An evaluation of phenomenography

Amanda F. Cossham

Abstract

This article briefly evaluates phenomenography as a research approach. Drawing on findings from a recently-completed research project, it explains the phenomenographic approach, outlines how it was used in the research project, and presents the advantages and disadvantages of phenomenography. It identifies three issues with using phenomenography that do not seem to have been raised elsewhere. Two issues apply generally to all such research: the nature of phenomenographic data, and an inconsistency in phenomenography itself. The third is around mental models and phenomenographic conceptions and is applicable to this research project, but has wider implications for the concept of mental models in the cognitive viewpoint of library and information studies (LIS) research.

1 Introduction

Phenomenography is an interpretivist approach that is similar to phenomenology, grounded theory method, and naturalistic inquiry in its focus on human experience. However, phenomenography emphasises the variations in experience and collective meaning, rather than individual experience. It studies the qualitatively different ways in which people experience a phenomenon. That is, it does not ask about the nature of a phenomenon (as phenomenology does) but about how people experience, understand, and conceptualise a phenomenon.

The article presents a brief evaluation of phenomenography as a research approach. It draws on what was learned during a recently completed research project into models of the bibliographic universe. The bibliographic universe can be described generally as published resources that are of interest to libraries and likely to be found in library collections. The overall aim of the research was to identify the ways in which library catalogue users (or readers) understood, experienced, and conceptualised the bibliographic universe in the current, continuously changing information environment, and to identify what their understanding might mean for the development of library catalogues. The focus

Author

Amanda Cossham is a senior lecturer at The Open Polytechnic of New Zealand, where she teaches cataloguing and classification, and information sources and services. She has recently completed her PhD through Monash University.

Email: amanda.cossham@openpolytechnic.ac.nz

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was on people who were active readers and library users (or who used other information institutions); it did not explore the understandings of those who do not use libraries or who are poor readers.

Library catalogue users' mental models (or understandings) of the bibliographic universe were compared with existing conceptual models to determine the extent of the alignment between the two kinds of models. The research was carried out in the light of the functional requirements for bibliographic records (FRBR) model (IFLA Study Group on the Functional Requirements for Bibliographic Records, 1998) and its use in *RDA: Resource Description and Access*, the cataloguing guidelines that superseded AACR2R. Other conceptual models were also compared to see which were most similar to the ways in which library catalogue users thought.

2 Phenomenography

Phenomenography is a qualitative research method and is described by Marton (1986, 31) as a "method for mapping the qualitatively different ways in which people experience, conceptualize, perceive, and understand various aspects of, and phenomena in, the world around them". Phenomenographic research therefore elicits "the qualitative variation in people's experience of the world around them" (Bruce, 1999, 32). It does not focus on a single way of experiencing the world, but on the variety of ways. The focus is on the phenomenon as it appears to the research subjects: "It takes a non-dualistic ontological perspective; meaning that object and subject are not separate and independent of each other" (Ornek, 2008, 'Phenomenography', para 2). That is, phenomenography considers that there is only one world and it is the world which people experience. This is a second-order perspective, rather than a first order perspective.

Second-order perspectives ask how people experience a phenomenon (e.g., How do people experience information seeking behaviour?) whereas first-order perspectives ask what the phenomenon is (e.g., What is information seeking behaviour?). Thus, in the first-order perspective,

… we orient ourselves towards the world and make statements about it. In the second [order] perspective we orient ourselves towards people's ideas about the world (or their experience of it) and we make statements about people's ideas about the world (or about their experience of it).

(Marton, 1981, 178)

Thus, phenomenography focuses on people's ideas about, and experience of, reality rather than reality itself. However, phenomenography does not say that there are variable realities, or that there are multiple and endless ways of experiencing the world. Rather, it says that people have variable ways of experiencing and conceptualising reality, but that there are a limited number of ways and that these ways are interrelated. People's experience, along with the society in which they live, are contributing factors to the ways in which they experience a given phenomenon.

Phenomenography was developed in the 1970s by researchers at the University of Gothenburg, Sweden (Marton, 1981, 1986), and has been popular with Australian

researchers (for example, Bowden & Walsh, 1994; Bruce, 1999; Diehm & Lupton, 2014; Dortins, 2002; Noble, 2005; Yates, 2013; Yates, Partridge, & Bruce, 2012). It has been widely used by educational researchers, especially in higher education and for concepts of learning (for example, Åkerlind, 2004; Ashworth & Lucas, 1998; Bowden & Walsh, 1994; Entwistle, 1997; Ornek, 2008; Tight, 2015). It has also been used in library and information studies (LIS) to explore understandings of a range of different concepts, including information literacy (Andretta, 2007; Boon, Johnston, & Webber, 2007; Bruce, 1997, 1999; Demasson, Partridge, & Bruce, 2016); information needs, seeking and use (Limberg, 2000; Limberg & Sundin, 2006); relevance of information use (Steinerová, 2008); the concept of information (Shenton & Hayter, 2006; Smith, 2010); and the continuing professional development of "one-person librarians" (Hornung, 2010) and of English for academic purposes (EAP) teachers (Gurney, 2015).

Phenomenographic research aims to generate a range of descriptions of the research subjects' experiences. It identifies a limited number of concepts that form an "outcome space" (Limberg, 2000, 54) and the relationships between these concepts (Ashworth & Lucas, 1998; Marton, 1994). The emphasis is not on finding one common understanding nor on separating out each individual's understanding, but on identifying a restricted range of understandings, descriptions or maps (Bruce, 1999) that encompass the research participants' understanding collectively.

Bruce notes that this approach fits well with LIS when "the views and perceptions of users of information and information technology" are of interest (1999, 31). That is, it suits user studies approaches where we want to know how our end users think about information and the information systems that we make available for their use. Phenomenographers also recognise that individuals may hold different conceptions of various aspects of reality over time (Marton, 1981, 186), and indeed, may hold different conceptions simultaneously. Users' expectations also change over time as they continually engage with information and communication technologies. They may also have varying understandings of information systems such as library catalogues, especially in the light of their experiences with search engines. If LIS professionals understand how users think about information and information systems, they can better ensure the information systems will meet users' needs.

Phenomenography involves flexible data collection in natural settings as well as simultaneous data collection and analysis. Like other interpretivist research designs, phenomenographic approaches are frequently iterative, and tend to use qualitative data, collected in natural settings, while data analysis is on-going throughout data collection (Creswell, 2009; Glesne, 2011; Williamson, 2013; Williamson, Burstein, & McKemmish, 2002). Research tools used by phenomenographers include individual interviews, focus groups, and participant drawings (Yates *et al*. 2012, 102). Data are coded and analysed at the semantic and conceptual levels in order to find a range of categories that encompass participants' conceptualisations (expressed experience and understanding) of the research phenomenon. These categories are then described, and the relationships between them determined, and this forms the outcome space. Data collection and

analysis are interactive and simultaneous rather than sequential, and analysis of initial data collected may affect the questions asked in later interviews.

As with grounded theory method, the intention in phenomenography is to achieve theoretical saturation of data; that is, to reach a point where no additional data are being discovered about the categories, and all categories have been explored fully. Categories are not pre-determined, but arise from the data as they are collected. This means that the researcher does not impose their understanding on the participants by assuming that certain categories will exist. This was important for the research project, where the focus was on finding out what participants thought and how they categorised, or conceptualised, and understood the bibliographic universe, rather than on fitting their understanding into pre-existing categories. It contrasted the LIS perspective of library catalogue users with what the users themselves understood.

3 Research design

As noted, the research project was concerned with models of the bibliographic universe, and with people's understanding and conceptualisation of the bibliographic universe and the bibliographic entities within it. A minor aim was to provide a new definition of the bibliographic universe. Phenomenography was selected as the research approach because it enabled the researcher to determine how people conceptualised the bibliographic universe, to scope the bibliographic universe without talking about it, and to focus on the end user's perspective.

The research involved four cohorts of participants who were literate and good users of information: recordkeepers, teachers, secondary school students, and web content managers. Individual interviews were conducted with the adults, and small focus group interviews were conducted with the students. Each interview also involved a card sorting activity which allowed participants to show their understanding through the way they sorted (categorised) the cards, as well as explain their understanding through their responses to the interview questions.

Four distinct cohorts were selected to see whether there were domain or disciplinary differences in their understanding of the bibliographic universe and the entities within it (this aspect is currently being written about separately for publication). Secondary school students were selected in preference to university students who are more frequently used in LIS research. The focus was on public and school library use, rather than academic library use.

Phenomenography and grounded analysis (i.e., the analysis used in grounded theory method) were used to frame the data collection and analysis. These methods enabled a social constructionist perspective for the research because they allow a focus on collective and culturally-influenced meaning of a social object, here, the bibliographic universe. Crotty notes that

… social constructionism emphasises the hold our culture has on us: it shapes the way in which we see things … and gives us a quite definite view of the world.

(Crotty, 1998, 58)

Like much qualitative research, the design was emergent, and developed over the course of the research in order to better address how participants understood the bibliographic universe.

The card sorting activity used bibliographic entities related to *The Hobbit* by J.R.R. Tolkien, such as the manuscript, editions in Spanish and Dutch, graphic novels, non-fiction works about *The Hobbit* and Tolkien, and magazine articles about *The Hobbit* movies. Participants sorted the cards into groups, and explained how (and whether) the groups were related. The interview questions did not explicitly talk about *bibliographic universe*, because the term is generally only used by librarians, and more especially, cataloguing librarians. The aim was to avoid pre-determining the participants' ideas by providing a definition. Therefore, the card sorting activity framed the kinds of things that are likely to be found in the bibliographic universe as a context for the discussion. The interview questions then explored participants' engagement with, and understanding of, the bibliographic universe less directly. This was deliberate because a minor aim of the research was to redefine the bibliographic universe based on the library catalogue users' perspective as well as the LIS perspective.

Participants' expressed experience and conceptualisations of the bibliographic universe were coded and categorised, and descriptions were written of each category. Together, these categories made up the outcome space that expressed the participants' collective conceptualisations of the bibliographic universe.

4 Advantages of phenomenography

There are several significant advantages to phenomenography, especially when researching users and their varied understanding and experience of the phenomena and information systems that are of interest to LIS.

Phenomenography focuses on people and how they experience phenomena in the world around them; it does not focus on the phenomena themselves. This is a valuable approach for LIS research in part because we create systems not only for our libraries, archives, and records centres, but also for our end users. In Western societies at least, these users tend to have substantial experience with computers, tablets and mobile phones, with the Internet and its search engines, and with social media. They are experienced with information and communications technologies, although not necessarily experts, and they have an understanding of information systems considerably greater than their counterparts of, say, 20 years ago. This suggests that LIS needs to understand the kinds of experience and understanding that these users hold, in order to improve the information systems LIS provides.

Phenomenography also aims to generate a (limited) range of possible ways of experiencing a particular phenomenon, which together form an outcome space. It can be described as collective analysis of individual experiences (Åkerlind, 2005). This is a more realistic approach for user studies than one which looks for a single understanding because it allows for variation across a group of research participants. It also seeks similarities in the ways in which participants experience a phenomenon. It is especially useful when the phenomenon is something that is hard to define precisely, complex, or that might have variable meaning in various

contexts, such as *information* or *literature* or (as in the case of my research project) the *bibliographic universe*. Yates, Partridge and Bruce note that

Understanding variation in peoples' experiences makes it possible to be inclusive in both professional practice and the development of research agenda, as well as making it possible to encourage diversity in peoples' approaches to important phenomena.

(Yates, Partridge, Bruce, 2012, 113)

Additionally, participants may hold different conceptions of a phenomenon simultaneously, and this is also encompassed by the phenomenographic approach. For example, conceptions of a dog might include 'part of the family', 'dangerous animal', 'nuisance on city streets', 'reason to go for a walk', 'guide and support', 'working animal (e.g., farm dog)'. All of these are recognisable conceptions of 'dog' which together give a much richer picture and thick descriptions of what a 'dog' is. Thus, there is a degree of flexibility and accommodation of differences in the approach, as there is in many of the research approaches which are termed naturalistic inquiry.

5 Disadvantages of phenomenography

Phenomenography has attracted criticism for lacking replicability and for an absence of rigour in the actual procedures for revealing the research subjects' experiences (for example, Ashworth & Lucas, 1998; Richardson, 1999), as well as for "a lack of specificity and explicitness" concerning its conceptual underpinning (Richardson, 1999, 53). Richardson also suggests that phenomenography has the same problems as grounded theory, in that it must reconcile the tension between "the positivistic desire for scientific rigor and generalisability and the hermeneutical search for authentic understanding" (1999, 72).

Sandberg (1997) considers the extent to which phenomenographic results are reliable, identifying two major questions that were originally raised by Marton (1986): would other researchers reach the same categories of description as the original researcher, and, would other researchers recognise the conceptions identified by the original researcher, through the categories of description?

It is unlikely that other researchers would reach the same categories of description. Interview data are always constituted through a unique conversation between the researcher and the participant (or between the researcher and the focus group). Dortins (2002) and Ashworth and Lucas (2000, 302) emphasise this notion of a "conversational partnership". There may be formal questions (more or less), but the conversation will not necessarily proceed the same way if a different researcher was to conduct the interview, especially when the interviews are semi-structured. This is because the participant's comments can lead the researcher to ask in certain ways for additional feedback, or not to ask. The researcher's background and focus is likely to have an impact as well, even if they are consciously bracketing themselves.

Additionally, the participant may choose to focus on particular dimensions of their experience rather than others, and so even with set questions, each interview may cover different aspects of the phenomenon under consideration (Yates, et al.,

2012, 102).The participant will respond according to their understanding at that particular point in time, and possibly without having actively considered the phenomenon before. Such factors cannot be replicated: it is not possible to go back in time, or for a participant to un-think the ideas they have had. This applies to much qualitative research; it is not unique to phenomenography.

The second question is somewhat easier to address: if other researchers do not recognise the conceptions identified through the categories of description, the categories of description are poorly written and developed. Phenomenographic research can be considered reliable in part because those conceptions can be recognised. It is noted, however, that there is still considerable analysis of the data that contain the conceptions (interview transcripts), and that a researcher is likely to focus on the research questions as much as on the participants' conceptions. In the current research, there was a tension between wanting to answer the research questions as fully as possible, and examining how the participants experienced the bibliographic universe. The more the data were analysed, the clearer it became that the library perspective (which framed the researcher's initial understanding) was quite different to the participants' experiences and understanding.

6 Issues with phenomenography

Phenomenography worked well as a research approach in this project, and offered significant advantages in determining what people thought. However, three issues were identified over the course of the research project, and these do not appear to have been addressed by other researchers. Two apply to phenomenographic research generally: the first is about the nature of the data collected, while the second suggests there is a flaw or inconsistency in the logic of phenomenography itself. The final issue is specific to this research and is around the notion of mental models and whether phenomenographic conceptions are the same or different.

6.1 Phenomenographic data

Phenomenography has been criticised as being merely descriptive accounts of people's own experience which have the "same evidential status" as oral accounts (Richardson, 1999). These accounts must then be categorised by the researcher and the subsequent categories are the "most important result" of phenomenographic research projects (Marton, 1986, 33).

It seems puzzling that oral accounts should not be accorded at least the same status as oral history, current sources such as newspaper articles, or evidence provided in a court of law. Any qualitative research interview will by its very nature include descriptive accounts of people's experience, and phenomenographic accounts are no different in this regard. In addition, phenomenography aims to find out how people experience a particular phenomenon, and there is really no other way of doing this than to ask them. In discussing the oral sources for a particular historical event, Portelli comments that

The oral sources used in this essay are not always fully reliable in point of fact. Rather than being a weakness, this is however, their strength: errors, inventions, and myths lead us through and beyond facts to their meanings.

(Portelli, 1991, 2)

The research participants' accounts of their understanding may not wholly reflect the ways in which they experienced the bibliographic universe; the accounts may not be "fully reliable" in the sense that they may present partial understandings or understandings that are at variance with the LIS perspective. But the only way to know what participants understand is to ask them to describe their experience, and to evaluate that description. Some participants may be better at describing their experience than others, or may feel more comfortable doing so: that is a feature of much qualitative data collection. In this research, participants were also asked to do a card sorting activity, which gave another set of data that could be compared with their accounts of how they experienced the bibliographic universe.

There were some minor contradictions between what they did with the cards and how they described their experience with the bibliographic universe, but these were apparent contradictions and not necessarily actual ones. That is, they appeared to the researcher to be contradictions, but may not have actually have been so to the participants. In addition, phenomenography expects variation between participants (otherwise they would all express the same experience and understanding) and also in the conceptions held by any individual.

It seems that a qualitative method which aims to discover the variation in experience is being criticised for not meeting positivist standards of scientific rigour that it does not, in fact, intend to meet. Relying on what participants are able to convey to a researcher in an interview provides a specific kind of data; it does not provide data that are lacking.

6.2 Inconsistency in phenomenography

There is an apparent logical inconsistency between the research approach and the researcher's position. This could also be described as a disconnect between the research approach and the researcher's position.

One of the challenges of any research approach is the extent to which it is or should be applied to the conduct of the research itself. A researcher is expected to bracket themselves and their understanding to ensure that there is as little personal bias as possible. They must diligently, accurately, faithfully, and as neutrally as possible report what participants (or the data) communicate. They must also demonstrate their own interpretative awareness (Sandberg, 1994, in Sandberg 1997, 209), and cultivate an awareness of how their interpretations influence the research process. This applies to most research methods, not just phenomenography (exceptions might include autoethnography or some case study research).

However, phenomenography considers the ways in which people experience and conceptualise phenomenon in the world around them, and it uses a non-dualistic perspective: there is not the world *and* the way it is experienced, but the world *as* it is experienced. If the phenomenographic approach is applied to the research itself, a researcher would report only their understanding and experience of the participants' experience, rather than report the participants' experiences directly. But this does not happen in practice: researchers bracket themselves and present the participants' understandings and conceptualisations, as directly as they can.

In this research, the researcher bracketed her understanding as far as possible, and indicated what the participants' understanding and conceptualisations were. The participants' conceptualisations were presented as directly as possible. The inconsistency is that phenomenographic research is done within the framework of a second-order perspective, but the findings are presented according to a first-order perspective.

6.3 Phenomenography and mental models

The research focused on library catalogue users' mental models of the bibliographic universe, and LIS conceptual models of the same phenomenon. However, phenomenographic approaches provide a second-order perspective, while mental models provide a first-order perspective which is associated with the cognitive viewpoint in LIS (see, for example, Limberg, 2000; Marton, 1981; Richardson, 1999). This tension between first-order and second-order seems too rigidly applied, and does not sufficiently take into account the ways in which cognitive science understands mental models and their associated aspects including prototypes, scripts, and schema.

Limberg says that "studies of mental models is research of the first order perspective, where researchers try to explore existing mental models or structures and use these to explain certain behaviours" (2000, 55) while phenomenography studies are the second order perspective and emphasise that the real world "is constituted of the totality of ways of experiencing this world". Johansson *et al.* (as cited in Bruce, 1999, 35) agree with Limberg, saying phenomenographers "are not describing minds, but perceptions; [they] are not describing the (person) but his or her perceptual world".

However, Johnson-Laird (1983) suggests that mental models are formed and developed by experience of the world, and that they are a powerful tool that enables both memory and logic; they determine and are determined by the way people experience the world and interact with it. Lakoff (1987), in his book *Women, Fire and Dangerous Objects: What Categories Reveal About the Mind*, supports this idea, and evaluates and describes research into the various ways individuals create what he calls idealised cognitive models using categorisation. He shows how these are drawn from people's interaction with and experience of the world, their society and their culture, and how such models help people to function within the world. More recent cognitive research also emphasises socially constructed mental models, scripts and schema, and the ways in which these constructs determine and are determined by people's interactions with the world (for example, Matlin, 2009, chapters 7 and 8).

Thus, the notion of mental models as presented in phenomenographic research seems to be outdated when compared with the way it is treated in cognitive science. Lakoff (1987) compares the traditional view of how people think, reason, and make sense of their experience (which he labels *objectivism*) with the "new view" (which he labels *experiential realism* or *experientialism*). While categories are the main way we make sense of experience in both views, he notes that

In the new view, our bodily experience and the way we use imaginative mechanisms [which facilitate abstract thought] are central to how we construct categories to make sense of experience.

(Lakoff, 1987, xii).

According to Lakoff, this means that thought is *embodied* and *imaginative*, and has *gestalt properties* and an *ecological structure*. Thus, humans' conceptual structures can be described using cognitive models that have those four properties (1987, xiv-xv). Lakoff uses examples that demonstrate cognitive models and conceptual structures within particular cultures, emphasising that such models and structures are culturally-determined or influenced.

Marton (1981) claims that

In 'phenomenography' ... we would deal with both the conceptual and the experiential, as well with what is thought of as that which is lived. We would also deal with what is culturally learned and with what are individually developed ways of relating ourselves to the world around us.

(Marton, 1981, 181)

There does not appear to be a significant difference between what Marton is describing and how Lakoff describes cognitive models and categorisation. If people provide a discursive account of their experience of a particular phenomenon, that account must be based in at least some part on the mental models that they hold about the phenomenon due to their experience with it, because mental models are one of the ways in which people make sense of the world around them. These models may change over time, as people gain more experience with the phenomenon and as their purposes change. It is therefore suggested that phenomenographic conceptions can be considered as the *equivalent* of mental models, even if they are not identical.

Dahlin (1994) also identifies problems with Marton's non-dualistic view of the world, suggesting that Marton does not convincingly show the non-dual character of conceptions:

[Marton's] second argument would be that there is only one world, understood in different ways by different people. But that could equally well imply that there is one world, the ***existence*** *of which is independent of the experience of human beings, but which is nevertheless* ***apprehended*** *from different points of view by different people. ... it is only stated [by Marton] that this world is at the same time both subjective and objective. It is not really demonstrated how this can be so.*

(Dahlin, 1994, 102; ***emphasis*** in the original)

Lakoff's thorough and detailed argument for prototype-based categories defined by cognitive models provides a basis from which to examine the criticised notions of "mentalism" in LIS (see, for example, Frohmann, 1990; Hjørland, 2013; Mai, 2000). Hjørland comments that "The cognitive view in KO [knowledge organisation] seems thus to lack sufficient intellectual foundations" (2013, 22). Lakoff's work could be used to establish such foundations within the cognitive view.

Across the wider LIS literature, it is unclear to what extent researchers are using current notions of mental models from cognitive science, or whether older notions still predominate. Some views of mentalism in LIS, such as Westbrook (2006), focus on what is true and what is false in the mental models that individuals create based on their experience. This view seems unhelpful because it implies that there is a right way of (in this instance) using an information system or information communication technology. However, Norman (1983) has suggested that there is no "correct" view of a system: some views are simply more helpful than others when it comes to how that system is used because they ensure that the user will get the kinds of results or data that they expect to get.

People's experience of the bibliographic universe involves both the entities and relationships within it. It also includes the ways in which people engage with, read, learn about, access, value, and use those entities, i.e., their information behaviour or information practices. The researcher did not attempt to reason backwards from the behaviour or practices that her participants mentioned to a rationale for that behaviour. Instead, the behaviour or practices were taken as given, as the participants' expression of their own engagement and experience. That is, it was less important to understand *why* participants conceptualise the bibliographic universe as they do than to understand *that* they conceptualise it in certain ways. It is possible to draw on these conceptualisations to improve the ways in which users access bibliographic entities through a library catalogue, by providing data that makes sense within the framework of their understanding of the bibliographic universe.

7 Conclusion

Phenomenography is a thoroughly qualitative research approach that provides the researcher with a rich, holistic and variable understanding of the way people conceptualise a phenomenon. For LIS researchers engaged in user studies, it provides a valuable perspective on and understanding of users and their experience and conceptualisations. This perspective and understanding can be used to improve our users' experience of and engagement with the systems, services and programmes that LIS institutions offer.

While the explicit aim in any research is to answer the research questions, Marton suggests that "to find out the different ways in which people experience, interpret, understand, apprehend, perceive or conceptualize various aspects of reality is sufficiently interesting in itself" (1981, 178). This proved to be true in the case of the current research. One of the useful lessons from the research was the researcher's awareness of the extent to which the LIS perspective dominated her understanding, despite considerable efforts to step outside this domain-specific perspective, and the extent to which this perspective varied from the library catalogue users' perspective.

In addition, the research questions were good questions to ask from the perspective of a LIS researcher interested in the development of library catalogues and bibliographic data, but they were far less relevant to the participants themselves and did not address the aspects that the participants thought were significant. That is, the participants' perspective was even more different and

varied than had been anticipated. Any subsequent research done by this researcher which involves users will thus have a much better grounding and awareness of the gap between the LIS perspective and the end user perspective.

There needs to be better acknowledgement both directly (by LIS professionals, academics, and researchers) and indirectly (through catalogue interfaces) of the ways in which library catalogue users conceptualise the bibliographic universe and its representation in the catalogue. Such acknowledgement would enable more user-friendly catalogues and better meet users' expectations of the role of libraries in the wider information environment.

Further research is planned around the method, and in particular into first-order and second-order perspectives, and into the notion of mental models (which is frequently used in LIS research) and phenomenographic conceptions.

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