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distinct field, with its own history and development and its own seminal texts and paradigms. But in her effort to establish this stable and coherent structure, Svenonius fails to do justice to the various pressures being brought to bear on it.

One wonders, for instance, how this detailed schema of entities, languages and principles interacts with our current digital and networked environment. Svenonius, in her afterword, takes a largely optimistic approach, seeing the "juggernaut" advance of automation as a source of potential solutions to current conceptual and logistical problems in bibliographic control (p. 196-197). This confident outlook rests, I suspect, on an assumption that the theoretical and ontological scheme she has presented is media-neutral, and therefore reasonably secure. This confidence may not be warranted: expanding scholarship in the history of the book has made us freshly aware of how firmly our concepts of bibliography are grounded in the technologies and social implications of the printing press.

Similarly, Svenonius comes down firmly on the side of universal bibliographic control as an ideal, arguing that "the era of local in-house thesauri . . . is likely to wane as bibliographical control expands to achieve interdisciplinarity and universality" (p. 194). Implicit in this statement is the assumption that interdisciplinary communication is dependent on universality, an assumption which current research in knowledge organization calls into question. How will this theoretical structure stand up to new trends towards community-based information systems, culture-based systems, and information ecologies which derive their strength from a specific sense of place and a specific set of needs and values?

If voices within the knowledge organization research community ask tough questions, the voices in other disciplines will ask even tougher ones. Once you see bibliographic control arrayed in all its assumptions, objectives and ontologies, the wall between information science and all the other disciplines that strive to organize knowledge becomes transparent. Theories of bibliographic representation cry out for closer connections with similar theories in semiotics and anthropology. The discussion of texts, works and categories deserves a connection with treatments of text and genre in the humanities. The use of language concepts in bibliographic control leads inevitably to a comparison with the effect of linguistics on philosophy, and on literary and cultural theory. In this sense, Svenonius inspires a dissatisfaction of

which she should be proud: her work has awakened us to a sense of all that still needs to be done.

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BOWKER, Geoffrey C., STAR, Susan Leigh. **Sorting Things Out: Classification and Its Consequences**. Cambridge, MA : MIT Press, 1999. 377 p. ISBN 0-262-52295-0 (pb).

This book is a deeply satisfying and intellectually stimulating discussion of the intersection of classification and human lives – in society, in work, and individually as trekkers on life's journey. The overarching theme is that classification is both material and symbolic (p. 39-40) and each of these has important consequences. Our classifications, at their worst, create torque, a twisting under stress. At their best, they create objects for cooperation across social worlds. The authors explore the many ways in which classifications reach into human endeavor, reflect it, and create the lenses through which we see. The authors ask three questions: 1. What work do classifications and standards do? 2. Who does that work? and 3. What happens to the cases that do not fit?

The book is divided into four sections, each with several chapters. In the first section, "Classification and Large-Scale Infrastructures," the authors present "the story" of the creation and functionality of the International Classification of Diseases (ICD), a classification that has evolved over a century, and that incorporates within its folds the vocabulary of an international community of practice with a stunningly diverse set of values, measures, and agendas. The ICD demonstrates how on the one hand we have a classification in which the "algorithms for codification do not resolve the moral questions involved, though they may obscure them" (p. 24). On the other hand, we have a pragmatic tool that can be used for coordinated work among agencies. The authors explore the practical politics of arriving at categories

This first section is important to the reader in that it lays out the method of inquiry adopted by the authors. It is a structured, polemical approach in which the exemplar (the ICD) serves as a framework for presentation of classification as a pragmatic, co-

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constructed, dynamic infrastructure that can be studied formally for its properties and implications. Each observation of the ICD is linked to the foundational concepts of infrastructures (embeddedness, transparency, reach or scope, and so on). At the same time, important classification constructs such as boundaries, convergence, residual categories, consistency, and warrant, are illustrated by evocative and clear examples from the ICD. The authors bring to bear their own understanding of classifications and classification work, but at the same time they reveal the process by which this understanding has evolved from the examples under study. This combination is very powerful because the reader becomes a participant rather than a passive recipient, accompanying the authors, rather than merely listening to them. Thus, at no time can the reader relax and just absorb. The authors require that we actively follow, think through the offering, and make of it what we will within our own frameworks.

The second section, "Classification and Biography," examines the intersection of classification and individual human lives. Two cases are presented: the case of tuberculosis and the classification of races under apartheid in South Africa. The first case, tuberculosis, narrates the difficulties of human beings coming to terms with a disease that is not easily classified, changes over time, and requires cruel and indeterminate changes in a person's life for extended periods. This chapter explores the tensions, the twists, and the accommodations over time. The second case, apartheid, demonstrates the absurdity of trying to define and classify "pure" types even after it becomes clear that we are all hybrids. More importantly, this case demonstrates the tragic effects on people's lives of policy embedded in faulty infrastructures. In this section, the authors adopt a somewhat different rhetorical style. These chapters are not so much a shared exploration, as they are a deep and rich description, from many angles, of how we sometimes resist, work around, sometimes reluctantly capitulate to or make the best of the classifications that affect our lives.

The third section, "Classification and Work Practice," considers the role of classification as a means of articulating what we actually do and what that means to us as members of a community of practice. Here the authors describe the creation of the Nursing Interventions Classification (NIC), a vocabulary designed to make the "invisible" work of nurses "visible." This classification, like many others, is more complicated than would at first seem to be the case.

For every act of specification and standardization we give up some autonomy. Moreover, there are constraints because this classification is meant to interface with other medical classifications and must serve as a communication medium for both researchers and practitioners, thereby limiting the special or unique perspectives that nurses in any one location may have. As such it embodies the permanent tensions between formal and empirical approaches to classification, local/situated norms *vs.* norms shared across localities. At the same time it is clear that the authors are cheering on this project because it is a "classification for the future" (p. 263). Through such a tool, the nursing profession can reinvent itself and can change the perception of nursing work as "part of the room charge" – work whose traces have in the past been deleted from patients' records as work not valued in its own right.

In the fourth section "The Theory and Practice of Classification," the authors tie together the concepts presented earlier. Themes are revisited: classification is not just in the mind; it is anchored in work and practice. We struggle to find ecological solutions in which "objects can inhabit multiple contexts at once, and have both local and shared meaning," while "people, who live in one community and draw their meanings from people and objects situated there, may communicate with those inhabiting another" (p. 293). This chapter also summarizes the role of technology, politics, and social norms in both shaping and limiting the work of "re-representation".

This is not a one-theme book in which the authors lay out a thesis in the first chapter, summarize it in the last chapter, and pepper the intervening chapters with anecdotes and examples. This is, instead, a subtly structured work in which the authors build the narrative and the argument along several dimensions simultaneously. First are the dimensions of scale: institutional infrastructures, personal biographies, communities of practice. Second are the ways in which classification affects and is affected by each of these. Third, each chapter introduces concepts and references of its own, each one particular to the examples presented or emerging from them. Nothing is just tacked on; no example is presented just for its own sake. The presentation flows, with many tributaries and many diversions. Each chapter is a work that could stand alone, but that is also important to the integrity of the whole.

The authors do not always hide their own personal views with respect to, say, contempt for apartheid or

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admiring the efforts of the designers of the NIC, but even at those points when their views are manifest, the presentation is overall balanced and focuses on the foundational issues. The result is a work that could have been chilly and detached in a scholarly way but is, instead, engaging. In almost every chapter one has the urge to argue some fine points of whether, for instance, naming is less information-laden than are fully articulated classifications, but this is evidence of the reader's mind having been stimulated, and not a sign of flaws.

This work is not an "easy read." The authors assume a familiarity with philosophy, especially the philosophy of science. In addition they draw on the work of many social scientists from a wide range of fields, notably, anthropology, sociology of work, cognitive psychology, librarianship, information science, public policy, medical informatics, and politics. They write in an elegant, somewhat formal prose that assumes the reader has a broad, eclectic education. The style is frequently metaphorical and sometimes downright poetic. Each sentence, and even the parenthetical modifiers, are packed with complex, multi-layered ideas, and the reader must be always in "parallel thinking" mode – not rushing to closure, not necessarily going from A to B in a straight line. The closing sentence is: "The only good classification is a living classification" (p. 326). Following their own ecological approach, the authors do not prescribe how to classify. Their book is not a manual. Their guidelines are guidelines for reflection. Their motto seems to be, "Think about classification deeply and understand it, but, having said that, live your life, with its ambiguities and challenges, and draw from that."

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GHOSH, S.B, and SATPATHY, J.N. eds. **Subject indexing systems : concepts, methods and techniques.** Calcutta : Indian Association of Special Libraries and Information Centres (IASLIC), 1998. iii, 397 p.

The Indian Association of Special Libraries and Information Centres (IASLIC), founded in 1955, is the Indian counterpart of ASLIB in the UK and of the SLA in the United States. Though its membership is small, it has been steadfastly active as compared to the stop-start history of other library organisations in India. Apart from organizing annual conferences and seminars, it publishes occasional monographs, brings out its quarterly *IASLIC Bulletin* and a monthly *Newsletter*, and does appreciable work for the continuing education of professionals. Regretfully, it is not active in the arena of formulating and propagating standards. The book under review, which has not been assigned an ISBN, speaks poorly of IASLIC as a professional publisher.

Since 1976, IASLIC has organised many workshops on indexing systems in order to make "professionals aware of the latest trends in the area of subject indexing." The content of this book is made up of the course materials from a workshop conducted in 1996. This volume can be considered as a new version of the book on indexing published in 1980 : T.N. Rajan, ed. *Indexing systems : concepts, models and techniques*, Calcutta : IASLIC, 1980, 270 p.

Fifteen chapters, divided into nine sections marked A through I, follow a brief introduction. Section A (the first chapter), reproduced without apparent changes from its 1980 version, is a historical account of indexing methods and systems from Cutter to the 1970s. It could be in fact a synopsis of the entire book. Section B (chapters 2-4) dwells on the nature, types, and features of indexing languages. These chapters discuss the functions and construction phases of a thesaurus and classaurus—the latter constitutes the controlled vocabulary base for POPSI, the Postulate based permuted subject index designed by Ranganathan's disciples at the Documentation Research and Training Centre in Bangalore. In Section C (chapters 5-7), three precoordinate indexing systems, namely chain procedure, Precis and POPSI, are explained in depth; the two Indian systems are presented in far more detail here than in any other comparable textbooks. COMPASS, which has replaced Precis at the British National Library, is not discussed here. Section D (chapter 8) discusses coordinate indexing, manifested mostly in the dated UNITERM method. Section E (chapter 9) covers file organisation and the creation of electronic databases, and deals with the basics of computers rather than with the basics of indexing. Section F (chapters 10-12) discusses automation of keyword indexes, cluster formation and natural language processing (NLP). Section G (chapter 13), titled "Non-conventional indexing," explains the nature and functions of Eugene's Garfield citation indexes. One wonders how long citation indexes, which are by now