The simple and the complex in E. C. Richardson’s theory of classification
Observations on an early KO model of the relationship between ontology and epistemology

Abstract
In light of ongoing debates about ontological vs. epistemological approaches to knowledge organization (KO), this paper examines E. C. Richardson’s treatment of ontology and epistemology in his theory of classification. According to Richardson, there is a natural order of things in the world accessible to human cognition, which may be expressed in two classificatory orders: evolutionary classification, which ranges classes of things from the most simple to the most complex, and logical classification, which ranges classes of things in the inverse order, from the most complex to the most simple. Evolutionary classification reflects ontological order and logical classification reflects epistemological order: both are faces of a single natural order. Such a view requires adherence to a representationalist, or, in Hjørland’s (2008) terms, positivist understanding of epistemology, wherein human knowledge faithfully mirrors the structure of the external world. Richardson’s harmonization of ontology and epistemology will find little favor among proponents of the currently fashionable pragmatist approach to KO. Nevertheless, it constitutes an early version of what Gnoli (2004) terms a naturalistic epistemology, which, once deepened and clarified, offers the best prospects for an explicit expression of both the ontological and epistemological dimensions of knowledge within a single classification of general scope.

1: Introduction: ontology vs. epistemology in KO
Ontology (i.e., an account of what exists in the world) and epistemology (i.e., an account of how human beings come to know) are both necessary elements in explaining the contents of human knowledge (i.e., what human beings know). In recent years, the field of knowledge organization (KO) has witnessed a vigorous debate about the relations between ontological and epistemological approaches to classification (e.g., Gnoli 2008, 139-140; Gnoli & Hjørland 2009). Although the protagonists of this debate agree that both ontology and epistemology have a role to play in classification design, they differ as to the relative importance to assign to these two approaches in the construction of classifications: some argue that classification should be based primarily on ontological considerations (e.g., Gnoli 2004, 265-267), while others accord primacy to epistemology (e.g., Hjørland 2003, 105-107). Since such deep theoretical cleavages run the risk of fostering a sense of intellectual fragmentation within the KO community, there have been calls for KO researchers to ask themselves whether the ontological and epistemological approaches to classification can be reconciled (Gnoli 2008, 139-140).

One approach to addressing this difficult and delicate question is to consider the ways in which ontological and epistemological considerations figured in earlier KO theorists’ accounts of classification. A careful analysis of such accounts has the potential to yield instructive examples of how ontology and epistemology can interact within the framework of a single KO theory. The purpose of this paper is to present a case study of such an analysis by examining interrelation between ontology and epistemology in the theory of classification set forth by one of the pioneers of KO within library and information science, the American bibliographer and librarian E. C. Richardson (1860-1939). I have chosen to focus on Richardson’s theory for two
reasons. First, his book, *Classification, theoretical and practical* (Richardson 1901), appears to have been the first work within the then emergent field of library science that was entirely devoted to formulating a systematic theory of classification and so came to exert a considerable influence on such prominent early proponents of KO theory as Berwick Sayers and Henry Bliss (Taube & Wise 1961, 64-65; Maltby 1975, 29): as such, Richardson’s theory is of great historical importance for KO. Second, although Richardson based his theory on what was essentially an ontological approach to classification (Gnoli 2006, 139), he accounted for epistemological issues within its framework as well: indeed, he posited a clear and distinct interconnection between an ontologically-based classificatory order and an epistemologically-based one, which he based on their varying relationship to a scale of ontological complexity. As we shall see, Richardson’s synthesis of ontology and epistemology was not unproblematic, for it was based on an epistemological theory that did not take full account of the range of complexities that hedge human knowledge. Even so, the clarity of its structure makes it a singularly apt example of an early attempt within KO at harmonizing classificatory orders based on ontology and epistemology within a single, idealized classificatory scheme.

### 2: Richardson’s evolutionary classification: an ontological order from the simple to the complex

Richardson’s (1901, v) goal in developing a general theory of classification was both to contribute to the theoretical understanding of classificatory principles in library science and to set forth principles that might guide the practical construction of library classifications. Like most of his contemporaries, he took it for granted that the classification of books in libraries was to reflect the universe of knowledge and that an ordered enumeration of primary disciplines – or, in the language of the day, sciences – was to provide the basic framework of main classes, wherefrom subdivision might proceed (Miksa 1992, 101-112): in other words, bibliothecal classification was to be based, mutatis mutandis, on the order of sciences. Now the order of sciences itself had to follow an organizing principle and this was a point on which classificationists might differ. Melvil Dewey (1876, 10), for example, claimed the “inverted Baconian” scheme as the theoretical basis for the order of main classes in his Decimal Classification: adapted from Francis Bacon’s account of the human faculties of knowledge, this arrangement of the main classes represented – at least in principle – an order of sciences ultimately based upon an epistemological theory (Gnoli 2006, 139). For Richardson, however, the principle for ordering the sciences was to be found not in the faculties of the human mind but in the things in this world that constitute the objects of the various sciences: arguing that “a science [...] is nothing apart from the things or facts with which it deals”, he posited that “the order of the sciences is simply the counterpart of the order of things” (Richardson 1901, 19).¹ On this view, the things of the world are related to one another in a natural order accessible to the human mind and a well-constructed classification of the sciences should seek to correlate their classificatory sequence in accordance with this order: in other words, the classification of the sciences should be based on a principle of ontological order.

What, then, did Richardson take to be the order of things? Richardson’s view of ontological order was strongly colored by the intellectual climate of his time. In the late
19th and early 20th centuries, the idea of evolutionary progress played a prominent role in American and European intellectual discourse: promulgated in popular works by scientists, such as the German biologist Ernest Haeckel, and philosophers, such as Herbert Spencer, the notion of development, over time, from simpler (or “lower”) to more complex (or “higher”) forms was held to provide a general framework for understanding the natural history of not only biological but also socio-cultural phenomena (Bowler 2009, 12, 190-196, 220-222; Dousa 2009, 78). Richardson adopted this framework as a basis for positing the order of things. In his view, a general classification should obey three general principles or laws: (1) the law of likeness, according to which “all things are organized according to their likeness”; (2) the historical law, according to which “the progress of things in time is also in general a genetic progress in complexity”; and (3) the law of evolution, according to which “the law of historical progress from the simple to the complex holds good of all things which tend toward continued existence” (Richardson 1901, 15). Furthermore, the law of evolution involved the correlation of three distinct notions: “logical progress in complexity”, “progress in space and time corresponding with progress in complexity”, and “the genesis of the more from the less complex” (p. 15). All this formed the basis for a definition of evolutionary classification as “classification according to the order of likeness from the simplest to the most complex” (p. 11). Such a classification, in Richardson’s view, corresponded to the order of things.

Richardson (1901, 29-39) used these canons of evolutionary classification to organize the things of the world in a linear order, progressing from ions, atoms, and molecules, through inanimate matter (i.e., “lifeless things”), plants and animals (i.e., “living things”) to human beings and societies (i.e., “human things”), and, ultimately, God (i.e., “supernatural things”). This order of things – which, in its general outlines, bears a distinct resemblance to that advocated by integrative levels theory – served as a basis for constructing a classification of sciences: in broadest terms, these followed a progression from “Hylology” (i.e., sciences dealing with inanimate matter, including physics, chemistry, astronomy, and geology), through “Biology”, to “Anthropology” (including psychology and sociology), and “Theology” (Richardson 1901, 39-44). In short, Richardson’s ideal theoretical order of the sciences was founded on an ontological basis, whose foundational principle was gradation in complexity, progressing from the simple to the complex.

3: Richardson’s logical classification: an epistemological order from the complex to the simple

According to Richardson, evolutionary classification reflected the natural order of things, as it had come to be over the course of cosmic history. However, it was only one form of what he termed natural classification – i.e., classification based on the essential characteristics of the things being classified (Richardson 1901, 9, 60). The second form of natural classification that he identified was logical classification, which he defined as “classification according to the degree of likeness from most complex to the simplest” (p. 11). Logical classification formed the mirror image of evolutionary classification, for it ordered things in a sequence from the most complex to the most simple, whereas the latter had proceeded from the most simple to the most complex: differing only in
Richardson’s argument here is that, whereas evolutionary classification truly represents the order of nature as it has manifested itself over time and so constitutes an appropriate conceptual basis for a classification of the sciences, logical classification presents a sequence of classes that better reflects the way in which the human mind approaches the order of things and so is more suitable for serving as a basis for library classifications. This is an epistemological argument for logical classification, for it explicitly grounds the sequence of inverse evolutionary order in what Richardson posited to be habits of human cognition. On this account, logical classification not only formed one of the faces of the one natural order of the world, but it was congruent with the way in which human beings orient themselves cognitively towards this order. The importance of this for the general structure of his classification theory should not be minimized. Whereas one face of natural order (i.e., that of evolutionary classification) captured the ontological structure of the world, the other (i.e., that of logical classification) refracted this structure through the inverting prism of epistemology: ontology and epistemology thus functioned as two complementary aspects of a single, well-integrated classificatory structure.

4: Richardson’s epistemology: its nature and the limits of its application

Richardson’s view that an epistemological order proceeding from the complex to the simple is inversely related to an ontological order proceeding from the simple to the complex was based on a core assumption about their conceptual composition. To wit, he assumed that both classificatory orders would contain the same unit classes standing in the same position in relation to one another, the only difference being in the directionality of their sequence (Richardson 1901, 73). Now it is possible to posit a one-to-one correspondence between the component units of an ontological and an epistemological order only if one holds that human ideas about the way that things are truly represent the way that they, in fact, are: in other words, it requires that one subscribe to a realist epistemology. Richardson’s own approach to epistemology took just such a bent. In his view, classification was a human cognitive activity that sought to reduce the “chaos of our ideas […] to order” in such a way that it would produce “a connected view of everything that is, so far as [our] ideas go” and so lead to “a just idea
of the whole of things” (p. 28; cf. p. 2-3, 5). To arrive at a “just idea of the whole of things”, it was first necessary to calibrate one’s own ideas of things in the world with the things themselves so that the former reproduced the latter as faithfully as possible: in Richardson’s words, “[i]t is the outer universe which is the starting point and fixed factor of all the search for order. As the inner idea corresponds with the real fact or truth or not, it is worthy or worthless” (p. 20). Once each “unit idea” had been adjusted to “exactly correspond with the reality” that it represented (p. 29), it could be set into a classificatory order, which, as we have seen, Richardson took to represent the structure of the world as it had developed over time: both the conceptual content and structure of the classification would then constitute “an inner cosmos ‘mirroring’ the outer cosmos” (p. 28). In short, Richardson held a representationalist view of knowledge, according to which not only individual ideas but the classificatory relations between them formed a veritable “mirror of nature” (cf. Rorty 1980). It is little wonder, then, that he understood epistemology to be “the science of organized ideas in their exact correspondence with outward things, or knowledge” (Richardson 1901, 41).

It is instructive to consider Richardson’s epistemology in light of current epistemological discussions within KO. One lens through which to view his theory is Hjørland’s typology of basic epistemological positions for KO, which exists in both an expanded (e.g., Hjørland 1997, 60, 71, 74, 76) and a reduced version (e.g., Hjørland 2008, 97). In terms of the expanded version of this typology, Richardson’s core theoretical tenet that human ideas are ultimately derived from experience of the external world is congruent with the basic tenets of empiricist epistemology. Likewise, insofar as Richardson posited human knowledge to be largely a passive and faithful reflection of the external world, his version of empiricist epistemology may be said to underwrite what the reduced version of the typology characterizes as a positivist approach to knowledge (Hjørland 2008, 97). This view of knowledge clearly aligns Richardson’s ideal of theoretical classification with the epistemological positions of contemporaries such as Charles Cutter (cf. Miksa 1977, 33-34, 53-54) and Paul Otlet (e.g., 1934, 40, fig. 2; 1938, 100), who, mutatis mutandis, viewed knowledge in representationalist terms. It also sets it at odds with the currently fashionable canons of pragmatist epistemology, according to which classifications should reflect the socio-cultural goals, values, and interests of particular epistemic communities rather than try to represent the world as a whole in a neutral fashion (Hjørland 2003, 105-106; Hjørland 2008, 97).

Although many KO researchers today would disavow Richardson’s straightforwardly representationalist stance in favor of a pragmatist understanding of knowledge and KO, there are some who are more sympathetic to his point of view. For example, Gnoli (2004, 263) has recently discussed what he terms a naturalistic approach to KO, according to which “any knowledge element is considered as part […] of our general representation of the world as we know it”. The core epistemological assumption of this approach is that “the basic categories and thinking […] must be founded in some way on features of the real world: otherwise, they would have been disadvantageous for life, hence would have not evolved” (p. 265). This leads to a doctrine of “hypothetical realism”, which views the “categories of human knowledge as being strictly related to the structure of reality, though not reflecting it in a perfect and complete way” (p. 265).
In its main outlines, Richardson’s epistemic stance has much in common with the naturalistic epistemology set forth by Gnoli. Both understand human knowledge to be strongly constrained by, and so to reflect the way that the external world is. Furthermore, both posit classificatory orders of universal scope based on the idea of a progression from simpler to more complex entities – evolutionary classification in the case of Richardson; integrative levels in the case of Gnoli – that, in their view, correspond – at least within the current limits set by human perceptual capabilities and contemporary scientific knowledge (Richardson 1901, 30; Gnoli 2004, 265-266) – to the structure of reality. Richardson’s and Gnoli’s epistemologies differ, however, in their respective accounts of the tightness of fit between entities in the outer world and human conceptualization of those entities. As we saw earlier, Richardson (1901, 29) insisted on an exact and total correspondence between human ideas and the things in the external world to which they refer. Such a correspondence is possible only within an epistemological outlook that disregards the existence of different cultural perspectives in favor of a single, neutral, and universal account of human knowledge. Gnoli (2004, 265), by contrast, suggests that the correspondence between human categories and the things that they represent is not quite so absolute: in his view, members of different cultures may pick out different real features of a single entity and so their respective ideas about that entity may vary in particulars, although converging in their general contours (cf., already, Bliss 1929, 123). This realist account of human knowledge, which acknowledges local diversity within a deeper underlying cognitive unity, marks an advance over the monistic perspective of Richardson.

5: Concluding remarks
In his theory of classification, E. C. Richardson harmonized both ontological and epistemological order within a single, ontologically based classificatory structure. He did so by positing that a sequence of classes proceeding from most complex to most simple, known as logical classification and representing an epistemological order, is inversely related to a sequence of classes proceeding from the most simple to the most complex, known as evolutionary classification and representing the ontological order: ontology and epistemology were thus represented as forming two sides of a single natural order. There was good philosophical precedent for viewing epistemological order as the inverse of ontological order, an idea that ultimately stems from Aristotelian tradition (Chroust 1961, 603-607), and one may well admire the elegant simplicity of Richardson’s solution. Such simplicity, however, came at a heavy price. Richardson’s theory required a pre-critical, representationalist account of epistemology, according to which human beings come to know the world as it is and the way in which the come to know the world is invariant and unitary. Such an account may have been satisfactory in Richardson’s day. However, it fails to do justice to the variety of perspectives that one encounters in the multicultural world of today. We have seen that more recent versions of naturalistic epistemologies seek to provide more nuanced accounts of how human knowledge can be perspectival and yet capture certain salient aspects of the structure of external reality (e.g., Gnoli 2004). It is in providing practical mechanisms for expressing this refined vision of naturalistic epistemology (e.g., Gnoli 2009) that the solution to the problem of reconciling ontology and epistemology in a single classification system is to be sought.
Notes

1. In Richardson’s view, “things” included ideas as well as physical objects, for he viewed the former in both materialist and mentalist terms (Richardson 1901, 3, 26-27).

2. It should be noted that, although Richardson did not espouse a pragmatist epistemology, he was pragmatic with regards to the classification of books in libraries; he was willing, in practice, to introduce numerous modifications to the ideal classificatory orders of evolutionary and logical classification in order to accommodate individual library classifications to the exigencies of their milieux of use (Richardson 1901, 69-70). For further discussion of this practical strain in his thought, which he shared with contemporaries such as Cutter, see Dousa (2009, esp. 82-83, 87-88).

References


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*Web documents were accessed 28 September 2009.*