# THE ORGANIZATION OF KNOWLEDGE: CAUGHT BETWEEN GLOBAL STRUCTURES AND LOCAL MEANING

.

# STUDIES IN INFORMATION (PREVIOUSLY LIBRARY AND INFORMATION SCIENCE)

*Series Editor:* **Jens-Erik Mai**

**Recent Volumes (Library and Information Science)**

# THE ORGANIZATION OF KNOWLEDGE: CAUGHT BETWEEN GLOBAL STRUCTURES AND LOCAL MEANING

EDITED BY

**JACK ANDERSEN**

*Royal School of Library and Information Science, University of Copenhagen, Copenhagen, Denmark*

**LAURA SKOUVIG**

*Royal School of Library and Information Science, University of Copenhagen, Copenhagen, Denmark*

Series Editor: Jens-Erik Mai

# Contents

This page intentionally left blank

# List of Contributors

| | |
|---|---|
| *Melissa Adler* | School of Information Science, University of Kentucky, Lexington, KY, USA |
| *Jack Andersen* | Royal School of Library and Information Science, University of Copenhagen, Copenhagen, Denmark |
| *José Augusto Chaves Guimarães* | Graduate School of Information Science, UNESP − São Paulo State University, São Paulo, Brazil |
| *Daniel Martínez-Ávila* | Graduate School of Information Science, UNESP − São Paulo State University, São Paulo, Brazil |
| *Fabio Assis Pinho* | Department of Information Science, Federal University of Pernambuco, Recife, Brazil |
| *Laura Skouvig* | Royal School of Library and Information Science, University of Copenhagen, Copenhagen, Denmark |

This page intentionally left blank

# Introduction

This book is the result of a one-day conference held in Copenhagen in August 2015. The organizer of the conference was Professor Jens-Erik Mai, University of Copenhagen.

The theme of the conference was Global and Local Knowledge Organization and it was framed thus:

> Contemporary digital information society has globalized information structures and facilitated easier access to information across libraries, cultural institutions, and the Internet. While this has helped shaped global discourses, it has often done so at the expense of localized meaning and ethics. This conference sparks a conversation about the tension between the global information structures and grounding meaning and ethics in localized contexts.

In a world where the global and the local constantly intermingle, it was opportune to inquire into how knowledge organization research deals with the problems and challenges caused by the interaction of global and local information infrastructures. Beginning to look into what knowledge organization as activity and practice does in global and local information infrastructures is of course a challenging commitment. As such this book is also the result of an examination of what kinds of questions can be posed and addressed regarding issues of global and local information infrastructures. Ideas of universal bibliographical control and universal classification systems have been with us for centuries, from Conrad Gesner's *Bibliotheca Universalis* through Paul Otlet's UDC-system to Google's vision of organizing the world's information. These ideas and visions always face the same problem concerning the tensions and contradictions between devising universal systems and the local appropriation of these systems. Thus, we should not expect, nor work for, a perfect solution to this problem as human meaning construction, symbolic interactions, and various forms of ideologies will always be part of the picture. Therefore, the most challenging and pertinent task for knowledge organization research is to constantly and critically reflect upon the complexities of human meaning construction, symbolic interactions, and ideologies at stake. These take on different

articulations and content depending on the kinds of questions we ask and from where in time and space we ask these questions. The texts in this volume are an attempt at doing this.

The activity and practice of knowledge organization has during the last 10 to 15 years moved out of the professional walls of libraries, archives, or the like institutions. That is of course not to say that the professional work carried out by these institutions has become irrelevant. It is, however, to recognize the fact that the activity and practice of knowledge organization is now something most of us do on a regular basis: we tag, structure, archive, or search structured digital collections because they are embedded in various forms of software and digital media. Thus, to organize knowledge is not restricted to professional domains. It is also a way of getting around in and making sense of digital information infrastructures. This opens new pathways as to what kinds of questions, conversations, and analytical frameworks to work with in knowledge organization research. For instance, studying the social and cultural implications of tagging, ordering, and archiving culture and cultural products has led some scholars from media, communication, and cultural studies to work with problems of knowledge organization (Beer, 2013; Gillespie, 2014; Hallinan & Striphas, 2016). These scholars work with knowledge organization exactly because the activity and practice has moved into the cultural sphere; that it is something people do in their everyday life in order to engage with digital information infrastructures. But also because knowledge organization in terms of algorithms has implications for how we as individuals are described, how cultural products are presented and circulated, and how public opinion is shaped by code, data, and algorithms — until recently features of software that did not impinge on social and public affairs. But now they do because of the omnipresence of software and digital media and the networked and platformed nature of communication.

However, this circumstance also requires a particular commitment by those who have been engaged in knowledge organization research in information studies. It is an invitation to step into the conversation and inform and shape modern ideas of tagging, ordering, or archiving in terms of what are the pitfalls and what we do already know about, for instance, the social, cultural, and ideological consequences of ordering and categorization from studies of library classification. There is a strong record of research to draw upon here (Bowker & Star, 1999; Mai, 2013; Olson, 2002; Wilson, 1968) and we should offer that line of thinking to the modern contexts. We should see this as an impetus for knowledge organization research to reach out and inform an agenda about what directions our digital information infrastructures can and should take.

Moreover, due to the omnipresence of classification and categorization in today's digital information infrastructures, questions about knowledge

organization become questions with social, cultural, and political ramifications in broader spheres of activity than libraries. Whereas studies of library classification could point out how various people and subjects were described according to some hegemonic ideology (Berman, 1971; Olson, 2002), nowadays almost all our mundane activity is being classified and described because of our daily interactions with and reliance on software and digital media. That does not diminish the issue of ideology in classification. It becomes an issue that applies to all of us as citizens, private persons, or employees because our digital actions are archived, calculated, and classified by not only the state, as in Foucault's biopolitics (Foucault, 2008), but also by private companies, schools, universities, individuals, and various digital platforms. Accordingly, questions about knowledge organization become questions deeply intertwined with commerce, surveillance, identity, cultural taste, or political actions — all spheres that are much broader than library classification and with direct social, cultural, and political implications. This situation puts knowledge organization research near the center in studies of digital culture, provided that the field responds with adequate and socially relevant questions, analyses, and critiques.

The contributions in this volume are all written by scholars in information studies. From their respective points of departure, all the chapters are suggestive in terms of how to deal with modern problems of classification, categorization, and description. They all shape and critically analyze in both historical terms and contemporary settings how the organization of knowledge is a powerful means of understanding human meaning construction, symbolic interaction, and ideologies at stake in present-day digital information infrastructures.

The opening piece of the volume is written by Jack Andersen. He sets out to offer a twofold understanding of the organization of knowledge as both a form of communicative action in digital culture and as means to understand features of digital culture. With this, Andersen offers a new way to analytically approach studies of digital culture.

The following two chapters are historical in their orientation. Laura Skouvig suggests a Foucauldian genealogy in order to carry out a critical attitude toward our contemporary understandings of information. In a reading of different works on early modern information cultures, she discusses how different conceptualizations of information affect concrete uses of technologies of information.

A general assumption in Melissa Adler's chapter is that the way Library of Congress has classified people, nations, and territories must also be viewed as a history of how the United States has researched, used, or organized them into U.S. history. In her historical-genealogical study of the treatment of Māori History in the Library of Congress Classification (LCC), Adler examines how the United States is the universalized and

assumed norm guiding the classification of subjects in LCC and how this can be a starting point for interrogating the intended and unintended consequences of universal classification schemes.

The next three chapters are written by the Spanish and Brazilian scholars Daniel Martínez-Ávila, Fabio Assis Pinho, and José Augusto Chaves Guimarães.

Martínez-Avila is looking at reader-interest classifications in order to consider the social consequences of such classifications and questions whether reader-interest classifications really consider the totality of users.

Fabio Assis Pinho's chapter is concerned with the problems at the intersection of knowledge representation and institutional memory. Pinho considers how a field of description of the informational content of photography allows its contextualization to contribute to the construction of institutional memory. Pinho's main argument is that there is a need to contextualize photographic documents in local systems in order to be able to construct a corresponding institutional memory.

In his chapter on slanted knowledge organization, José Augusto Chaves Guimarães argues that the organization of knowledge is a naturally slanted field. As such, Guimarães argues, this slanted nature of knowledge organization should be recognized as an ethical option in the theory and practice of knowledge organization.

Overall, this volume presents discussions that address the tensions and contradictions between global and local information infrastructures. In a digital and globalized world, human sense-making activities, for example, classification, are called upon and continuously contested. Thus, knowledge organization research must also continuously deal with these challenges and demonstrate how they can be dealt with practically, analytically, empirically, and theoretically. Fundamentally, to classify (or to tag, order, archive, sort) is always an articulation of the relationship between the classifier (whether human or algorithm) and the classified. This relationship is a political one as decisions have to be made, boundaries have to be drawn, and categories have to be established. From various approaches and perspectives, the chapters in this volume have centered on this relationship and have articulated their different takes on this issue. Consequently, we can make use of all the chapters to inform about why the problems of classification will always be with us, why the problems of classification are political, and why the problems of classification are socially and culturally embedded. The chapters can help to shape a contemporary conversation about where the ideas of classification come from and what directions they can possibly take.

Jack Andersen
Laura Skouvig
*Editors*

# References

Beer, D. (2013). *Popular culture and new media. The politics of circulation*. New York, NY: Palgrave Macmillan.

Berman, S. (1971). *Prejudices and antipathies: A tract on the LC subject Heads concerning people*. Metuchen, NJ: Scarecrow.

Bowker, G., & Star, S. L. (1999). *Sorting things out. Classification and its consequences*. Cambridge, MA: MIT Press.

Foucault, M. (2008). *The birth of biopolitics: Lectures at the Collége de France, 1978-1979*. New York, NY: Palgrave Macmillan.

Gillespie, T. (2014). The relevance of algorithms. In T. Gillespie, P. J. Boczkowski, & K. A. Foot (Eds.), *Media technologies: Essays on communication, materiality, and society* (pp. 167−193). Cambridge, MA: MIT Press.

Hallinan, B., & Striphas, T. (2016). Recommended for you: The Netflix Prize and the production of algorithmic culture. *New Media & Society*, *18*(1), 117−137.

Mai, J. E. (2013). Ethics, values and morality in contemporary library classifications. *Knowledge Organization*, *40*(3), 242−253.

Olson, H. A. (2002). *The power to name: Locating the limits of subject representation in libraries*. Dordrecht: Kluwer.

Wilson, P. (1968). *Two kinds of power. An essay on bibliographical control*. Los Angeles, CA: University of California Press.

This page intentionally left blank

Chapter 1

# Genre, Organized Knowledge, and Communicative Action in Digital Culture

*Jack Andersen*

## Abstract

The purpose of the chapter is to argue for a twofold understanding of knowledge organization: the organization of knowledge as a form of communicative action in digital culture and the organization of knowledge as an analytical means to address features of digital culture.

The approach taken is an interpretative text-based form of argumentation.

The chapter suggests that by putting forward such a twofold understanding of knowledge organization, new directions are given as to how to situate and understand the activity and practice of the organization of knowledge in digital culture.

By offering the twofold understanding of the organization of knowledge, a tool of reflection is provided when users and the public at large try to make sense of, for example, data, archives, search engines, or algorithms.

The originality of the chapter is its demonstration of how to conceive of knowledge organization as a form of communicative action and as an analytical means for understanding issues in digital culture.

**Keywords:** The organization of knowledge; genre; digital culture; digital media; communicative action

**Chapter Outline**

## 1.1.  Introduction

Any given form of culture can always be described in a variety of ways: a literate culture, an enlightenment culture, a culture of participation, a culture of experience, or as "a whole way of life" (Williams, 1989). Our current form of digital media culture, I suggest, can be described as a culture of ordering, structuring, and archiving as we witness an abundance of activities and practices that have to do with organizing, listing, archiving, ordering, or searching for items; that is, what is in information studies called the organization of knowledge. What used to be the professional practice of archivists and librarians, is now a way of navigating media culture and of producing culture, whether by humans or algorithms. The activities and practices of ordering, listing, archiving, categorizing, and searching are carried out by people in their everyday interactions in digital networks, suggesting that the organization of knowledge is a tool used to make sense of our daily routinized communicative interactions. Moreover, given the omnipresence of social, mobile, and networked media in our everyday life, it is too a tool employed to make sense of our lifeworld as it stretches from local, through regional, and to global digital contexts.

Moving on from these observations, we can begin to question how the organization of knowledge shapes everyday life because of its "inscription" in digital media. In digital culture, ordering and archiving is a way of interacting with digital media. It is "a whole way of life." It is a form of communicative action: One cannot experience digital media without also practicing knowledge organization: people construct queries, examine results, and access retrieved items as a matter of course when interacting with digital content. Accordingly, the creation of data to facilitate search

and retrieval (tagging, labeling, or linking) is likewise a communicative action.

In this chapter, I will try to take a step back and think about how we can describe and understand ordering and archiving and its place and meaning in digital culture. In doing so, I will suggest a twofold understanding of the organization of knowledge. First, I will elaborate an understanding of it as a form of communicative action in digital culture. Genre is a means of understanding typified forms of social and communicative actions in particular forms of human activity spheres. Specifically, I want to underpin how we can begin to understand the organization of knowledge as a form of typified social and communicative action in digital media.

Second, I am going to consider how the organization of knowledge can be a means to understand features of digital culture. In digital culture, we encounter the activity and practice of ordering and archiving, particularly through search engines, algorithms, and databases, and I am going to look at what they do communicatively in digital culture. Such an understanding has the potential to enhance conversations about new media and the new communicative infrastructures in society, where the activity and practice of the organization of knowledge has increasing social and cultural significance.

The chapter unfolds in the following way. I begin with some brief remarks on the everyday organization of knowledge. For this purpose, I draw on the work of Beer (2013) and his ideas about the archive in digital culture. Next, I consider how genre can be used to explore the understanding of the organization of knowledge suggested in this chapter. By looking into some work done on search engines, databases, and algorithms as a means of communication, I begin to establish the premise from where to argue for the organization of knowledge as a communicative genre in digital culture and as an analytical concept for understanding features of digital culture.

## 1.2. The Everyday Organization of Knowledge and Communication in Digital Culture

Libraries, archives, and similar kinds of collecting institutions and systems have for a long time been used to share and facilitate access to their particular collections. The whole idea of having collaborating local, regional, national, and global bibliographical systems rests on the assumption that providing access to structured collections of recorded knowledge is a social responsibility and of benefit to particular user communities: the public and societies at large. These efforts continue with digital networks and digital

media and play a significant part in society's communicative and information infrastructure.

However, what I would like to pay attention to in this chapter is the communication and organization of knowledge in digital networks that takes place outside these institutions and the practices and activities of their professionals. I will look at the everyday organization of knowledge in the everyday life of people when involved in different communicative interactions, whether that is on Facebook, YouTube, Twitter, Flickr, Wikipedia, or on search engines. In digital culture there is a public expectation to be able to search and to store — and to be searched for and stored — in structured collections of items, because digital media, as opposed to classic mass media, offers, among other things, this exact possibility due to their inherent database configurations (Manovich, 2001), and because of digital media's integration in almost all other forms of media we encounter in our everyday digital culture. Thus, with digital media it seems like digital culture is centered on the idea of organizing, archiving, and ordering in everyday life.

This is also the central theme of David Beer's book, *Popular Culture and New Media* (Beer, 2013). In particular, Beer pays attention to the role of classification in everyday life given the permeation of new media. He labels this as "the classificatory imagination" and argues that "… we need to begin to factor in the decentralization of cultural classification and archiving processes to understand the ordering of culture. In other words we need to develop a stronger sense of the *classificatory imagination* in culture" (Beer, 2013, p. 44; italics in original), with "classificatory imagination" covering the idea that people come to think and act by means of classification in everyday encounters with digital media. This argument about the necessity of factoring in the decentralization and domestication of classification and archiving in everyday is important for the argument to be developed in this chapter. Recognizing that classification and archiving are a means of ordering culture offers an opportunity to reflect upon what this means to the practice and activity of the organization of knowledge in everyday life.

Continuing this line of reasoning, Beer proposes the concept of archives as a means to understand digital culture: "The concept of archives can be used to explore the ordering of data in digital culture and to ask who controls them, what is stored, how it is accessed, how it is managed and so on" (Beer, 2013, p. 41). It is not a concept developed strictly from archival theory. It is used in a rather symbolic way to underscore the archival processes triggered by the proliferation of data in digital culture. Communication in digital networks is facilitated by data produced by people's communicative actions in their infrastructures of participation (Beer, 2013, p. 53). Data is collected by services and platforms and stored in archives, producing traces of our communicative affairs. Digital networks and the communicative

actions they enable go hand-in-hand with forms of knowledge organization, or archiving as Beer (2013) argues, as much of the work of categorization, tagging, and ordering is carried out by people in their everyday interactions in digital networks. They do this because they communicate and relate to each other and make sense of society at large by these means. Thus, the concept of archives as an analytical tool offers a way to understand communication in digital culture and digital networks.

Here, I want to take Beer's argument a step further. People and institutions do not communicate and produce communicative actions coincidentally. In order to make sense of, for instance, tagging or archiving as modes of communication and ordering, humans construct structured ways of communication in order to make their communications recognizable and intelligible to their appropriate local audiences and activity contexts. Typified forms of communication and genres are developed.

## 1.3. Genre: Understanding Local Communicative Interactions and Social Structure

In rhetorically oriented understandings of genre, genre is a typified form of communication employed by people in various spheres of human activity and social practices (Bakhtin, 1986; Bazerman, 1988; Berkenkotter & Huckin, 1995; Devitt, 2004; Luckmann, 2009; Miller, 1984; Yates, 1989). Genre as an analytical concept is a powerful means of understanding diverse forms of communication as it sheds light on not only the very concrete form(s) of text(s) used in human activity spheres, but also on the social structures producing genres and their role in coordinating social organization (Luckmann, 2009). As such, genre is always caught between its broader scope of production and its concrete local context of appropriation and interpretation. The uptake of the genre (Freadman, 1994) in a concrete setting is crucial for its success in coordinating social action. Given that the action of a genre can be caused by activity contexts outside of the particular genre, genre always mediates between a local and global level. For instance, the genre of the scholarly journal article is mediating between its local contexts of production and its extension into multiple disciplinary and globally dispersed contexts. However, the very appropriation of a genre is of course locally dependent. Genre is thus always caught in the tensions and contradictions between local and global communication contexts and, at the same time, is the communicative means available to people for producing recognizable communicative actions between or within local and global contexts.

Genre is a means for making sense of communication at a distance and for making communication recognizable to others. Genre entails specific forms of communicative relationships and positionings among individuals. Typification, coming from Schutz's phenomenology (Schutz, 1967), can help establish and maintain a communicative order at a distance that helps writer and reader share a recognizable space of meaning and make available a common ground for meaningful construction and for meaningful discourse.

Because distance means a distance between something, communication is always mediated. It is not and cannot be pure dialogue between separated minds (Peters, 1999). Genre is always about the other or the addressee, as Bakhtin notes (Bakhtin, 1986). Genre implies the other as genre is a social game and not a solipsistic trap. The other is necessary. Otherwise, distance is not distance. Thus, genre is not a technical fix for communication. It is a communicative solution to socio-communicative problems (Luckmann, 2009). It is a social and cultural tool loaded with the ideologies, motives, ideas, and knowledge of particular groups of people in particular contexts. Genre is not the outcome of some master plan. Genre is pragmatically molded by tensions and contradictions between participants in human activities.

Framing my further observations within this view of genre, I am now going to examine how search engines, algorithms, and databases communicatively perform in digital culture. Having done that, I will move on to elaborate my argument about the organization of knowledge as a concept for making sense of features of digital culture and as a genre in digital culture.

## 1.4. Search Engines and Communicative Actions

In current media culture, searching and search engines are significant forms of media interaction. On a par with television, radio, and the press, search engines are a new powerful form of mass media which penetrate our everyday lives and public spheres in almost every dimension. "As our use of digital media converges, mixing and combining computer applications with more traditional media, we also find search engines becoming part of our entire media ecosystem" (Halavais, 2009, p. 10). The homepages of public authorities and private companies present themselves as ordered places to be searched in order for us to produce meaningful action with them. Cell phones, apps, and e-books include a search function, and the big search engines such as Google or Bing constantly make us aware of the importance of being searchable, represented, and visible (or invisible) in their

collection of digital resources. In other words, search engines have introduced the verb "to search" constituting a new communicative action different from but complementing the verbs attached to traditional mass media such as "to listen, to read, or to watch." Contemporarily, these four verbs and actions represent prominent ways of interacting with various media and cultural forms.

Search engines have induced "a culture of search" (Hillis, Petit, & Jarret, 2013). They help produce the public expectation that almost everything relevant is being recorded and is available and searchable; that everything is coded and archived for retrieval. "Search is a way of life" and "a public utility," as noted by Hillis et al. (2013, pp. 4–5). Although search engines may be a public utility, they are, of course, not neutral, just like all other media. The production of search results does not come from nowhere; it is generated by the deliberate actions of search algorithm designers and those (big companies, for instance) who produce content to be included in search engines.

In addition, searching using search engines can also be seen as a way of connecting with other people and with the world at large: "Every tag, search entry, and click is, in fact, a way of connecting to other people's searches and tags; i.e., to other people's intentions of naming and identifying the things that matter to them most" (Hirsu, 2015, p. 32). Hirsu's description of search reminds us that humans are social creatures and that the desire to connect with other like-minded persons is still with us in the age of search. The difference compared with older forms of media is the way in which we connect (i.e., by searching) to others. Halavais (2009, p. 161) calls this sociable search: "The emergence of sociable search suggests that we need to find not just information, but each other. Search is important for the individual who wants to be part of a larger social conversation …." Together these observations suggest how search engines perform as a means of communication by focusing on the idea of being connected to others and being part of various social conversations. It further suggests how search engines align with established mass media, as they too rely on the idea of connecting people through conversations about social and cultural matters. In short, search engines inscribe themselves in the history of communication and our hopes of being connected or related to the other (Peters, 1999).

Search engines are a first step toward grasping search as a genre. Search in digital culture can be considered part of a communicative solution to communicative projects (Luckmann, 2009). Search becomes a rather typified form of action engaged in by people when employing search engines. For instance, because of our previous experiences with search engines, they make us aware of how to limit our search parameters, how to phrase our query appropriately, how to produce an adequate search as a response to a

particular situation, and, not least, how to align with — or not align with — the search algorithms.

## 1.5. Algorithms: Between Communication and Culture

Digital media is, among other things, made up of software and with software comes algorithms (Manovich, 2013). Algorithms, or algorithmic communications, have during the last decade shaped our ideas of communication and culture. There is a fast-growing body of literature on the topic (Beer, 2009, 2013; Bucher, 2012, 2017; Cheney-Lippold, 2011; Gillespie, 2014; Hallinan & Striphas, 2016; Kitchin, 2017; Natoli, 2014; Striphas, 2015) pointing to the relevance and urgency of understanding the force and impact of algorithms in current forms of digital culture. Algorithms shape our digital interactions with the very data we produce. They form our ideas of what can be searched for and known. Algorithms shape our online identity, potentially making us unknown to ourselves and challenging our own conception of who we are. Being inscribed in digital media, algorithms at the same time determine what is index-able, what there is to be communicated about, and in what ways. Algorithms do not do anything in human communication unless we, as humans, animate them for a specific purpose in our efforts to connect with others. Algorithms are, of course, also designed and encoded with certain motives, ideologies, or beliefs on behalf of those who put them into action.

Being a part of the regularization of inscription and calculation, algorithms make representations of phenomena similar and interpretable across situations and interlocutors, by treating them as the same. They also enlist those phenomena and the regularized data in regularized activity systems and actions, though they are also open to modification and alternative uses.

Although the rule-governed aspect of algorithms (and particularly the way they are embodied in software) limits their flexibility, we might also think of them as software objects, allowing them to be embedded in various infrastructures. In these infrastructures, algorithms take on agency as they develop "… their own capacity to remember" (Beer, 2013, p. 15) because they are in use. Being used and displaying agency, means they capture aspects of their use (Beer, 2013, p. 17). Therefore, algorithms are "active in capturing aspects of our everyday lives and cultural engagements" (Beer, 2013, p. 20), and we should recognize as the active agents they are.

Although algorithms and the communications they produce lack transparency because we do not know exactly what animates their action besides our own, the transparency issue may not be the problem for understanding their role in digital culture. Rather, it might be beneficial to recognize their

agency as something that must be acknowledged as part of culture. For this reason, Striphas (2015) coined the term "algorithmic culture" by which he means "… the use of computational processes to sort, classify, and hierarchize people, places, objects, and ideas" (Striphas, 2015, p. 395). Computers and computational processes are not only pervasive; they are also beginning to influence what we understand as culture because of computational processes, thereby challenging established notions of culture formed in a non-digital world and by people traditionally inhabiting the cultural sphere. By now, algorithms are embedded in our communicative infrastructures and their form of agency helps produce and typify our cultural and social assumptions. But algorithms need data and with data comes databases.

## 1.6.   Databases: The Ordering of Culture and Society

Databases are underneath every sort of new digital media and order the world according to their logic of listing items in a structured collection (Manovich, 2001). Databases and the activity of listing are, of course, not a new activity. Precursors such as bibliographies, lists, or oral recitals have been with us throughout human history and have underpinned many social and cognitive activities. Jack Goody argued most forcefully about the introduction of the list in written cultures, saying that lists "… were not simply by-products of the interaction between writing and say, the economy, filling in some hitherto hidden "need," but that they represented a significant change not only in the nature of transactions, but also in the modes of thought that accompanied them …" (Goody, 1977, p. 81). Likewise, we may say that the database also represents a change in the mode of thought that accompanies it. A database understands the world according to how a computer understands it (Hayles, 2012, p. 176), that is, in terms of automation, calculation, and symbols. The more widespread databases become in our cultural and social interactions, the more we need to, or are forced to, align with their way of looking at the world. The potential change in mode of thought that databases introduce is a sense of calculated communication mediated through structured collections of items, whether that is in cell phones, social media, search engines, or mass media; socially and culturally relevant pieces of information are amassed in structured collections whose main mode of communication is search and retrieval.

Arguing that the database is a new cultural form, Manovich (2001) offers a way of thinking about how it is that databases shape the ordering of culture and communicative actions. This idea about the database is not

to say that it stops being a technical object. Rather, what Manovich points to is that with new (digital) media being used in cultural production and consumption, the database and its logic of ordering moves into the cultural sphere. We may of course question whether this argument applies to all forms of new media, as Manovich was writing at a time when print materials were beginning to be digitized and, hence, moved into a database. Today, we have digital-born materials which differ from digitized materials coming from non-digital material (Brügger & Finnemann, 2013). Nevertheless, the database as a cultural form is both a useful metaphor and concrete tool for understanding the role of ordering in contemporary culture. For instance, Google, Twitter, or Facebook position themselves as being of great benefit to human social interaction. However, they are also players on a competitive media market and their capital is, among other things, the data they collect in their databases about our online activities.

Moreover, the database and its mode of being have moved into culture and our consciousness. Of course it does not completely occupy culture and our consciousness, but the database has gained a presence to an extent we may not have witnessed before because of its integration in many forms of digital media. Its presence has resulted in the ideas of data, search, retrieval, and storage having a strong manifestation in culture and in our everyday practices. Thus, like Beer's concept of the archive, the database as a cultural form in its own right provides a means to understand current cultural production and articulations through its way of seeing the world, that is, through data and categories of data.

## 1.7.    The Organization of Knowledge as Analytical Concept in Digital Culture

Partly influenced by Beer's idea of the concept of archiving as a means to understand digital culture (Beer, 2013), the organization of knowledge makes us see digital culture as a culture of ordering, organizing, or archiving items and how this is inscribed in culture. Obviously, this is not a whole new feature of culture and cultural production. But the organization of knowledge is a new cultural form (cf. Andersen, 2008; Manovich, 2001) in the sense that it is not foreign to people nowadays in their everyday lives to participate in, use, or be constituted by forms of archiving. People may not call it by that name, but they essentially carry out the practice of organizing or archiving knowledge when making their way around digital media culture.

The organization of knowledge forces us to make sense of our everyday world through how categories and categorizations are produced because

that is how many digital resources and platforms speak to us. That is, we have a conversation partner, whether that is a database, a search engine, or algorithms who speak through the logic of structuring, numbering, and ordering but whose communicative actions are dependent on ours.

The database speaks through its structured collections and the communicative action it engenders, namely, search and retrieval. Persons included in a database means being identified and given an identity (Poster, 1995) according to the fit with the structures and categories of the database and its producers. As with all structured collections of items, there is a duality between who determines the categories and what to put in them, and who looks at the categories and potentially makes sense of them. Databases and their contents are products of larger communicative projects (Luckmann, 2009) to which they must fit in. As such, databases can be considered a genre as they are communicative solutions typified through the categories they communicate.

The search engine as a partner in conversation provides the hope of being connected to the "other" through clicks, search histories, or keywords. It provides the expectation that most things (shoes, events, food, clothes, places, buildings, streets, etc.) are coded for search and what cannot be found does not exist. Search engines thus perform differently than libraries, as their audiences use them for different activities — activities libraries cannot (and maybe should not) fulfill. Due to their historical origins and their connection to the written word, libraries symbolize a literary culture. Search engines do not symbolize a literary culture. Search engines reflect the culture of the market. For instance, companies who want to be visible and searchable in search engines most likely do not conceive of search engines as part of literary culture, but rather as a marketplace for advertising.

Thus, as an analytical concept, the organization of knowledge offers a way to make sense of current forms of digital culture and social interactions. This means that we as people and as citizens become more engaged with digital media because of their omnipresence in our life, we also begin to understand and talk about our social and cultural interactions in terms of what, how, and who can be tagged, archived, or searched for. Tagging, archiving, or searching as social and cultural interactions assume some sort of structured collections of items. They, moreover, assume — albeit implicitly — some sort of activity (algorithmic or human) producing those collections. The ordinary presence of the phrases "I googled …," "I tweeted …," or "I tagged …" suggests how we relate to and connect with others through communicative actions enabled by digital media and their structured collections of items. To google, to tweet, or to tag reveals a consciousness of ourselves as actively involved agents in communication, but these also

reveal a habitualized form of human action shaped by the affordances of search engines and social media in our lives.

To understand our everyday interactions, our cultural assumptions, or our social worlds through the concept of the organization of knowledge is a way of recognizing the permeation of the powers of organizing in our infrastructures of participation (Beer, 2013). The concept of the organization of knowledge helps to make clear what we may already know as individuals in digital culture: that we are configured by and inscribed in categories and sets of data that we ourselves have partly produced by means of our digital communicative actions.

The concept brings to our attention the social and cultural force of categories and how difficult it can be to get out of them once you are included and thusly looked upon by others. Accordingly, the concept of the organization of knowledge reminds us — as have thinkers like Marx, Foucault or Bourdieu — of the ever, ongoing power struggles between classes, between cultures, or between those who categorize and those who are categorized. This reminder may have more pertinence than ever given the saturation of digitally structured collection items in our everyday lives.

## 1.8.    The Organization of Knowledge as a Genre in Digital Culture

In analyzing blogging as a genre, Miller and Shepherd (2004, p. 1) contended that "When a type of discourse or communicative action acquires a common name within a given context or community, that's a good sign that it's functioning as a genre." In our current form of digital culture, to tag or to google are clearly common names for a type of communicative action performed by people in particular everyday contexts with particular forms of digital media. Looking at the organization of knowledge (i.e., tagging, organizing, ordering, archiving, or searching) as a genre in digital culture is a way of understanding it as a tool in communication, helping to typify, stabilize, and make socially recognizable different forms of communicative actions. In digital culture, it is something we make use of in order to make sense of situations and to be able to act appropriately in given situations demanding our responses. For example, with regard to tagging, Beer (2013, pp. 53−54) claimed that this is "… one of the most powerful organizing and ordering practices in contemporary culture … central in understanding the organization and ordering of contemporary culture. It shapes cultural encounters, it defines how archives work, and what is retrievable …" Beer's observation is useful in this context as he connects the practice of tagging with an understanding of

contemporary culture. Extending this observation to tagging understood as a specific form of typified communication, we might begin to see how it is that tagging as "organizing and ordering practices" are powerful in contemporary culture. For instance, when one chooses to tag a particular item with the tags X, Y, and Z, these tags also begin to typify what is to be communicated with them. They are "stabilized-for-now," as Schryer (1993) says about genre. The tags create expectations as to what is to be found within and communicated them: "Once one has 'chosen' a genre for a communicative project, it is the genre that 'chooses' the parts for its accomplishments" (Luckmann, 2009, p. 273). Twitter can serve as an example of Luckmann's notion of genre in communicative projects. The hashtag, as a knowledge organization component of tweeting, can be used for a variety of functions. Sometimes, hashtags are used to facilitate retrieval of tweets on similar topics or associated with particular events, and to enable systematic, conscious collocation of a set of similar tweets: people at a conference might be encouraged to use a particular hashtag so that all the tweets from that conference can be found together (#ECREA2016), or a hashtag might collocate tweets that comment on a particular issue (#cyberbullying) or event (#rio2016 for the Olympic Games). But tweets are used for much more than this. A hashtag like "#blacklivesmatter" is not used just to facilitate sorting and retrieval but to declare one's allegiances and invoke a particular perspective. In other words, here the "tag" is performing an explicit communicative function — and, importantly, use of the tag is recognized as such by authors and readers of tweets — in addition to facilitating retrieval and sorting. In other words, hashtags in Twitter work somewhat differently than other tags, such as those associated with photos in image services, and searching in Twitter is also somewhat different than searching images. Twitter hashtags are (at least sometimes) read more like a newspaper or a poem than like a temperature reading on a thermometer.

To take Luckmann's argument to its logical conclusion, we can say that to communicate by means of a chosen tag, and for the tag to accomplish a communicative effect in a communicative project, the chosen tag commits us as communicators. The tag or tags need to be socially recognized and accepted. Thus, tagging in contemporary digital culture is not only a "powerful organizing practice" because it shapes "cultural encounters." It is powerful as an organizing practice because it gives rise to a typified form of communication; that is, as genre. Genres are powerful communicative tools because they shape communicative interactions and commit people in these interactions in structured ways (Paré, 2002).

## 1.9.   Conclusion

What I have argued in this chapter is that in digital culture we can perceive the organization of knowledge as both an analytical concept to understand communication in digital culture and as a particular genre in digital communication. The implication of this argument is, first, that the organization of knowledge can be considered a keyword in our cultural vocabulary (Williams, 1983), making it part of the language by which we understand and describe digital culture. Having the status of a keyword in digital culture shapes an understanding of the organization of knowledge as moving from being limited to a particular professional practice to a way of perceiving a range of features in digital culture having to do with, for instance, data archives, data circulation, digital cultural production, and consumption or algorithmic cultures (Striphas, 2015).

Considering the organization of knowledge as a genre in digital communication is one way of suggesting its social function as a tool and not as an objective to be achieved in human communication (Andersen, 2015). Being a genre in digital everyday communication suggests that the organization of knowledge is one genre among many in digital culture. But it is a particular genre that has come about because of the architecture of digital media as it invites ordering practices due to its databased nature. As more and more people on a daily basis are in touch with, or are implicated by, structured collections of items as part of their communicative actions, this points to the potential in seeing the organization of knowledge as a genre. It ascribes to the practices of ordering and archiving a form of agency in digital culture.

## References

Andersen, J. (2008). Knowledge organization as a cultural form: From knowledge organization to knowledge design. In J. T. Tennis & C. Arsenault (Eds.), *Proceedings of the tenth international ISKO conference*, Montréal (Vol. 11, pp. 269−274). Würzburg: Ergon Verlag.

Andersen, J. (2015). Re-describing knowledge organization − A genre and activity-based view. In J. Andersen (Ed.), *Genre theory in information studies* (Vol. 11, pp. 13−42). Studies in Information. Bingley: Emerald Group Publishing Limited.

Bakhtin, M. (1986). *The problem of speech genres* (V. W. McGee, Trans.). In C. Emerson & M. Holquist (Eds.), *Speech genres and other late essays* (pp. 60−102). Austin: University of Texas Press.

Bazerman, C. (1988). *Shaping written knowledge. The genre and activity of the experimental article in science*. Madison, WI: University of Wisconsin Press.

Beer, D. (2009). Power through the algorithm? Participatory web cultures and the technological unconscious. *New Media & Society*, *11*(6), 985–1002.

Beer, D. (2013). *Popular culture and new media. The politics of circulation*. London: Palgrave Macmillan.

Berkenkotter, C., & Huckin, T. (1995). *Genre knowledge in disciplinary communication: Cognition/culture/power*. Hillsdale, NJ: L. Erlbaum Associates.

Brügger, N., & Finnemann, N. O. (2013). The web and digital humanities: Theoretical and methodological concerns. *Journal of Broadcasting and Electronic Media*, *57*(1), 66–80. doi:10.1080/08838151.2012.761699

Bucher, T. (2012). Want to be on the top? Algorithmic power and the threat of invisibility on Facebook. *New Media & Society*, *14*(7), 1164–1180.

Bucher, T. (2017). The algorithmic imaginary: Exploring the ordinary affects of Facebook algorithms. *Information, Communication & Society*, *20*(1), 30–44.

Cheney-Lippold, J. (2011). A new algorithmic identity. *Theory, Culture & Society*, *28*(6), 164–181.

Devitt, A. J. (2004). *Writing genres*. Carbondale, IL: Southern Illinois University Press.

Freadman, A. (1994). Anyone for tennis? In A. Freedman & P. Medway (Eds.), *Genre and the New Rhetoric* (pp. 43–66). London: Taylor & Francis.

Gillespie, T. (2014). The relevance of algorithms. In T. Gillespie, P. J. Boczkowski, & K. A. Foot (Eds.), *Media technologies. Essays on communication, materiality, and society* (pp. 167–193). Cambridge, MA: MIT Press.

Goody, J. (1977). *The domestication of the savage mind*. Cambridge: Cambridge University Press.

Halavais, A. (2009). *Search engine society*. Cambridge: Polity Press.

Hallinan, B., & Striphas, T. (2016). Recommended for you: The Netflix Prize and the production of algorithmic culture. *New Media & Society*, *18*(1), 117–137.

Hayles, N. K. (2012). *How we think. Digital media and contemporary technogenesis*. Chicago, IL: The University of Chicago Press.

Hillis, K., Petit, M., & Jarret, K. (2013). *Google and the culture of search*. New York, NY: Routledge.

Hirsu, L. (2015). Tag writing, search engines and cultural scripts. *Computers and Composition*, *35*, 30–40.

Kitchin, R. (2017). Thinking critically about algorithms. *Information, Communication & Society*, *20*(1), 14–29.

Luckmann, T. (2009). Observations on the structure and function of communicative genres. *Semiotica*, *173*(1–4), 267–282.

Manovich, L. (2001). *The language of new media*. Cambridge, MA: MIT Press.

Manovich, L. (2013). *Software takes command*. New York, NY: Bloomsbury.

Miller, C. R. (1984). Genre as social action. *Quarterly Journal of Speech*, *70*, 151–167.

Miller, C. R., & Shepherd, D. (2004). Blogging as social action: A genre analysis of the weblog. *Into the Blogosphere: Rhetoric, Community, and Culture of Weblogs*. Retrieved from http://works.bepress.com/dawn_shepherd/2/

Natoli, P. M. (2014). Automated media: An institutional theory perspective on algorithmic media production and consumption. *Communication Theory*, *24*, 340–360.

Paré, A. (2002). Genre and identity: Individuals, institutions, and ideology. In R. M. Coe, L. Lingard, & T. Teslenko (Eds.), *The rhetoric and ideology of genre: Strategies for stability and change* (pp. 57−71). Cresskill, NJ: Hampton Press.

Peters, J. D. (1999). *Speaking into the air: A history of the idea of communication*. Chicago, IL: University of Chicago Press.

Poster, M. (1995). Databases as discourse, or electronic interpellations. In M. Poster (Ed.), *The second media age* (pp. 78−94). Cambridge: Polity Press.

Schryer, C. F. (1993). Records as genre. *Written Communication*, *10*, 200−234.

Schutz, A. (1967). *The phenomenology of the social world*. Evanston, IL: Northwestern University Press.

Striphas, T. (2015). Algorithmic culture. *European Journal of Cultural Studies*, *18*(4−5), 395−412.

Williams, R. (1983). *Keywords: A vocabulary of culture and society* (Rev. ed.). New York, NY: Oxford University Press.

Williams, R. (1989). Culture is ordinary. In *Resources of hope: Culture, democracy, socialism* (pp. 3−18). London: Verso.

Yates, J. (1989). *Control through communication: The rise of system in American management*. Baltimore, MD: Johns Hopkins University Press.