare's entry into book publishing (Wenger has also published through Cambridge University Press). CPsquare ([www.CPsquare.org](http://www.CPsquare.org)) is a community in which people explore their work with communities of practice. The name "CPsquare" reflects its meta-community nature and the metaphor of a town square in which people can interact.

Before reviewing *Digital Habitats*, I want to acknowledge that I know the authors and am a member of CPsquare. They are long-term collaborators who bring different backgrounds and perspectives. As I read the book, I hear their distinctive voices as well as syntheses of their voices. Etienne brings a deep understanding of social learning theories and their relationships to communities of practice. The roots of his expertise include a degree in Artificial Intelligence from the university of Geneva and a decade with the Institute for Research on Learning in Palo Alto. Nancy brings a commitment to social justice and an action-oriented passion for helping groups, often through her facilitation of online interactions. In recent years, her work has become much more international. John adds long-term experience with both technical and social elements of community support with CPsquare, the University of Colorado and other forums. His degree in planning and architecture makes him sensitive to habitat in all its different meanings and influences his appreciation of good graphic representation of concepts. John grew up in Puerto Rico and now lives in Oregon and believes his Buddhist/Puerto Rican background has enhanced his cross-cultural sensitivities.

*Digital Habitats* focuses on the intersection of learning in communities and supportive technologies. It is neither an academic book, nor a consumer's guide to the rapidly changing marketplace of platforms and tools. It subtly draws on scholarly thinking to support practitioners.

*Technology stewardship* is a relatively new phrase, and the authors have set out to develop a new literacy for this role. An October 2009 Google search for "technology stewardship" revealed about 104,000 hits; it will be interesting to monitor the uptake. The authors produced this book because of the

changing landscape of community work, given the growing potential of social media and other technologies. It is positioned as a “guide for understanding how technology can help a community do *what it wants to do*” <http://technologyforcommunities.com/about-the-book/> (emphasis added).

The following review has two components: an overview of the book followed by insights through the lens of complexity thinking.

### An Overview of Digital Habitats

After telling the story of how the book came to be, the authors present *Digital Habitats* in four parts titled Introduction, Literacy, Practice and Future. This framework is introduced in an intriguing reader’s guide. Readers are encouraged to think about whether they identify as a “deep diver,” “attentive practitioner” or “just do it-er” and whether their orientation might shift in the future. Of course each author spans these categories, but I cannot help but see these categories as representations of the three authors’ unique strengths. The reader’s guide suggests approaches for each style. With my deep diver identity, the authors directed me to Chapter 11 (among other places) where I savored questions such as:

*...the hypertext nature of the web makes it possible for communities to create entire resource collections through links and tags. How does this affect the community’s sense of ownership of its ‘repository’ (p.187).*

As an attentive practitioner, I agreed that reflections on polarities—such as the tensions between participation and reification—need constant attention. And as an abstract, random thinker, I valued recognition by the authors that there are many paths available for exploration of *Digital Habitats*.

The *Introduction* begins with a glimpse of theory, including the domain (topic focus), practice and community elements of a community. The authors were respectful of the diverse expertise that readers might bring; this glimpse of theory is only one of many examples. One reader might have years of experi-

ence building platforms but the domain-practice-community framework might be entirely new. Another reader might be immersed in the social and cultural aspects of communities and new to the idea of multidirectional influences amongst groups of people and the tools they use. I wonder if the authors struggled with the boundaries of the theory section. Theory is subtly interwoven with stories. This may be ideal for some readers, however, the academically-oriented sceptic would have no idea how much thinking and theory sits behind the book. I also wonder how CoP novices will react to the case study approach used to present elements of theory. The case chosen is a community of patients dealing with rare blood disorders (referred to as MPD). It is a fascinating case, but part of the fascination comes from its being an anomaly in many respects. Would novice readers react differently if they saw cases more typical of private or public sectors (such as automotive engineers or policy analysts)?

The *Literacy* section provides an aerial view of the landscape, exploring different paradigms and ways of understanding activities, tools and their relationships. It is constructed in such a way that one can learn from reading it from beginning to end, or find food for thought by skimming any page. As one of many examples, the concept of habitat integration is approached through platforms, interoperability or features, tools and practice.

The *Practice* section is grounded through topics such as strategies for acquiring technology and when to foreground or background stewardship activities. It culminates in an Action Notebook, which takes sophisticated ideas presented in chapters 1-9 and presents them in a format that looks deceptively like a simple checklist. This notebook is elegant without being simplistic. It can be thought of as the “now what” of the book. I found elements of the workbook repetitive when applying it to a project of my own, but this might not be the true for work with some large communities. Sidebars punctuate the Literacy and Practice sections by illustrating concepts with recent, real-life stories.

The *Future* section includes chapters about trends (A More Distributed Future) and

a learning agenda. Both include insightful perspectives. Personally, I find the distributed future chapter too cautious. The authors had just conveyed insights about the impacts of recent changes, and I wanted them to zoom out to a more macro view of what might happen in our shrinking world—for better or worse—and why we should care. Instead, this chapter felt more like a summary of what one might read in twitter, blogs or the technology columns in newspapers about what is happening now.

The transition to the final learning agenda chapter is intriguing as well. The voice shifts from the dispensing of expertise to the seeking of expertise. As I re-read this chapter I saw it as a call to action. Like the previous chapter, it is cautious. It is more of an intellectual build-it-and-they-will-come than a celebration of recent innovative work, an explicit invitation, an argument for the importance of new connections or a warning of what will happen if we do not accelerate and share learning in work with digital habitats.

*Digital Habitats* includes a Table of Contents, Index, (no reference list) and a Glossary. The glossary provides plain language descriptions of terms ranging from the technical (e.g., AJAX, VoIP) through the tech-social (e.g., Avatar, Blogosphere, Folksonomy) to the current vernacular (Buddy lists, Smart mobs).

### Digital Habitats through a Complexity Lens

I find it curious that Wenger, White and Smith work with complex systems but do not explicitly talk about complexity thinking. Despite their avoidance of the field's language, I believe their work is steeped in complexity.

From a complexity perspective, I will use eight concepts as lenses:

1. Diversity;
2. Distributed memory;
3. Open systems;
4. Multiple interactions and relationships amongst entities;
5. Unpredictability and non-linearity;
6. Emergence and adaptation;
7. Boundaries, and;
8. Fitness landscapes.

### Diversity

Diversity is an important concept in complexity theory because of the inherent interactions and options. Organizational goals and practices such as alignment and efficiency strip away redundancy and diversity, which might be important as circumstances change.

The cover of *Digital Habitats* provides the first hint that the authors appreciate diversity. Not only does a picture of natural habitats reinforce the metaphor; the habitats are presented through a painting by Randall David Tipton. Tipton uses digital media to share insights about painting at <http://randalldavidtipton.blogspot.com/>.

The authors themselves bring diversity: “Working together for the last three years [often from a distance as they live in different U.S. states] the three of us have become a little community of practice, bringing together different backgrounds, styles, and connections to our collaboration. The book’s reviewers and persons acknowledged also come from different parts of the world and different walks of life” (p.xii).

The interweaving of content about technologies, tools, relationships, learning, and business practices will diversify the interests and practices of curious novices. Although academic terms are rarely used, the authors imply that thoughtful practitioners benefit from skills with reflexivity, ethnography, hermeneutics and action research.

The authors directly address diversity when writing about identity. They emphasize—in the book and their practices—that learning within community does not “imply, require or produce homogeneity” (p.58). Perhaps because of Wenger’s behavioral learning experiences in the Institute for Research on Learning, they position disagreements as community resources.

### Distributed Memory

A complex system has a memory, which is distributed throughout the system and affects its behavior (Cilliers, 2005). The authors could have explored the significant implications of this attribute in more depth. For example, do leaders recognize the importance of learning

about distributed memory in communities when HR departments focus almost exclusively on individuals in their hiring, development and exit strategies? The authors explore the edges of distributed memory from several angles including configurations of technologies to sustain habitats, the interplay of participation and reification, the negotiation of meaning and questions such as “How does your community need to interact with other communities?” (p. 150).

### Open Systems

Some traditional management practices have been aimed at creating the illusion of organizations as closed systems. Communities of practice can be seen as mitigation strategies, connecting practitioners across branches, divisions, departments, organizations and continents. Here, the open nature of the systems is more obvious. *Digital Habitats* implicitly deals with this reality in many ways as illustrated by the MPD patient community presented in Chapter 1.

The *domain*—or content focus—boundary is permeable, in that members learn about and debate potential treatments from many sources including physicians trained in Western medicine and persons focusing on natural remedies. The community also allows information about being a patient to flow out into the public sphere, to inform medical professionals, family members and so on.

In the shared *practice* of living with MPD, members bring stories from their local contexts into this international community so they can compare experiences with everything from symptoms to interactions with haematologists. Their online site also provides links to journals, news and opinions from outside the community.

The *community* can enable a flow of motivation, connection and energy across its boundaries. Some of this flow may be almost invisible. For example, researchers—who may never post—learn about patient perspectives, which can bring new confidence into their work. As another illustration, the community coordinator received a note that read:

*I was subscribed for 7 years and we read the list everyday with anticipation, but I never posted. My mother and I were helped to an incredible degree by the information we received from your list. Thank you (p. 9).*

Such feedback not only illustrates the flow of energy out of the community, but also inspires the coordinator to continue his efforts within the community.

### Multiple Interactions and Relationships Amongst Entities

These concepts from complexity thinking are well developed in *Digital Habitats*. The book includes big picture topics such as social media and new modes of engagement for interacting and publishing. Technology stewards are encouraged to study the degree to which members value relationship-building within and across community boundaries. Technologies are linked to activities such as expression of personal identity, formation of sub-groups and management of membership in multiple communities.

### Unpredictability and Non-linearity

These themes are dealt with implicitly through content, the ways in which ideas are presented, and acknowledgement of rapid change.

In the preface, the authors describe the Genesis of the book as a report about community of practice tools, written by Wenger for the U.S. Government Council of CIOs in 2000. Although there has been demand for an update of the report, the authors soon realized that the environment and their thinking had evolved dramatically throughout the last decade. So their focus on specific technologies waned, while exploration of the broader, complex landscape of technologies and communities demanded more time, reflection and effort, finally emerging as a book.

One example of non-linearity was the impact of 9/11 on the CPsquare community, in which members valued face-to-face meetings. Travel restrictions were the catalyst for developing better online options for the community, and the authors drew lessons from that gradual transition.

The complexities of work with knowledge have been compared to Buddhist practices of observation without judgement and the ability to hold two completely different ideas simultaneously (MacGillivray quoting Levesque, p. 197). Perhaps John's practice of Buddhism influences the ways in which different concepts are often presented in parallel to prepare readers for unpredictability. For example, technology increases complexity by enabling multi-membership, and can help to manage complexity with tools such as graphic representations of the health of the community (p. 59).

The authors acknowledge the uncertainties of the future, citing areas such as virtual presence, in which we are only scratching the surface of knowledge and experience.

### **Emergence and Adaptation**

Although "emergence" is not included in the index or glossary, it is a persistent undercurrent in *Digital Habitats*. In fact, it is positioned as the *raison d'être* for the book in Chapter 3, which begins:

*Emerging from the convergence of technology and community is a new role, which we call technology stewardship. We introduce the role and describe it in this chapter. This new role implies new functions, practices and identity. The role is important in helping communities construct and live in suitable digital habitats (p. 23).*

Knowledge management practitioners often speak about the tensions between their efforts and the norms and practices of IT departments. This requires constant attention to emergence and adaptation if one is working within a firm or department. The authors deal with this theme in several ways. For example, they acknowledge that there will be situations in which technology choices will be prescribed and limited, and to adapt to such constraints, ensuring communities get the most out of the endorsed tools. For more fluid contexts, they provide practical guidelines for experimentation and adaptation, implying a classic action research cycle of observation, action and re-

flective learning. I hope that some "classically trained" IT professionals will learn from the authors' approaches and help their profession find ways of bridging potential differences.

### **Boundaries**

The entire book is about the expansion of boundaries. Practitioners who work with knowledge management and communities of practice often position themselves either as experts in the information technology side or the human/social side of community work. Several years ago, all three authors and I attended a face-to-face event in Silicon Valley about work with communities of practice. It was a small gathering, by invitation only. The concept was to bring together deep expertise from this full spectrum of expertise and learn from each other. The idea was brilliant, but even in this seemingly optimal setting, tensions emerged. I cannot help but imagine this book as a way of birthing what might have been conceived during that gathering.

At a more micro level, the book includes insights about boundaries. For example, they use a figure to map categories of technologies on a landscape with horizontal and vertical axes representing asynchronous through synchronous and participation through reification. They point out that the hybrid nature of blogs and wikis is reflected in their positioning between participation and reification. This statement also reflects their understanding of the blogosphere as a complex system of connections and conversations, rather than blogs as modern-day soapboxes.

### **Fitness Landscapes**

The biological concept of a fitness landscape (which maps the likelihood of reproductive success) has been used in complexity thinking for application to business. Peaks are areas of high fitness and adaptation to the environment. Fitness landscape ideas have been adapted for related concepts, such as knowledge landscapes, in which individuals or groups explore the slopes and peaks of surrounding knowledge (Roos & Oliver, 1999).

The fitness landscape concept could be considered the "so what" element of *Digital*

*Habitats*. The fitness landscape concept may not be adequately developed for readers with little exposure to the concepts of informal learning, social learning, constructivism, the knowledge economy, knowledge as a key asset, or resilience. They might ponder questions such as: Why develop the multifaceted skills of a technology steward when the field is not yet recognized and when the book talks about things like the amount of volunteer work that may be required? Why not stay in the enterprise software business? That said, there are implicit links to fitness landscapes and positive outcomes through examples of patient health and enhanced connections amongst classroom teachers.

### Summary

The authors have produced a pioneering exploration of technology and community intersections. The book is much like an ecotone in nature: a place in which communities intersect and where richness at the edge makes the whole greater than the sum of the parts. It's a niche that may not appeal to linear thinkers, but hopefully they will connect with those who tolerate and thrive on ambiguity.

One potential shortcoming of the book is the paucity of references to deeper, related works. Another is the lack of selling to unconverted or novice readers, which belies the passion each author displays in their practice.

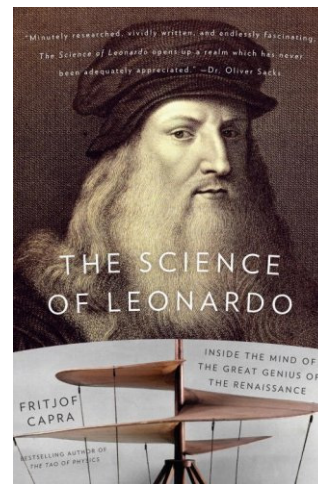
Its greatest strengths—in my view—are its relevance, timeliness, likely durability, and the art with which they have packaged complex ideas in ways that seem simple and immediately applicable.

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**A Review of *The Science of Leonardo: Inside the Mind of the Great Genius of the Renaissance***  
 written by Fritjof Capra  
 reviewed by Evangelos Katsamakas  
 published by Anchor Books  
 ISBN 9781400078837 (2007)



The contemporary growth of complexity and computational social science may call for a systematic look into the historical roots of systems thinking and complexity. Capra's book on the life and science of Leonardo da Vinci provides such a historical exploration.

The book consists of two tightly coupled parts, the first focusing on the life and the second on the science of Leonardo.

Leonardo was the prototypical 'Renaissance man' or 'Universal man' with innovative contributions to science, art and engineering that reflect a great diversity of knowledge, interests and capabilities. Capra argues that Leonardo da Vinci was a systemic thinker and a complexity theorist, aware of the interrelatedness of things, and interested in discovering fundamental patterns (archetypes) across diverse phenomena. As Leonardo wrote in one of his famous notebooks "for a man who knows how, it is easy to become universal..." (p. 34). He was "deeply aware of the fundamental in-

terconnectedness of all phenomena and of the interdependence and mutual generation of all parts of an organic whole” (p. 168).

Leonardo’s life and thought are dominated by synthesis of art and science. The historical context of his life was characterized by creative turbulence: fierce conflicts among wealthy Italian renaissance cities that kept brilliant engineers like Leonardo busy in defensive and offensive military projects, geographical exploration, discovery of the printing press, and rediscovery of the classics and humanism, all achievements celebrating human capabilities.

Capra suggests that Leonardo developed through his studies the approach to knowledge that later became known as the scientific method. Leonardo “always seemed to be more interested in the process of exploration than in the completed work or final results” (p. 165). Capra goes as far as claiming that Leonardo is “the true founder of modern science” (p. 6). To Leonardo, contrary to his contemporaries who resorted blindly to authority, the root of science was first *experience*, through detailed observation and experiment, and second *explanation*. His scientific explorations involved the flow of water and rivers (fluid dynamics), the nature of light, the functioning of the eye and other elaborate anatomical drawings, and many other natural phenomena. Mostly influenced by Aristotle and Euclidean geometry, his lucid scientific mind was complemented by powerful drawing skills. He used drawings as conceptual models, since the math of his time were not sufficient to describe complex dynamic phenomena, like fluid dynamics and turbulence, that attracted Leonardo’s intellectual curiosity. His science was uniquely dynamic portraying “a world in development and flux, in which all configurations and forms are merely stages in a continual process of transformation” (p. 172).

Leonardo believed that soul (mind) and body formed one indivisible whole in contrast to the mind-body divide introduced later by Rene Descartes. He did not pursue science “to dominate nature, as Francis Bacon would advocate a century later” (p. 11), but he was always amazed by nature’s ingenuity “with a

deep awareness of ecology and systems thinking” (p. 12). As Capra emphasizes, this insight is indispensable today, because “as our century unfolds, it is becoming increasingly apparent that the major problems of our time—whether economic, environmental, technological, social or political—are systemic problems...” (p. 264).

This delightful book aims at establishing Leonardo as a father of complexity and system science, through recent findings based on the analysis of Leonardo’s Notebooks and a rather novel interpretation of Leonardo’s life and scientific exploration. This interpretation might be biased by Capra’s own philosophical and scientific positions, but it still has significant merit as an exploratory step toward the historical roots of complexity and system sciences. This type of exploration could ultimately provide useful epistemological and ontological insights, informing and shaping the future trajectory of system sciences.

After Leonardo’s death, his Notebooks, consisting of 6,000 pages of notes and 100,000 drawings, were scattered all over Europe and remained unexplored. Capra keeps wondering that western science could have followed a more systemic approach, if Leonardo’s notebooks were published and studied at that time. Paradoxically, attempting to predict an alternative scientific history might be less safe than predicting that the future of science, including social science, will be a tribute to Leonardo.