Empirical Observation, Rational Structures, and Pragmatist Aims
Epistemology and Method in Julius Otto Kaiser’s Theory of Systematic Indexing

Abstract
Hjørland’s typology of the epistemological positions underlying methods for designing KO systems recognizes four basic epistemological positions: empiricism, rationalism, historicism, and pragmatism. Application of this typology to close analysis of Julius Otto Kaiser’s theory of systematic indexing shows that his epistemological and methodological positions were hybrid in nature. Kaiser’s epistemology was primarily empiricist and pragmatist in nature, whereas his methodology was pragmatist in aim but rationalist in mechanics. Unexpected synergy between the pragmatist and rationalist elements of Kaiser’s methodology is evidenced by his stated motivations for the admission of polyhierarchy into syndetic structure. The application of Hjørland’s typology to similar analyses of other KO systems may uncover other cases of epistemological-methodological eclecticism and synergy.

Introduction: The Theoretical Background
In recent years, the field of knowledge organization (KO) has undergone an epistemological turn, as researchers have increasingly addressed the issue of what theories of knowledge (should) underpin the practice of classification and indexing (e.g., Hjørland, 1997, 2003; Svenonius, 2004; Zins, 2004). In light of KO’s fundamental concern with categorization, it is only appropriate that one product of this interest in theories of knowledge has been a typology of the different epistemological positions that provide its theoretical underpinning. Elaborated by Birger Hjørland in a series of publications (e.g., Hjørland, 1998, 163; 2003, 105–107; Hjørland & Albrechtsen, 1999, 134), this typology recognizes four basic epistemological orientations: empiricism, which posits that knowledge is generated through the observation of phenomena and constructed through the process of induction; rationalism, which holds that knowledge is attained through rational intuition of pre-existent categories and built up by the process of deduction; historicism, which foregrounds the historical and contextual factors that shape knowledge; and pragmatism, which lays stress on the knower’s goals and values, as well as the consequences of his or her conceptualizations for both him/her and the objects with which (s)he is concerned, as key elements in the constitution of knowledge.1

In presenting this typology, Hjørland (1998, 163) distinguishes between the epistemological positions themselves and the methods of classification (or indexing) that they underwrite. This distinction is important, for it suggests that, on an analytic level, the use of any given method within a given KO system can be dissociated from the epistemological position that provides its theoretical justification—that is to say, the methods used in constructing a KO system need not mirror, in all particulars, the specific epistemological commitments of its creator(s) and/or curator(s). Indeed, as Hjørland and Albrechtsen (1999, 133) have observed, actual systems tend not be tied exclusively to methods deriving from a single epistemological position but often incorporate methodological elements derived from different epistemological theories.

1. These lapidary characterizations of the four epistemological positions only summarize, in most general terms, what are highly complex and widely ramified philosophical orientations: for a fuller tabular overview of the basic principles of these positions, see Hjørland, 1997, 60, 71, 74, & 76.
Given that most KO systems are methodologically hybrid, it is legitimate to ask what role Hjørland’s typology might play within KO research. Hjørland and Albrechtsen (1999, 133) have suggested that it can further two lines of research: “to try to illuminate the methodological and theoretical assumptions behind given systems and point out the weak and strong points of these different methods”. In practice, these two lines of research have not been pursued with equal intensity. Considerable effort has been devoted to the comparison and evaluation of epistemologically-grounded methods: one may cite, for example, Hjørland’s (1998, 164; 2005) discussions of the limitations of empiricist and rationalist methods in KO and his calls for greater deployment of historicist and pragmatist methods. Much less work, however, has been done in using the typology as an analytical tool to examine in detail the theoretical presuppositions of individual KO systems. Studies invoking the typology have been more concerned with presenting individual systems as examples of particular epistemological types than with using the types to analyze them: as a consequence, characterizations of the epistemological traits of specific systems have tended to be cursory and sweepingly general in their scope (e.g., Hjørland, 2003, 105, 107). This tendency toward blanket characterization of individual KO systems as exemplars of types runs the risk of foregrounding only one aspect of their epistemological-methodological apparatus. By the same token, it leaves unfulfilled an important aspect of the typology’s potential for enhancing KO research—its utility as a tool in identifying the different epistemologically-grounded elements within a single system and analyzing how these elements interact within the structure of that system.

In this paper, we present a case study of how Hjørland’s typology can be profitably applied to the detailed analysis of an individual KO system. As the object of our analysis we have chosen Julius Otto Kaiser’s (1911, 1926) method of systematic indexing. Originally conceived as a means for organizing information within in a corporate library setting, Kaiser’s indexing theory is best known today for certain features—namely, its stipulations that all indexing terms be divided into mutually exclusive categories of “concretes” and “processes”, which are then to be synthesized into indexing “statements” according to strict rules of citation order—that prefigure key principles of facet analysis (e.g., Svenonius, 1978; 2000, 173–174). When considered in tandem with Kaiser’s (1911, §§ 16–18, 295, 391) firm belief that the purpose of indexing is to analyze literature down to its component “facts” (i.e., informational units) and rearrange them into subject statements with “almost mathematical exactness”, these features may give the impression that his indexing theory was thoroughly rationalist in nature. However, a careful reading of Kaiser’s discussions of systematic indexing reveals that his theory was much more eclectic than is generally recognized. Indeed, as we shall see, his epistemological perspective and his indexing theory incorporated elements from empiricist and pragmatist, as well as rationalist, epistemological-methodological views. Scrupulous and thorough in his exposition, Kaiser gave explicit, and often detailed, justifications for his methodological positions: thus, his writings serve as an excellent venue for (1) using Hjørland’s typology to distinguish the different epistemological elements underlying the methods of systematic indexing and (2) examining how these different elements reinforced one another within the total economy of Kaiser’s indexing theory.

**Between Empiricism and Pragmatism: Kaiser’s Epistemology**

According to Kaiser (1911, §§ 5, 16, 46, 297), systematic indexing concerns itself with the analysis, distillation, and (re)organization of information that has been encoded in
language and recorded in literature. This recorded information, in turn, reflects human experience of, and thought about, the world, for “[w]hat we record is what we observe, what we reason out” (§ 52 [emphases his]): in other words, it represents knowledge (§ 297). Now as pathways to knowledge, the activities of observation and ratiocination require the existence of entities that are the ultimate objects of knowledge. In Kaiser’s view, these objects are (1) “things in general, real or imaginary,” and (2) “the conditions attaching to them”: he calls the former “concretes” and the latter, “processes” (§ 52 [emphases his]). Kaiser’s choice of the term “concretes” as a term for designating things in general is revealing, for it indicates that, despite his stipulation that things can be either “real” or “imaginary”, the prototypical thing is a material object perceptible to the senses (cf. Svenonius 1978, 135): as he put it, concretes “occupy a space, they have a form” and “[e]ach concrete represents something definite to handle” (Kaiser, 1911, § 108). Kaiser’s use of the term “processes” to denote the conditions attendant upon concretes is also significant, for in glossing “processes” as “what [concretes] do or what we can do with them” (§ 55), he attributed a dynamic quality to them. Concretes, then, constitute the underlying substance(s) of the world and processes are their qualities as manifested by their activity: together, they are the sum total of what is knowable about the world (§ 56).

For Kaiser (1911, §§ 53, 56), knowledge is ultimately rooted in the observation of concretes and their conditions. By means of observations of concretes, he argued, we come to form definite conceptions of the entities in the world around us: “[e]ven in their most complex forms—for instance, a battleship specifically pointed out—we know of what they are composed, there is no margin for doubt as to what is included and what is excluded” (§ 108). Yet, Kaiser cautioned, if observation-based conceptions of concretes are definite, they are also strongly circumscribed. This limitedness is due to the fact that “concretes are only known to us superficially. … We are unable to give a complete description of any concrete, no matter how many attempt a description” (§ 55)—that is to say, one cannot come to know a concrete by observing it in isolation and intuiting its essence as a Ding an sich. Rather, Kaiser claimed, persons come to know concretes by means of observing the processes in which they are implicated: for example, “[e]lectricity … is a concrete, but it is only known to us by its actions, and it is by observing its actions that we arrive at any appreciation at all of what its probable nature is (§ 55). The upshot of this is that knowledge, for Kaiser, takes on a strongly “phenomenalist” cast: an observer can come to know a concrete only by dint of the qualities that it reveals in its activity within the world.

Besides being dependent on observation of the behavior of concretes in the world, knowledge is also contingent on how this behavior is observed. Kaiser (§§ 55–56) held that “observation is individual” and “the individuality of an observer will be expressed in each of his observations and their application”. He believed that the act of observation is “not an automatic act” but engages the “our mental faculties” (§ 56): it is not exhausted by the merely perceptual action of looking but involves the cognitive activity of seeing. In Kaiser’s view, then, the process of coming to know something through observation is conditioned by the individual observer’s background and capacity for observation: the generation of knowledge is essentially a private, subjective affair.

At first glance, Kaiser’s phenomenalist epistemology appears be quite congruent with certain tenets of classical empiricism. For example, his claim that concretes cannot be known as they are in themselves but only through their dynamic qualities as perceived by the person observing them bears a strong resemblance to the Lockean distinction between
the (unknowable) “real essences” and (knowable) “nominal essences” of things (e.g., Locke, 1975, 417–418). Similarly, his insistence that human knowledge builds on acts of observation that are private and subjective is strongly reminiscent of the “subjective idealism” that characterizes empiricist approaches to epistemology (Hjørland, 1997, 61). There are, however, other aspects of Kaiser’s epistemological perspective that appear to point beyond empiricism tout court.

Standing in tension with the empiricist elements of Kaiser’s epistemology are ideas that are best characterized as pragmatist. Kaiser’s (1911, § 55) view that humans conceive of concretes on the basis of observations of “what they do or what we can do with them” is uncannily reminiscent of Peirce’s (1955, 31) pragmatist maxim, according to which, in observing an object, we must “[c]onsider what effects, that might conceivably have practical bearings, we conceive the object to have. Then, our conception of these effects is the whole of our conception of the object”. In both cases, knowledge of an object is dependent upon observation and analysis of its action in the world. Furthermore, as noted earlier, Kaiser held the epistemological tenet that, since human observers are unable to give a complete description of concretes in themselves and can only form an estimate of their “probable nature” by observing their actions, all knowledge is ultimately provisional in nature:

[E]very new discovery … forces us to modify sometimes some of our fundamental conceptions of concretes, which in turn leads to modifications in our methods of observing and describing them. Hence whatever we assert is always subject to the proviso: at the present stage of our knowledge. (Kaiser, 1911, § 54 [emphasizes his])

This view of knowledge as provisional and constantly subject to revision is directly comparable to Peirce’s (1955, 4, 54–59) notion of fallibilism, according to which our knowledge of the world is never absolutely certain, but ever revisable in the light of new experience—an idea that historically has been a central Leitmotif of pragmatist philosophy. Moreover, Kaiser’s (1911, § 58) dictum that “individual observation is best followed by individual application of the knowledge gained” points to yet another feature of his approach that is consonant with pragmatism. In his view, the goal of knowledge is not simply to attain a theoretical understanding of the world but to aid in the prosecution of one’s goals: as he puts it, “the philosopher, the scientist and the business man have this in common; each applies individual energy to available information in order to attain the object each has in view” (§ 3). In light of these features, Kaiser’s epistemology seems to lie on the borderlands between empiricism and pragmatism and so reminds us of the sometimes underappreciated affinities between these two epistemological approaches (cf. Kolakowski, 1972, 181–202).

Pragmatic Aims and Rational Structures in Kaiser’s Indexing Method
Kaiser’s inclination toward epistemological pragmatism dovetailed nicely with his broadly pragmatist attitude towards indexing as an activity—an attitude doubtless fostered by his longstanding association with special libraries. In his view, the goal of indexing is to release information from its bibliographical packaging and make it “accessible” and “ready for use” to its users: accordingly, an index “must be so constituted that we can exercise systematic control over the information thus made available” (Kaiser, 1911, § 51, 15). This control of information, however, has to be congruent with the purpose for which it is being organized. In Kaiser’s words, “[a]ll organization has a purpose. The object of organization is not only to control our subjects [i.e., individual information units—TMD]
but to control them so as to give effect to our purpose” (§ 632). Needless to say, this purpose will vary, depending upon the organization for which the index is prepared: different enterprises will have different purposes and the index created for each enterprise will reflect its particular concerns.

The particular purpose of a given index, according to Kaiser, should determine both its organization and contents. In his words, “[o]ur plan of control will … depend upon our purpose” and so “[m]ethods must of necessity always be subordinate to purpose” (Kaiser, 1911, §§ 106, 248)—that is to say, the purpose for which the index is being prepared should govern the process of organizing the information at hand. This information, however, should consist only of that which is considered relevant to the purposes of the enterprise in question:

We want to be informed—and we want all possible information—on that which has a direct bearing on what we are concerned with. Indexing by which we make our information accessible [sic] has therefore a negative and a positive function[:] it throws out what is not required, it concentrates on that which is required (§ 45).

By calibrating both the selection and organization of information to the perceived needs of an enterprise, “we reduce our materials to that which is essential for our purpose, we create a nucleus of effective information, information which will be of real use to us in the pursuit of our business” (§ 46). In general, then, Kaiser’s vision was one of an index “developed on the basis of the analysis of goals, values and consequences”—the very essence of a pragmatist KO system as defined by Hjørland (2003, 105)—within the framework of a corporate library.

Although Kaiser envisioned the function of indexing in pragmatist terms, his indexing method was based largely on rationalist mechanisms. The lexical content of the index had an empirical basis, for Kaiser (1911, § 114, 318) advocated using words and word phrases extracted from the text being indexed as indexing terms. Once a term had been selected, it was subjected to rather stringent regimentation. Each term was assigned to one of a triad of categories representing an expansion of Kaiser’s original dyad of entity types: “concretes”, “countries” (technically, a subclass of concrete), and “processes” (§§ 299–301). These categories were to be mutually exclusive: to this end, Kaiser (1926, 23, § 11; 27–28, §§ 22–25) proposed a series of ways to disambiguate potentially problematic terms (e.g. “organisation” is a concrete term, while “organising” is a process term), going so far as to semantically factor compound words whose components designated concretes and processes (e.g., “bacteriology” became “bacteria” [concrete] + “study of” [process]). These fundamental categories were combined into more complex strings of terms known as “statements”, whose composition was strictly limited to three possible syntactic forms: (1) Concrete–Process, (2) Country–Process, and (3) Concrete–Country–Process (Kaiser, 1911, § 302). An important consequence of this syntactic regimentation was that only concretes or countries could serve as main index entries, while processes occurred solely as subdivisions—a reflection of Kaiser’s (§§ 302, 313, 384) view that, in business contexts, concretes should have primacy over processes. The main term of each statement (i.e., the country or process) was then related to other main terms by means of a syndetic structure recognizing synonymy, hierarchical (i.e., general term–specific term), and, to a lesser degree, associative relationships (§§ 414, 416, 423).

This proto-faceted indexing method was not immune to the limitations that can hedge rigorously rationalist approaches: for example, as Kaiser himself admitted, the categories of “concrete” and “process” could not accommodate certain classes of terms (e.g., math-
ematical terms); the semantic factoring of terms couldn’t account for polysemous compound words; and the strict syntax of subject statements imposed a structural limitation on their expressiveness (Kaiser, 1911, § 327; 1926, 27–28, §§ 23–24). There was, however, one respect in which Kaiser’s pragmatist vision of indexing influenced the articulation of his otherwise rather rigid rationalist structures. This was his admission of polyhierarchy into the syndetic structure of the index. As the following passage shows, Kaiser’s acceptance of polyhierarchy was motivated by a classically pragmatist motive:

Take any commodity: it has a number of properties, and may be viewed from a number of different aspects. Logically it belongs to just as many classes or classifications as it has aspects. … [B]y means of related terms we may … combine them [sci., main entry terms—TMD] in as many logical classifications [sci., taxonomical relationships—TMD] as may be called for by our business interests. We can choose these connections or classifications in strict accordance with our business needs, and we are of course presumed to be expert in our own business. (Kaiser 1926, 26, § 20)

In arguing that a given main entry term could serve as a subclass term to different superordinate class terms and so stand in a number of taxonomical relationships on the basis of the anticipated “business needs” of the users for whom the index had been prepared, Kaiser was able, at least in part, to wed his pragmatist aims with the rationalist mechanisms of his index.

Concluding Remarks
Kaiser believed that the validity of his systematic indexing would ultimately stand or fall with the degree of consistency that an index could achieve in its structure and so sought to create as consistent a rationale for it as possible: in this, he gave voice to a rationalist impulse that characterizes both his system and his mode of exposition. However, absolute consistency is an elusive goal and Kaiser did not entirely succeed in this enterprise, for neither the epistemological bases nor the methodology of his indexing system are free of inconsistencies and paradox (cf. Svenonius, 1978). In using Hjørland’s typology of epistemological positions to an analysis of systematic indexing, we have sought to pierce Kaiser’s discursive veil of consistency, uncover the hybrid nature of his epistemology, and limn the ways in which his epistemological position(s) related to his methodological prescriptions.

As we have seen, Kaiser’s epistemology combined elements of empiricism and pragmatism, whereas his indexing method involved rationalist mechanisms within a broadly pragmatist framework. The prominent role of pragmatist ideas in both Kaiser’s epistemology and his methodology is striking, especially in light of his reliance on rationalist mechanisms for index construction: the intersection of these two approaches in the methodology of systematic indexing suggests that the gulf between them is less extensive than has sometimes been suggested. Also noteworthy is the fact that, despite its eclectic epistemological-methodological bases and some inconsistencies in structure, systematic indexing proved, on the whole, to be a fairly effective indexing method for industrial libraries (cf. Barbour apud Kaiser, 1926, 37–41): indeed, its hybrid nature sometimes enriched its structure, as is evidenced, for example, in the interweaving of pragmatic aims and rationalist structures in its polyhierarchically inflected syndetic structure.

In conclusion, we note the utility of Hjørland’s typology in uncovering these otherwise hidden aspects of Kaiser’s system. Its application to the close analysis of other KO systems has the potential to reveal similar epistemological-methodological eclecticism and synergies in systems that, at first blush, seem monolithic in their approach: such analyses may well improve our understanding both of historical KO systems and the various ways
in which different epistemological positions can interact within the limits of a single classification or indexing scheme.

References


