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Intellection and Intuition: On the Epistemology of S.R. Ranganathan

Abstract

The Indian librarian and library theorist S.R. Ranganathan (1892-1970) is generally recognized as a seminal figure in the development of facet analysis and its application to classification theory. In recent years, commentators on the epistemology of knowledge organization have claimed that the methods of facet analysis reflect a fundamentally rationalist approach to classification. Yet, for all the interest in the epistemological bases of Ranganathan's classification theory, little attention has been paid to his theory of how human beings acquire knowledge of the world – i.e., his epistemology proper – or to the question whether this theory reflects a rationalist outlook. This paper examines Ranganathan's statements on the origins of knowledge to assess if they are congruent with rationalist epistemology. Ranganathan recognized two different modes of knowledge – *intellection* (i.e., intellectual operations on sense data) and *intuition* (i.e., direct cognition of things-in-themselves) -- and it is in virtue of the latter that his epistemology can be considered to fall within the ambit of rationalism. Intuition as a source of knowledge plays a role in Ranganathan's classification theory, most notably in his model of scientific method underlying classification development, his vision of the organization of classification design, and his conceptualization of seminal mnemonics and a reduced number of fundamental categories as important elements in the design of classification notation. Not only does intuition subtend the rationalism of Ranganathan's epistemology but it also serves as a bridge to another often-neglected aspect of his thought, namely his valorization of mysticism. Indeed, Ranganathan's theory of knowledge is best characterized as mystical rationalism .

In memory of Francis L. Miksa, distinguished historian and theorist of knowledge organization

1. Introduction

The Indian librarian and library theorist S.R. Ranganathan (1892-1970) is generally recognized as a seminal figure in the development of facet analysis and its application to classification theory. In recent years, scholars of knowledge organization (KO) interested in tracing the epistemological currents of the field have claimed that the methods of facet analysis represent a fundamentally rationalist approach to classification (e.g., Hjørland 2013) and, accordingly, Ranganathan's theory of classification has been characterized as essentially rationalist in its orientation (e.g., Hjørland 2003, 105; Tennis 2013, 793). Historians of KO have adduced evidence in favor of this thesis: most notably, it has been shown that Ranganathan patterned his postulational approach to classification on the axiomatic method of mathematics, a rationalist discipline *par excellence* (Miksa 1997, esp. 169-170; 1998, 68-73). Yet, for all the interest in the epistemological bases of Ranganathan's methodology of classification, little attention has been paid to his theory of how human beings acquire, and justify, their knowledge of the world – that is to say, to his epistemology in the strict sense of the term – and to the question whether this theory reflects a rationalist outlook as well. Current characterizations of Ranganathan's epistemology in the KO literature are thus incomplete.

The purpose of this paper is to fill in the aforementioned lacuna by examining Ranganathan's statements on the origins of knowledge to assess if they are congruent with rationalist epistemology. Our examination will show that Ranganathan recognized two different modes of knowledge – intellection and intuition – and that it is primarily in virtue of the latter that his epistemology can be considered to fall within the ambit of rationalism. We shall then briefly review the role of intuition in Ranganathan's theory of scientific method and classification development, his views on the organization of classification design, and his conceptualization of seminal mnemonics. Furthermore, we shall show that not only does intuition subtend the rationalism of Ranganathan's account of the origins of knowledge but it also serves as a bridge to another aspect of his thought that has received some attention from commentators, namely his valorization of mysticism (e.g., P.S.J. Kumar 1992, 191-201; Langridge 1974). In this respect, Ranganathan's rationalism is richer, more complex, and, indeed, more interesting than has hitherto been recognized.

2. Methodological Preliminaries I: Defining Rationalism in Epistemology

Before turning to Ranganathan's theory of knowledge itself, it is necessary to say a few words about the definition of rationalism. Within the theoretical discourse of KO, rationalism is usually characterized as an approach to knowledge organization that privileges the use of *a priori* categories, deductive processes, and logical division in developing the structure and contents of classification (e.g., Hjørland 2003, 105; 2013; 2014, esp. 370; cf. Dousa and Ibekwe-SanJuan 2014, 152).[1] Such a characterization is useful in that it foregrounds features of rationalism that are readily identifiable in methodological precepts for classification. However, it underplays the one aspect of rationalism that most strikingly separates it from other epistemic outlooks and so defines it as a distinct epistemological position – its account of what can be counted as legitimate sources of knowledge. It is advisable, then, to consider briefly how rationalism is defined within the philosophical discourse of epistemology.

From the late 18th century onwards, Western philosophers have tended to define rationalism as an epistemological position in opposition to empiricism.[2] According to this traditional contrast, proponents of empiricism hold that all knowledge ultimately derives from, and finds its justification in, experience of some sort, especially sensory experience (Meyers 2004, 2-3; Priest 2007, 11). Empiricists accept inference, both deductive and inductive, as a means of building up knowledge about the world: however, all chains of inference must ultimately be anchored in data acquired by experience, be this sensory or introspective. As a rule, adherents of rationalism do not deny that much of human knowledge

[1] For a fuller list of the tenets of rationalism, see Hjørland 1997, 71.

[2] The current distinction between empiricism and rationalism as opposed epistemological schools derives primarily from a historiographical schema of the development of early modern philosophy adumbrated by Immanuel Kant (1724-1804) and elaborated by various English and German historians of philosophy over the course of the 19th and early 20th centuries (Vanzo 2013, 2016), though earlier antecedents to the opposition can be found in the writings of medieval and early modern thinkers (Priest 2007, 7-8). Although philosophers and historians of philosophy today generally agree that the distinction is untenable as a historiographical framework, it is still considered to have utility as a typological framework for the classification of epistemological theories.

derives from experience. However, they posit that some substantive knowledge about the world can be acquired independently of experience, whether through the presence of innate ideas in the human mind, direct cognitive intuition that bypasses the deliverances of the senses, or some other such mechanism (Cottingham 1997, 6, 7-9; Huenemann 2008, 4-5). In other words, empiricists hold that, ultimately *all* substantive knowledge of the world is *a posteriori* with respect to experience, whereas rationalists maintain that at least *some* substantive knowledge is *a priori* in nature (Meyers 2003, 3; Priest 2007, 9).[3] The distinctive feature of rationalism as an epistemological theory, then, is its affirmation of the possibility of substantive *a priori* knowledge about the world and it is with this criterion in mind that we shall consider Ranganathan's views on the origin of knowledge.

3. Methodological Preliminaries II: Ranganathan Between East and West

Another question confronting anyone seeking to undertake an analysis of Ranganathan's theory of knowledge is whether the categories of rationalism and empiricism are suitable tools for interpreting his thought. These categories are the products of the Western philosophical tradition, which differs, in significant ways, from the various philosophical traditions that have arisen on Indian soil – most notably, perhaps, in its tendency, in modern times, to divorce itself from consideration of questions of ultimate meaning and issues relating to the religious and spiritual spheres of life, which have traditionally been, and continue to be, of great importance within Indian philosophy (Hamilton 2001, 1-8; King 1999, 1-16). Now Ranganathan's cultural background was that of a Hindu Brahmin and he accordingly drew on the resources of Indian philosophical-*cum*-religious traditions in formulating and communicating his ideas (cf. P.S.G. Kumar 1992, 2-3, 181-182; Langridge 1974, 32; Mazzocchi 2013, 767-768; Rahman 1965, 678, 681; Satija 1978, 22-23; 1992, 30-32, 145). Because of Ranganathan's rootedness in Indian philosophical lore, some commentators have argued that philosophical categories derived from Western thought – *in casu*, "empiricism" and "rationalism" – do not provide an appropriate framework within which to consider his thought (e.g., Mazzocchi 2013, 767, 773).

One may readily agree with the view that the various streams of Indian philosophical tradition differ in significant ways from their Western counterparts and that the contents of the former cannot be mapped *tout court* onto the theoretical grid of the latter. Yet this does not lead to the conclusion that it is methodologically illicit to consider Ranganathan's thought

[3] In drawing the contrast between empiricism and rationalism in terms of *a priori* and *a posteriori* knowledge, it is crucial to stipulate that the knowledge in question is *substantive*: that is to say, that it is knowledge about real entities existing in the world and not simply about concepts existing in the mind. This stipulation is necessary because empiricists generally accept that it is possible to justify some statements about the latter without reference to experience -- for example, one does not need to invoke experience to justify the truth of the (tautologous) statement "Bachelors are unmarried men" – but hold that all statements about the former require reference to experience (Meyers 2003, 3-4). In other words, proponents of empiricism do not deny the possibility of *a priori* knowledge *per se* but they do deny the possibility of substantive *a priori* knowledge, whereas rationalists affirm the existence of the latter.

within the framework of the debate between rationalism and empiricism. The reason for this is twofold.

First, although there are considerable differences in both the content and style of Western and Indian traditions of philosophical inquiry, these traditions are not, by any means, incommensurable. As one team of Indian commentators on the subject has put it, "the basic problems of philosophy have been the same in the East as in the West and the chief solutions have striking similarities" (Chatterjee and Datta 2016 [1939], 3). In fact, it is not difficult to find points of convergence between Indian and Western epistemological views. For example, the members of the Cārvāka school of philosophy, which upheld a strictly materialist view of the world, considered perceptions derived from sense impressions to be the only reliable source of knowledge about the world, going so far as to cast doubt on the legitimacy of any form of inference as a source of knowledge (Chatterjee and Datta 2016 [1939], 25-26, 53-68; King 1999, 16-22): such a doctrine can clearly be characterized, in terms of Western epistemological categories, as a thoroughgoing, even radical, form of empiricism (Dawes 2017, Section 1). Although most streams of Indian philosophical tradition cannot be mapped as neatly onto Western categories as the Cārvāka school, there is generally sufficient overlap between their core epistemological assumptions and those of Western philosophical tradition to allow for at least a broad characterization of them as "empiricist" or "rationalist" in tenor (cf. Hjørland 2014, 374). To be sure, an interpreter must be ever sensitive to the particular differences in doctrine and worldview that distinguish Indian epistemological views from Western ones: provided that he or she is scrupulous in noting such points of divergence, he or she does little interpretative violence in characterizing a given Indian epistemological view with Western typological categories such as "empiricism" or "rationalism".

A second reason for considering it methodologically acceptable to examine Ranganathan's epistemology in terms of the contrast between the Western philosophical empiricism and rationalism is that his thought, like that of many Indian intellectuals, was culturally hybrid. Although his family background and early education formed him primarily within the horizons of Hindu tradition, his college education in mathematics, his teacher training, and his library training in England exposed him to Western thought and culture. As a consequence, Ranganathan was acquainted with both the traditional Hindu and modern Western worldviews: as one commentator has aptly put it, "his cultural being was rooted deep in [Indian—TMD] tradition," while "his intellectual being … was essentially Western oriented" (Girija Kumar 1992, 46). Ranganathan himself felt a strong affinity for the progressive, scientific elements of Western thought, confiding to one of his friends that "I am out and out a Western [sic] in my outlook" (Rahman 1965, 684). His thought was informed by ideas and impulses from the Western intellectual tradition which he synthesized with the intellectual heritage of his Indian background; as a consequence, it is quite amenable to analyses conducted through the prism of Western philosophical tradition. Accordingly, there is no methodological impropriety in inquiring whether Ranganathan's theory of knowledge was rationalist in tenor and in applying the contrast between rationalism and empiricism as an interpretative framework for analyzing it: indeed, as we shall see, these categories offer a useful conceptual tool for understanding it.

4. Ranganathan's Theory of the Origins of Knowledge: Intellection and Intuition

Now that we have dealt with preliminary issues of methodology, we are at in a position to examine Ranganathan's theory of the origins of knowledge. Within the corpus of Ranganathan's writings, this theory is presented in two separate groups of writings: (1) a cluster of texts dating from the early years of the 1950s (e.g., Ranganathan 1951-1952, 206-210; 1952, 30-44) and (2) the third and final edition of Ranganathan's *opus magnum* on library classification, the *Prolegomena to Library Classification*, which was published in 1967 (Ranganathan [2006] 1967, 80-82; 550-551).[4] Although the basic elements of the theory remained fairly constant over the years, its scope and framing changed significantly between the first formulations of the 1950s and the final treatment in 1967. Because the version of the theory given in the *Prolegomena* is the latest one set forth by Ranganathan, it has a greater claim to definitiveness than the earlier ones. It shall thus serve as the basis for our discussion, though we shall not hesitate to refer to the earlier treatments when they help to clarify points in the later version.

According to Ranganathan (2006 [1967], 81), knowledge encompasses the "Universe of Ideas". As a rule, the component elements of this Universe are generated in the following manner. Initially, "an entity" makes "a meaningful impression" upon the mind of a cognitive agent through one of the "primary sense[s]" – that is to say, through one of the senses of sight, hearing, smell, touch, or taste (Ranganathan 1952, 33) – and is "deposited in the memory" of the agent (Ranganathan (2006 [1967], 80). An impression made by an entity upon a single sense – for example, the impression of a bright round globular body in the dark night sky made upon the sight of an observer by the entity known as the moon – constitutes what Ranganathan termed a "pure percept". Sometimes, an entity is sensorily experienced only by means of a pure percept, as in the case of the moon, which is experienced only by sight. However, a single entity can often be perceived by more than one sense: for example, a chirruping bird sitting on a branch can be perceived through the senses of sight and sound, while a fragrant red rose forming part of a bouquet in one's hand can be experienced through the senses of sight, smell, and touch. In such cases, the entity in question makes an impression upon the cognitive agent through an association of two or more pure percepts perceived and stored in the memory together: Ranganathan named such associations "compound percepts" (pp. 80-81).[5] New percepts, both pure and compound, are constantly being added to the memory of the cognitive agent, where they are brought into association with percepts previously stored there: these constitute what Ranganathan called an "apperception mass" (p. 81). Out of the associations created by the interaction between the new percepts and the

[4] It should be noted that the theory was not presented in either the first (1937) or the second (1957) editions of the *Prolegomena*.

[5] Compound percepts are, in effect, bundles of pure percepts that can be decomposed into a concatenation of statements about the entity that has been perceived. For example, the compound percept associated with sensorily experiencing a rose can be decomposed into three statements – "the rose is red", "the rose is fragrant", and "the rose has soft, delicate petals" – each of which represents a single individual pure percept.

preexistent apperception mass concepts emerge.[6] Concepts, in turn, are elaborated into ideas, which are characterized, rather obscurely, in the *Prolegomena* as "product[s] of thinking, reflecting, imagining, etc got by the intellect by integrating with the aid of logic, a selection from the apperception mass" (p. 81). From Ranganathan's earlier writings, it is evident that he understood the transformation of compound percepts and concepts into ideas to take place through a three-fold process of "assumption" (i.e., correlating and selecting percepts from the memory), "inference" involving deductive thinking and abstraction, and "verification" (Ranganathan 1951-1952, 208-210; 1952, 34-36). The entire operation of transforming percepts and concepts into ideas Ranganathan named *intellection* (Ranganathan 2006 [1967], 550).[7]

Ranganathan's model of intellection can be further clarified with the aid of a visual metaphor that he provides as an illustration to supplement his text, reproduced as Figure 1 below. This illustration represents the mind of a cognitive agent as a brain chamber. On the righthand wall of the chamber are five apertures, representing the five primary senses through which sensory experiences, in the form of pure or compound percepts enter the mind. The percepts are funneled through pipes into a large boxlike reservoir representing the memory, where they are stored. When a given set of percepts or concepts is selected for undergoing the process of intellection, it passes through a pipe representing the "Universe of Discourse", which is so named because, according to Ranganathan (1951-1952, 206, 209; 1952, 33-34), individual percepts acquire names, and so become objects of discourse, only after they have been stored in the memory and brought into association with other percepts. This pipe funnels them into a cylindrical vessel representing the intellect, the site of the thinking process. At this point, the percepts or concepts are subjected to the purifying fire of logic, through which they are "permuted, alloyed, fused, integrated, and so on – cooked, so to speak – in the intellect" (Ranganathan 1951-1952, 208; 1952, 34), a process that transmutes them into ideas. Finally, these ideas, the products of intellectual experiences, are transported back into the reservoir of the memory where, forming part of the apperception mass anew, they can be brought into conjunction with new percepts, pure or compound, and, in time, spur a new cycle of intellection and production of new ideas.

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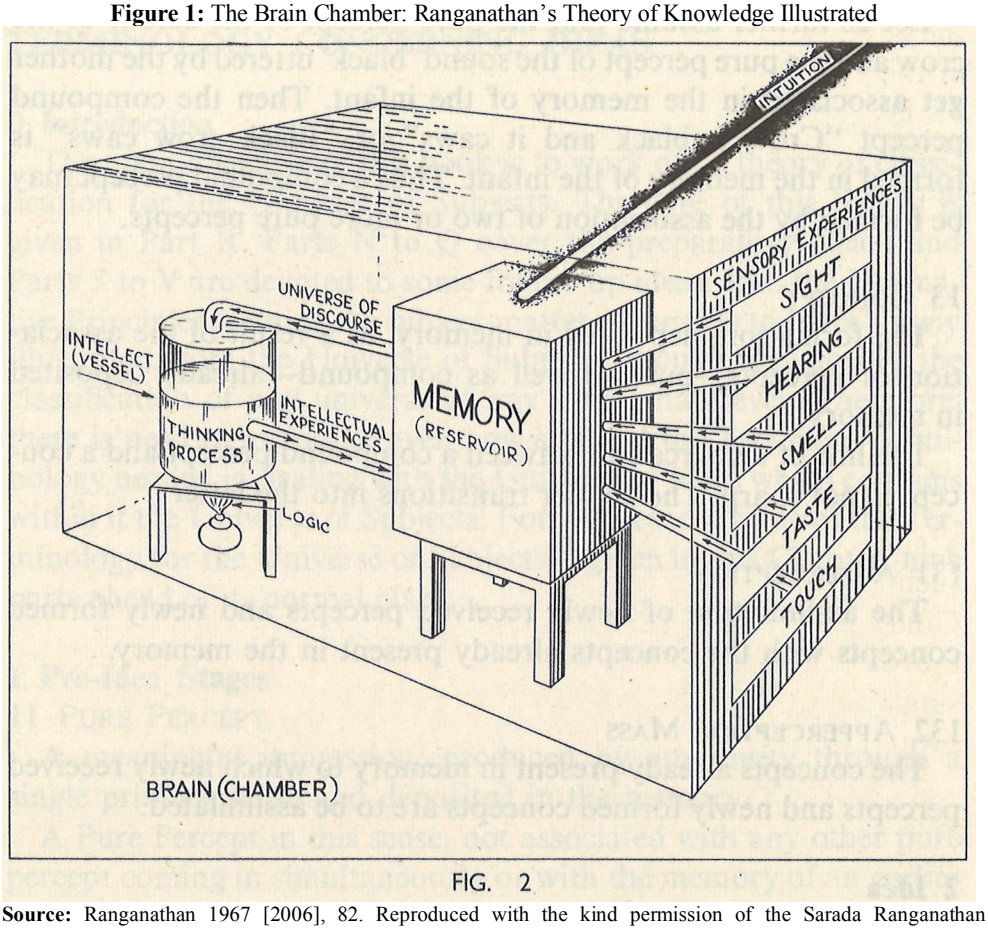
[6] Ranganathan (2006 [1967], 81) did not specify how percepts are converted into concepts, limiting himself to the enigmatic statement that "[t]he line of demarcation between a compound percept and a concept is not sharp. The former transitions into the latter." Most likely, the difference between the two is that a compound percept is based is an association made on the basis of a single act of sensory perception stored in the memory, while concepts are mutually reinforcing associations of similar compound percepts stored within the apperception mass in the memory: however, in the absence of further textual evidence for Ranganathan's views, this explanation must remain a surmise.

[7] P.S.G. Kumar (1992, 134) understands intellection to encompass the entire process from the sensory experience of percepts through the synthesis of ideas from concepts. This interpretation, however, does not accurately represent Ranganathan's views. For Ranganathan, intellection proper begins only when compound percepts stored in the memory are brought together as concepts and subjected to the logical processes of inference: intellection presupposes sensory experience, but sensory experience does not form part of it (cf. Ranganathan 1952, 31-32).

Figure 1: The Brain Chamber: Ranganathan's Theory of Knowledge Illustrated



Source: Ranganathan 1967 [2006], 82. Reproduced with the kind permission of the Sarada Ranganathan Endowment for Library Science.

Thus far, we have seen that, in Ranganathan's view, the process of intellection builds upon percepts – that is to say, the deliverances of sensory experience – which are subjected to a process of abstraction and inference to form ideas. On this view, ideas are the products of experience and so the substantive knowledge about the world that they embody is *a posteriori* in nature. Such a view is fully consonant with the tenets of empiricism and so, were intellection the only avenue of acquiring knowledge, one would be strongly inclined to classify Ranganathan's epistemology as empiricist in nature. However, at this point, we must consider a detail in the image of the brain chamber that we have hitherto left out of account. In the upper righthand part of Figure 1, we see depicted a shaft of light that, penetrating

through the roof of the brain chamber, enters into the reservoir of memory, which it accesses not through the one of the side walls but through its top surface as well. This shaft of light represents the other cognitive means by which knowledge may be acquired – *intuition*.[8]

As Ranganathan (2006 [1967], 550) understood it, intuition involves "no mediation by the senses". Neither is it a part, or a kind, of intellectual process. Rather, it represents a cognitive experience *sui generis*, one that is "unmediated by the primary senses or the intellect" (Ranganathan 2006 [1961a], 180). When a cognitive agent perceives an entity through intuition, he or she perceives it as a "'thing-in-itself' in its entirety – in the fullness of its attributes and its relation to the entire universe" and experiences it in a way that "transcends the space-time matrix" (Ranganathan 2006 [1967] 550). This stands in stark contrast to intellection, which "cannot apprehend anything in its entirety" but "has to understand everything in terms of the space-time matrix" (p. 550). Whereas intellection comes about through the laborious process of piecing together and integrating the results of many partial, sensory perceptions of a given entity into ideas about it through abstraction and generalization, intuition is a form of inner "seeing" through which a person gains immediate and comprehensive insight into nature of the entity that he or she is contemplating – an insight that reveals it as it truly is in the fullness of its being. In seeking to characterize intuition, Ranganathan frequently took recourse to Sanskrit philosophical terminology, describing it as "*divya indriya*", a term that he translated as "transcendental sense" (p. 550)[9] or as "*divya chakshus*", a term that can be glossed as "divine sight" (Ranganathan 2006 [1961a], 180).[10] Such language suggests that intuition carries not only cognitive value but spiritual value as well, and it is thus not surprising that he characterizes "experience unmediated by the senses and/or intellect" not only as "intuitive experience" but as "spiritual experience" and "mystical experience" as well (Ranganathan 1951-1952, 208).

As we just noted, Ranganathan considered intuition to be a cognitive function distinct from intellection, characterizing intellection as "rationalistic" and intuition as "mystic" (Ranganathan 2006 [1961a], 181). In this case, the rationalistic mode of intellection is not superior to the "mystic" one of intuition, for the former offers only a partial and limited perspective on entities in the world derived from intellectual processing of percepts, whereas the latter yields spontaneous insight into entities not only in their individual plenitude of being but in their relation to the universe as a whole (Ranganathan 2006 [1967], 550). Rather, intuition constitutes a privileged mode of knowing vis-à-vis intellection. Now Ranganathan held that a single cognitive agent can both experience intuition and exercise intellection

[8] Interestingly, the pictorial depictions of the brain chamber in the cluster of texts from the 1950s do not include this beam of light as an element; see Ranganathan 1951-1952, 208; 1952, 32. The reason for its absence in these illustrations appears to be that they accompanied discussions of the genesis of knowledge in which Ranganathan chose to foreground intellection and not to discuss intuition.

[9] Literally, the noun phrase *divya indriya* means "divine sense organ"; see Grimes 1989, 120, s.v. *Divya*; 144, s.v. *Indriya*. It should be noted that *indriya*, which denotes an "instrument[] of knowledge and action" (Chatterjee and Datta 2016 [1939] 20) is regularly use to refer to any one of the five physical senses: in our case, it is the modifying adjective "*divya*" that elevates intuition from the realm of the senses onto a higher epistemological plane.

[10] On the translation of *divya chakshus* as "divine sight", see Grimes 1989, 120 *s.v.* Divya; 161, 1 s.v. *Jñānendrija*.

(Ranganathan 1967b, 298). However, not all cognitive agents have an equal capacity for intuition. Some individuals, he believed, are endowed with a great capacity for intuition, yet such "self-centres of illumination" (Ranganthan 2006 [1961a], 180) or "seers" (Ranganathan 1967b, 295) are relatively rare: "[i]n majority of persons hardly any intuition works. In a few, intuition works partially, at certain moments" (Ranganathan 1965, 217-218, cited in Satija 1992, 53). The fact that few people have a strong capacity for intuition can lead to a situation in which a cognitive agent may have an insight that appears to arise spontaneously in the manner of intuition but that apprehends its object only partially and incompletely in the manner of intellection. Ranganathan (2006 [1967], 550) called this kind of cognitive situation "flair", which he characterized as "the limiting point between intellection and intuition", similar in certain respects to both but "belong[ing] to neither" (Ranganathan 2006 [1967], 550). In effect, flair constitutes a defective simulacrum of intuition, one that fails to yield direct cognitive contact with the "thing-in-itself" and so cannot provide the trustworthy basis for knowledge that intuition does.

As we have seen, Ranganathan's concept of intuition is imbued with ideas drawn from Indian philosophical traditions:[11] by his own admission, it represents a "mystic" mode of knowing that is "trans-intellectual, trans-sensory, trans-emotional, and trans-memory" (Ranganathan 1988, 358). This form of cognition does not fit comfortably into the epistemological landscape of modern Western philosophy, though, for his part, Ranganathan (1967b, 295), held that his idea of intuition as "intellect-free, perception-free apprehension of the integral entirety of facts and relations between them" corresponded to French philosopher Henri Bergson's (1859-1944) understanding of the concept.[12] Now Ranganathan (1952, 32) sometimes spoke of intuition as a particular kind of experience, a *façon de parler* that may suggest to some that he was speaking of an esoteric form of empirical cognition. However, as we showed earlier, intuition was for him a mode of acquiring knowledge independent of all sensory experience and, indeed, of all intellectual experience: it thus cannot be considered to be a species of *a posteriori* knowledge as understood by Western philosophers (See Section 2 above). Rather, it represents a *privileged* form of knowledge acquisition that bypasses entirely the deliverances of sensory perception or the ideas that the intellect synthesizes on the basis of its processing of percepts culled from the apperception mass. Intuition thus constitutes a species of *a priori* knowledge and, as such, provides the

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[11] For some brief remarks on intuition in Indian theories of knowledge, see Neelameghan and Raghavan 2012, 26.

[12] Bergson (2005 [1938], 181) did make a distinction between "intuition" and "analysis", understanding the former as the cognitive "sympathy by which one transports oneself into the interior of an object in order to coincide with that which it has of the unique and, therefore, of the inexpressible" (*la sympathie par laquelle on se transporte à l'interiéur d'un objet pour coïncider avec ce qu'il a d'unique et par consequent d'inexprimable*), while characterizing the latter as the cognitive "operation that refers the object to elements already known, that is to say, common to the object and others" (*l'opération qui ramène l'objet à des éléments déjà connus, c'est-à-dire communs à cet objet et à d'autres*). On his view, intuition is a simple cognitive act that yields an absolute knowledge of the object of cognition, while analysis is a complex, indeed, a (in principle) never-ending series of acts that at best yields relative knowledge of the object in question. There are, on the face of it, some interesting similarities between Ranganathan's and Bergson's ideas about intuition that would merit further investigation.

warrant for considering Ranganathan's epistemology to be rationalist in nature. Perhaps there is a measure of irony in the fact that it is not the "rationalistic" process of intellection but the "mystic" act of intuition that provides the decisive criterion for identifying Ranganathan's theory of knowledge as a rationalist epistemology.

5. Intellection and Intuition in Scientific Method and the Organization of Classification Design

Having outlined the general structure of Ranganathan's theory of knowledge and identified intellection and intuition as the two primary modes of cognition within the theory, we shall now consider some of the ways that these two concepts informed Ranganathan's ideas about classification work. We begin by examining their respective roles in his theory of scientific method and his proposals for the organization of classification design.

For Ranganathan, a major difference between intellection and intuition lies in the degree of control that one can exercise over them. Intuition, in his view, is "spontaneous and sudden" (Ranganathan 2006 [1967], 550). To be sure, within the framework of Indian culture, one can seek to predispose oneself to intuition through the practice of *tapa*s, or spiritual ascesis (Ranganathan 2006 [1961], 180; 2006 [1967], 550).[13] Yet intuition "shows no stages" (Ranganathan 2006 [1967], 550), its onset is unpredictable:

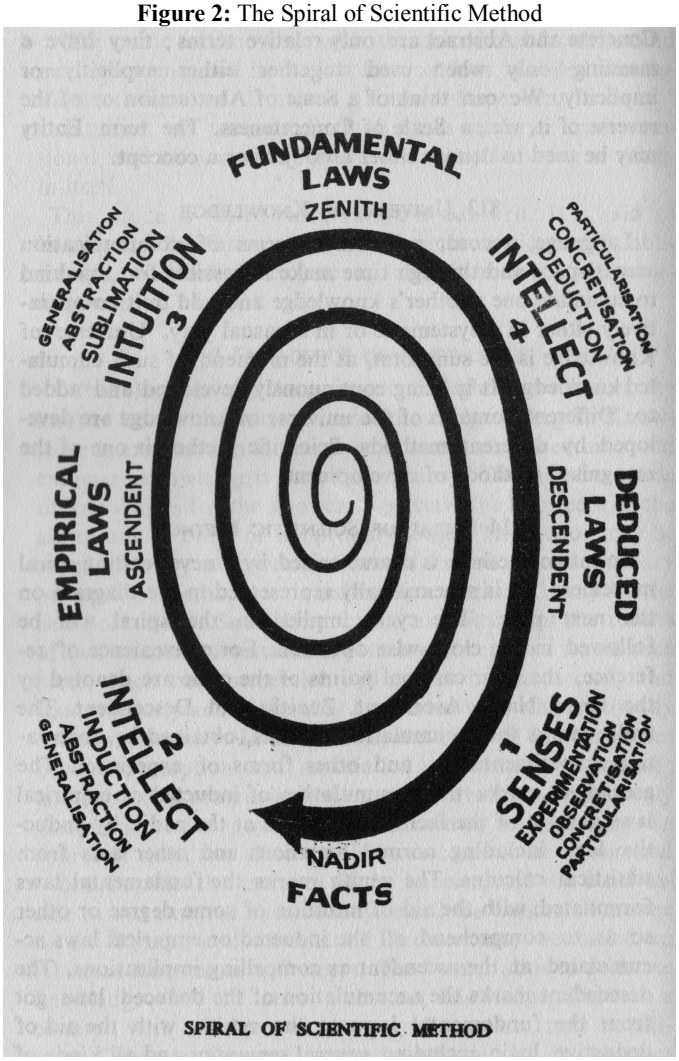
> [s]ome perceptual and intellectual experiences of the intuitive person – whether they are acquired by himself or are found in his apperceptive-mass injected into his mind by his social environment – may or may not have anything to do in the release of intuition (Ranganathan 1967b, 297).

Moreover, because intuition is a cognitive function that lies beyond intellect, it is, by definition, not amenable to intellectual control: in Ranganathan's (2006 [1967], 550) words, "it transcends methodology of any kind." By contrast, intellection requires strict methodological control. To be sure, the intellectual activity of a cognitive agent is, to a certain degree, autonomous: it "is, in a sense, self-created, i.e., created within the intellect without interference… by entities outside it" (Ranganathan 1952, 35). However, this autonomy plays out within a variety of constraints. For one thing, processes of inference carried out during intellection must conform to the rules of logic if they are to be considered valid. For another, because "[i]ntellect has to abstract and generalize", "[i]ntellection should have frequent recourse to an empirical check-up with the phenomenal universe outside "one's mind" (Ranganathan 2006 [1967], 550): in other words, its conclusions must be subjected to a process of empirical verification. For this reason, Ranganathan held that "method [is] essential in intellection" (p. 550): indeed, in his view, the function of scientific method is to regulate the process of intellection in the conduct of research.

[13] The Sanskrit word *tapas*, which literally signifies "heat" or "ardor", can refer to such ascetic bodily practices as fasting, keeping vigils, practicing breathing exercises (so Eliade 1969, 36, 106-108) or, on a more spiritual plane, to "burning enquiry and aspiration" constituting "a spiritual force of concentrated energy generated by a spiritual aspirant" (so Giles 1989, 357, 1 s.v. *Tapas*).

Ranganathan formulated his theory of scientific method in terms of a model that he named the spiral of scientific method (see Figure 2, below). According to this model, scientific research of any kind goes through an endlessly recurring sequence of four phases. Ranganathan offered two different versions of the spiral, one presented in his general library treatise, *The Five Laws of Library Science* (Ranganathan 1988, 360) and one set forth in the

Figure 2: The Spiral of Scientific Method



Source: Ranganathan 1988, 360. Reproduced with the kind permission of the Sarada Ranganathan Endowment for Library Science.

Prolegomena to Library Classification (Ranganathan 2006 [1967], 551-553), among which the chief difference lies in the sequence of the phases. Because the former version represents the epistemological aspects of the various phases more prominently, it shall serve as the basis of our following discussion, though we shall also consider the variant second version as well.

The diagram of the Spiral of Scientific Method given in the *Five Laws of Library Science* and reproduced in Figure 2 above is divided into four quadrants, numbered 1 through 4. The first of these quadrants, located in the lower righthand side of the diagram, represents a phase of research in which the "[p]rimary senses are used either in their native state or with the aid of instruments of various degrees of powerfulness" in order to make observations of phenomena in the world (Ranganathan 1966, 20). The primary senses, as we have seen, are the channels through which sensory percepts enter into the mind of a cognitive agent: this phase may thus be characterized as the empirical phase of research. The second quadrant, found on the lower left-hand side of the diagram, stands for the phase of research in which "[i]ntellect is used either by itself or aided by machinery" to perform [r]easoning with the aid of inductive logic" so as to formulate "inducted or empirical laws" regarding the phenomena previously observed (pp. 20-21): this phase thus constitutes the inductive phase of research. The third quadrant, placed in the upper left-hand side of the diagram, represents the phase in which "intuition of some intensity or other" reduces the various empirical laws generated in the inductive phase into a few "fundamental laws" (p. 21) – that is to say, laws of great generality that govern further thought about the phenomenon in question. Fundamental laws, Ranganathan averred, are functionally equivalent to hypotheses in the natural sciences and normative principles in the social sciences (pp. 24-25): accordingly, this phase can be termed a hypothesis-forming phase of research. The fourth and final quadrant, in turn, depicts a phase in which the intellect utilizes "[r]easoning with the aid of deductive logic … to work out all the compelling implications of the fundamental laws" (p. 21) : it may therefore be identified as the deductive phase of research. The need to verify the results of deduction, in turn, requires that new empirical data be adduced and this sets off a new round in the Spiral.

The version of the Spiral set forth in the *Prolegomena* rearticulates the elements in the foregoing sequence (Ranganathan 2006 [1967], 551-553). There, the cycle begins with an "empirical phase" in which "facts or individual experiences … arise out of the apprehension of the phenomenal world through the senses with the guidance of the intellect" (p. 551). Because individual experiences of the world are so numerous, they need to be reduced to a number manageable to the memory. This is accomplished through the application of inductive logic and associated intellectual procedures to distill the myriad individual experiences into a small set of "empirical laws" (p. 551). The "empirical phase" of the Spiral in the *Prolegomena* thus is equivalent to both the first two phases – empirical and inductive – of the Spiral in the *Five Laws*. The second phase in the Spiral in the *Prolegomena* is a "hypothesizing phase", in which "a jump" is made, "usually … by one endowed with considerable intuition", from the realm of the set of empirical laws to yet more reduced set of fundamental laws (p. 551): this phase clearly corresponds to the third phase of the Spiral in the *Five Laws*. The third phase of the Spiral in the *Prolegomena*, the "deductive phase", involves the deduction of further laws from the fundamental laws: "carried out "solely

through intellection" (p. 552), this phase is obviously equivalent to the fourth phase of the Spiral in the *Five Laws*. The fourth and final phase in the *Prolegomena* is the "verification phase", in which the laws deduced in the previous phase are subjected to verification "by observation in the phenomenal universe" (p. 552): involving both "the senses and intellection", it has no exact parallel in the Spiral of the *Five Laws* though it appears to overlap in part with the first phase of that version. At any rate, the results of the verification phase, according to Ranganathan, provide a stimulus for the onset of a new cycle in the Spiral.

Although the two versions of the Spiral vary somewhat in their composition and structure, it is evident that the cognitive processes of intellection and intuition play comparable roles in both. According to the version of the Spiral of Scientific Method given in the *Five Laws*, intellection predominates in the second, inductive and fourth, deductive phases of the Spiral (see Figure 2 above), while intuition is the driver of the third, hypothesizing phase: neither is accorded a role in the first, empirical phase, which Ranganathan presents as being strictly confined to the senses. The version of the Spiral in the *Prolegomena* exhibits a greater degree of nuance in that it posits that the initial empirical and the final verification phases involve the cooperation of the senses with the intellect. However, the functions of intuition and intellection in the middle phases of the Spiral are identical to those in the version of the *Five Laws*: intuition brings about the discovery of fundamental laws, while intellection is the mechanism by means of which further subsidiary laws and principles are deductively derived from the principles uncovered by intuition.

At first blush, it may seem strange that Ranganathan, who, as we have seen, considered intuition to be quite distinct from intellection, unpredictable in its occurrence, and beyond the purview of methodology, should have incorporated it as a consistent element into his model of scientific method. This impression is only magnified when one reads certain statements of his, such as the claim that "research is essentially intellectual" or, more strongly yet, that "research is only intellectual" (Ranganathan 1967b, 297). Yet, he had his reasons for including intuition within a model of scientific research. Although Ranganathan firmly held that intellection and intuition represent starkly different modes of cognition, he nevertheless believed that they could interact with each other. He noted that, over the course of research, the work of intellection can receive illumination from intuition. However, he warned, this illumination is often uncertain and feeble:

> [research] is occasionally lighted up by a dash of intuition in some researcher or other. The intuition coming into play is so slight and so fleeting that it does not reveal any fundamental laws. Intuition may also reveal the value of something seen or done, which escapes apprehension by intellect alone. Here too the intuition coming into play is so slight and so fleeting that it does not reveal fundamental laws (p. 297).

A researcher may at times experience partial insights into phenomena that he or she is investigating: however, these episodes may not lead to the comprehensive insight into the reality underlying the phenomena – the "thing-in-itself" – nor the glimpse of foundational principles that only a full measure of intuition can yield. Such cases might perhaps be better considered as examples of flair rather than of intuition in the strict sense of the term.

However, Ranganathan also was convinced that sometimes a researcher can experience "a large dose of intuition", one that "alone can flood-light the phenomenal world down to the near-seminal level and reveal fundamental laws" (p. 297). Such flashes of insight, he warned, may be of relatively short duration: "a person who gets a flash of a strong dose of intuition for a moment and "sees" some fundamental laws often becomes thereafter an essentially intellectual worker [sci., somebody operating at the level of intellection—TMD]" (p. 297). Nevertheless, if the intensity of intuition is sufficiently great, the researcher will uncover fundamental laws – hypotheses or normative principles – that provide the basis for further intellectual work. In Ranganathan's view, intuition provides the *only* mode of cognitive access to the fundamental laws that underpin the structure of science. It is for this reason that he includes it in his model of scientific method despite the lack of methodological control hedging it: without the unpredictable irruption of intuition into the hypothesizing phase, the Spiral of Scientific Method would come to a grinding halt.

The Spiral of Scientific Method was intended to serve as a model for all scientific disciplines, including that of classification theory, which Ranganathan (1967b) considered to be a subdomain of library science. It is unsurprising, then, that he identified certain elements of the classification system that he had developed, the Colon Classification (hereafter, CC), as the products of intuition. For example, Ranganathan (1961, 88) claimed that his postulation of the five fundamental categories of Personality, Matter, Energy, Space, and Time (PMEST) as the categorial basis of the CC had been "made intuitively". He identified all the Postulates of the Idea Plane,[14] as well as the Wall-Picture Principle for facet sequence,[15] to be "intuition-based" (Ranganathan 1967b, 308). Similarly, he asserted that, at the level of the Notational Plane, the Canons of Faceted Notation[16] and of Seminal Mnemonics[17] are "intuition-based" (p. 309). In short, Ranganathan held that many of the core conceptual elements and some important notational elements in the CC had been derived through intuition, while the other canons, postulates, principles, and devices forming part of the classification system were, by his account, "intellect-based". In Ranganathan's eyes, then, there was considerable warrant for considering intuition and intellection as important moments in the process of classification design.

Yet, if Ranganathan considered both intellection and intuition to play a part in the process of classification design, he held the contribution of the latter to be more foundational than

[14] For an enumeration of these Postulates, see Ranganathan 2006 [1967], 42.

[15] This principle stipulates that "If two facets A and B of a subject are such that the concept behind B will not be operative unless the concept behind A is conceded, even as a mural picture is not possible unless the wall exists to draw upon, then the facet A should precede the facet B" (Ranganathan 2006 [1967], 425): in other words if two facets stand in such a relation such that Facet B represents an entity that is ontologically dependent on an entity represented by Facet A, then Facet A should precede Facet B.

[16] On the Canon of Faceted Notation, which stipulates the conditions under which it is appropriate to use a faceted notation, see Ranganathan 2006 [1967], 285.

[17] For the Canon of Seminal Mnemonics, which states that "A scheme for classification should use one and the same digit to denote seminally equivalent concepts in whatever subject they may occur", see Ranganathan 2006 [1967], 304. We discuss Seminal Mnemonics at greater length in Section 6.

the former. This valorization of intuition vis-à-vis intellection is clearly reflected in an ideal model of teamwork in classification design that Ranganathan outlined in his treatises *Philosophy of Classification* and *Classification and Communication*. According to this model, the team of workers devoted to the construction and maintenance of a bibliographical classification should consist of five classes of workers – "the intuitive classificationist", "the intellectual classificationist", "the classifier", "the reference librarian", and "the workers in the different formations [sci., domains—TMD] of the field of knowledge" (Ranganathan 2006 [1961a], 279; cf. Ranganathan 2006 [1961b], 121) – each of which had a different role in the project of classification design. At the head of the team stand the intuitive classificationists, whose work is, according to Ranganathan (2006 [1961b], 122), "of a fundamental nature". The role of the intuitive classificationist consists "prior to everything else [of] visualizing the classificatory language as a whole and laying down its pattern by examples and rules and forging its notational apparatus so as to endow it with as great a potency as possible" (Ranganathan 2006 [1961a], 279): in other words, he or she must set out the general structure and parameters of the classification and establish its notational system. Occupying the second position in the hierarchy of workers are the intellectual classificationists, whose work Ranganathan (2006 [1961b], 122) characterized as being "of an arduous nature". The tasks of the intellectual classificationist include "[t]he work of mnemonically fixing the numbers for … new classes, of finding by trial and error the facets of new subjects … and deciding the order in which they should be assembled" as well as "building up a dynamic science of classification" through research (Ranganathan 2006 [1961a], 279). Below the intellectual classificationists come the classifiers, whose work is described by Ranganathan (2006 [1961b], 123 as being "of a routine nature": their share of the work consists in "translating the names of specific subjects … embodied in books or articles, into the classificatory language" (sci. using the classification to classify bibliographical resources) and "bringing to the notice of the classificationist[s] new specific subjects that baffle the existing … apparatus" of the classification (Ranganathan 2006 [1961a], 279). The reference librarians and the subject specialists, by contrast, have more peripheral roles as consultants to the classificationists: the task of the former is to observe and report on shortcomings in the classification exposed by interactions between themselves and library patrons, while the latter is to advise on new subjects emerging in their fields of specialty and how best to relate these subjects to one another within a classificatory structure (Ranganathan 2006 [1961a], 280; 2006 [1961b], 123-124). From this brief description, it is evident that intuitive classificationists are responsible for creating the structure, both conceptual and notational, of the classification, while the intellectual classificationists have the task of elaborating this structure in its details and adjusting it in light of information provided by different classes of users of the classification, namely, classifiers, reference librarians, and subject specialists, For Ranganathan, then, the intuition of the intuitive classificationist sets down the foundations of a classification, while the intellect of the intellectual classificationist elaborates and develops it, just as, in the context of the Spiral of Scientific Method, intuition uncovers fundamental laws and intellection builds upon them: intellection follows upon intuition.

6. Towards Primordial Classification: Intuition in the Constitution of Seminal Mnemonics and Fundamental Categories

As we saw in the previous section, Ranganathan claimed that several cardinal elements of the CC had their roots in intuition. One may well wonder how, in his view, intuition shaped, and left its mark on, these core features of his classification. Although it lies beyond the scope of this paper to attempt to trace out the intuitional basis of all of these elements, it is worth considering at least two of them – the notational mechanism of semantic mnemonics and the conceptual set of fundamental categories, or PMEST –, for they reflect an aspect of Ranganathan's thought that is closely connected with the mystical side of his concept of intuition: namely, the aspiration to reduce the plurality of entities in the phenomenal world to an approximation of the unity of a deeper underlying reality.

We begin with seminal mnemonics. Traditionally, the notion of "mnemonics" has been used in classification theory to refer to the principle that "if a given concept recurs in different sectors of a classification scheme, it should be assigned the same symbol to represent it in the various class-marks with which it is correlated, provided that notational constraints permit this" (Smiraglia, Van den Heuvel, and Dousa 2011, 32). The intent is to indicate the presence of a concept in a classification by consistently representing it with a given alphanumeric character: a simple example of this is the systematic use of the digit "2" as the final digit in class-marks for classes falling under the main classes of literature, history, and geography to denote the country of England in the Dewey Decimal Classification (DDC) (pp. 32-33, with Figure 3). Because such correlations are encoded in classification schedules, they are sometimes termed "scheduled mnemonics" (Ranganathan 2006 [1967], 298).

The principle of scheduled mnemonics establishes a one-to-one relationship between a concept expressed by a given term and a notational digit, at least in certain contexts of a given classification's schedules. Ranganathan (2006 [1961b], 63-67; 2006 [1967], 298) accepted this principle and incorporated it into the CC. However, he also sought to put into practice another, more radical kind of notational mnemonics that he termed "seminal mnemonics".[18] By this he meant a correlation between a notational digit and the various concepts, each expressed by a different term, to which it was assigned in different sectors of a given classification. Such a correlation however does not entail a one-to-many relationship between the digit and the concepts denoted. Rather, as Ranganathan (2006 [1967], 304) saw it, there is a deeper unity underlying the various concepts correlated to the numeral in question: they are all diverse expressions, or rather manifestations, of a "seminal concept" subtending them. The concept of seminal mnemonics, then, posits a one-to-one relationship between a notation and a single seminal concept underlying an array of different concepts expressed by diverse natural language terms.[19] For example, the digit "1" in the schedules of the CC represents the

[18] For the (pre)history of this term, see Rahman and Ranganathan 1962, 53-54.

[19] Cf. Ranganathan 2006 [1967], 304, who expresses the doctrine of seminal mnemonics so: "It is … possible to have the same concept represented by the same *number* in all places of occurrence, but with different *terms* denoting it in the different places. The identity of the concept is cognizable at great depths, beyond the reach of natural

concepts of "Unity", "God", "World", "First in evolution", "One dimension", and "Solid state" (Rahman and Ranganathan 1962, 55). According to the principle of seminal mnemonics, all of these concepts are but expressions of a single subjacent seminal concept, unnamed by Ranganathan but manifestly carrying strong connotations of "oneness". Considerably more variegated is the list of concepts denoted by the digit "5", which encompasses "Energy", "Light", "Radiation", "Organic", "Liquid", "Water", "Emotion", Foliage", "Aesthetics", "Ocean", "Foreign Land", "Alien", "External", "Environmental", "Ecology", "Public controlled plan", "Woman", "Sex", and "Crime" (p. 55). Each of these concepts is, in principle, a surface manifestation of an underlying seminal concept, but it is not at all clear what the definition of the seminal concept unifying them may be. Other digits in the CC are associated with similar clusters of concepts, with each cluster representing a single seminal concept (cf. Rahman and Ranganathan 1962, 55-56; Subramanyam 1976, 17).

Ranganathan did not give names to the seminal concepts associated with the individual digits in the CC, but contented himself with enumerating the set of concepts associated with each digit. His rationale for keeping the seminal concepts nameless is revealing. Ranganathan (2006 [1961b], 70) believed that "an idea can and does exist without a word to denote it in its bareness and purity, though when viewed in the context of different particular subjects, its different contextual transforms do get expressed by different words". The reason for this is that seminal concepts are derived from a cognitive experience of intuition that is, in large measure, ineffable (Rahman and Ranganathan 1962, 53, 55). Ranganathan (2006 [1967] 304) held that "[t]he identity of [a seminal] concept is cognizable at great depth": in order to discover such concepts and build up a system of seminal mnemonics, a classificationist needs "to develop a subtle sensitiveness to recognise certain primordial patterns which inhere at great depths below the diversity of their manifestations in the phenomenal world and in arrays of co-ordinate divisions of facets of subjects" (Ranganathan 2006 [1967], 67). The insight needed to recognize and identify the seminal concepts behind a diversity of surface concepts expressed in natural language is intuitive in nature:

> [s]eminal equivalences have to be identified in the idea plane … . The classificationist has to have sufficient *intuitive insight* to be able to recognize seminal equivalence of concepts in the idea plane so that the same digit may be used to represent them in the notation plane (Subramanyam 1976, 16 [emphases TMD]).

Intuition, however, rarely, if ever, finds adequate expression in language (cf. Ranganathan 2006 [1961a], 179-181). To explain the difficulty of communicating the deliverances of intuition in all their fullness, Ranganathan (2006 [1961b], 69) drew on the resources of the Hindu philosophical psychology:

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language. As and when the concept came up to the surface in particular contexts, a word in the natural language has been coined to denote it in that context. At the unmanifest depth of identity, there has been no need to denote that seminal concept by a term in the natural language."

> The Vedas declare …: "Unable to reach which, the words return along with Manas". *Manas* is that part of the mind which acts as a channel between *Chitta* (= memory) which is the store of impressions and experiences on the one side and *Buddhi* (= the intellect) which develops the impressions and experiences by permutations and combinations and creates new impressions and experiences of its own. Production of articulate sounds, words and intelligible language, and other symbols, is one of them. As a transmission wire breaks down when the voltage increases beyond a certain measure, the *Manas*, which is like transmission wire between *Chitta* and *Buddhi* is overpowered when the intensity of what is poured into *Chitta* increases beyond measure during deep experiences and *samadhi*.

Significant in this context is the mention of *samadhi.* Translated by Ranganathan as "trance-state", this Sanskrit term, the core meaning of which is "concentration" or "absorption", refers to "a superconscious state where there is complete absorption of the intellect into the object of meditation" or "[a] state beyond expression and above all thought" (Giles 1989, 300, 2-3 s.v. *Samādhi*). It is the trans-cognitive state into which a person experiencing a highly intense episode of intuition enters, a state that brings his or her mind into direct contact with the underlying realities of this world (cf. Ranganathan 2006 [1961a], 179-180). The degree of intuition in *samadhi* is so great that it, so to speak, overloads the intellectual circuitry of the cognitive agent experiencing it: intuition is, at core, ineffable and a high degree of it leads to a breakdown in language, which cannot capture the content of the experience in its fullness (pp. 181-182). Ranganathan's reference to *samadhi* in the context of seminal mnemonics thus had a deeper point: he was stating that it is precisely because seminal concepts are the products of intuition that they cannot be captured in human language and can only be expressed through the use of seminal mnemonics.[20]

For Ranganathan, then, intuition is the epistemological mechanism by which one comes to perceive seminal concepts in the mind's eye. These seminal concepts, which are inexpressible linguistically but amenable to representation by notational digits, each subsume a set of different concepts expressible in language and so represent the reduction of a larger number of surface concepts to a smaller number of elemental ones. Seminal mnemonics thus involves a movement from a plurality of diverse concepts visible in language towards a more unified set of deeper ones hidden well below the surface of language. This movement mirrors a metaphysical assumption common in Hindu philosophical tradition according to which

> the astounding diversity of nature as perceived by man through his senses diminishes as we go deeper into the subtler levels of consciousness. Ultimate, at the superconscious level, the myriads of entities which appear to be different and independent at the phenomenal level, merge into one undifferentiated substratum (Subramanyam, 1976, 17).

[20] It should be noted that not all experiences of intuition need language, for, as Ranganathan observes, "phonetic symbols … can denote every known social referent including data of sense-perception, abstractions of varying degrees made by intellect and *even the speakable referents seized by intuition unmediated by senses or intellect*" (Ranganathan 2006 [1961a, 143 [Emphases TMD]). Yet, as we have seen, intuition comes in different degrees of intensity and the higher the intensity, the more incommunicable the experience of intuition becomes. Evidently, Ranganathan considered the degree of intuition needed to "see" seminal concepts is of such intensity that these concepts are incommunicable in their fullness.

Yet, if seminal mnemonics represents a movement towards monistic unicity, it does not quite reach the utmost limits of its destination. It reduces the many surface concepts not to a single underlying unitary concept, but rather to a highly restricted set of underlying concepts associated with notational digits. For this reason, the system of seminal mnemonics operates not at the seminal level, which would entail the merging of all concepts into a single primordial concept, but at a near-seminal level, in which the variety of concepts expressed in language is reduced to small set of elemental concepts (Neelameghan and Raghavan 2012, 46).

The movement from surface plurality towards underlying unity was an important in the constitution of seminal mnemonics within the CC. It also provided Ranganathan with a theoretical motivation for establishing a limited set of fundamental categories, PMEST, as a framework for the faceted scheme of the CC. Here again, Ranganathan held that the mind must move from the surface of the phenomenal world to deeper, less manifest levels of being. In his view, the Universe of Ideas covers a vast and unmanageable domain of concepts: "[m]illions and millions of isolate ideas, facets, and subjects, confuse and taunt us at the phenomenal level", he wrote (Ranganathan 2006 [1967], 395). To find one's way within the bewildering plurality of this Universe and reduce it to classificatory order, he averred, it is necessary "to descend from the phenomenal level nearer and nearer to the seminal level" (p. 395). This movement from the phenomenal toward the seminal level requires establishing a smaller number of "patterns" composed of a restricted number of categories to which all other concepts can be referred: these categories underlie all the concepts occurring at the phenomenal level, just as seminal concepts subtend surface concepts. Yet how far should the reduction in number of categories go? Ranganathan warned against aspiring to carry it out to its logical conclusion:

> If we reach the seminal bottom, there will be nothing but one. Then the question of arrangement disappears. Further, Monism is abhorrent to the intellect, however natural and delight-giving it may be to intuition. At any rate, if the task of the arrangement itself is nullified in that way, we cannot find anything useful to bring back from the seminal bottom to the phenomenal level, so as to be of help in the arrangement of subjects. Therefore, we must avoid that extreme. We must stop short of the ultimate level (p. 396).

To reduce all concepts manifest at the phenomenal level to a single primordial category would be to abolish the need to classification completely, for classificatory arrangement requires the existence of more than one category or class to be operative. It is thus necessary to restrain the tendency towards monistic unicity and to seek a set of categories with a suitably restricted number – that is to say, to work at a near-seminal level. With regards to epistemology, the classificationist must temper the monistic tendencies of intuition with the analytico-synthetic spirit of intellect, which works within a world of plural manifestations. Ranganathan thus advised that, instead of seeking to proceed from the phenomenal level all the way to the very end of the seminal level, one should

> descend down and down, and down and down, and allow the millions of isolate ideas to get absorbed and assembled, re-absorbed and re-assembled, and so on, until we find only five ultimate generic or seminal ideas at the bottom of all patterns" (p. 396).

These "five ultimate generic or seminal ideas", of course are the five fundamental categories (Ranganathan 1967a, 20). Although Ranganathan didn't specify why the optimal set of categories should be five in number,[21] he numbered these categories among the "hidden roots of classification", the epistemological background of which he described as follows:

> The roots of subjects are hidden even at the near-seminal level. They are hidden in the sense that they cannot be reached by intellectual analysis. They will have to be apprehended with intuition. If intuition is functioning cent per cent [sci., one-hundred percept—TMD], the roots can be unerringly and permanently located. Hardly anybody is found with cent per cent intuition. … Therefore, we have to depend upon whatever can be got through the play of a momentary flash of intuition in some person or other – essentially intellectual. Postulates and Principles are usually disclosed by such momentary flashes. They may go a long way though not the full way. When they cease to be helpful, they may be replaced by another set of Postulates and Principles that may be disclosed at that time (pp. 6-7).

This passage takes up themes broached earlier with regard to the Spiral of Scientific Method (cf. Section 5 above). In Ranganathan's view, very few cognitive agents can appreciate intuition in its fullest measure – that is to say, the number of people who have the capacity to be mystics is vanishingly small. The knowledge attained by these happy few is true and indubitable, though the fullness of its content is not fully communicable to others (cf. Ranganathan 2006 [1961a], 179-182). However, cognitive agents who operate normally at the level of intellection can occasionally experience intermittent flashes of intuition, albeit at a lesser intensity than those experienced by the mystic, and these episodes of intuitive insight can serve as the basis of further development by the intellect. Unlike the knowledge of the mystic that is based on pure intuition, the insights produced by such lower-grade intuition are not indubitable but, possessing the character of hypotheses, provisional and most appropriately evaluated according to their helpfulness or lack thereof in accounting for some phenomenon in the world (Ranganathan 1952, 24). That is why, within the context of classification design, the results of intuition, crystallized in the form of postulates and principles, are amenable to revision if they prove to be unhelpful (Ranganathan 2006 [1967], 396-398). In this respect, Ranganathan's epistemology is entirely consistent with his postulational approach to classification.[22]

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[21] Ranganathan does not seem to have explained his choice of five fundamental categories in his writings, generally confining himself to the statement that they were postulated and that, in his experience, they worked well enough to be acceptable as a basis for classification. One may well wonder whether his choice of number of fundamental categories was not governed by a desire to create a pleasing numerical symmetry with the five laws of library science (Ranganathan 1988): this explanation, however, remains in the realm of speculation.

[22] With regard to the postulational status of the five categories, it is significant that although Ranganathan laid claim to flashes of intuition, he did not consider himself to have had "real mystic experience" (P.S.G. Kaula 1992, 191). Rather, it appears that he classed himself as one of those persons who works primarily in the intellectual realm with occasional incursions of intuition. Ranganathan's awareness that he had not reached the mystical acme of intuition

As we have seen, Ranganathan considered intuition to be the (trans-)cognitive means of uncovering a restricted set of fundamental concepts or principles beneath the plurality of phenomena in the Universe of Ideas, an idea that found concrete expression in the form of the fundamental categories and seminal mnemonics in the CC. This notion of an intuition-driven movement from plurality to near-unity deserves emphasis, for it appears to have been a regulative ideal of classification design for Ranganathan. Eloquent evidence for this comes from the testimony of a member of his circle, who records the following statement that Ranganathan made to a circle of his students during a joint evening walk:

> Do you know? For me there is only one subject. Seminally, there is one and only one subject which manifests itself in the form of several subjects to the phenomenal world. I want to base my classification scheme which shall be perfect one on this seminal rock bed. It shall have a schedule of not more than 10 to 12 pages. And then, it shall be capable of classifying all the subjects that had been, that are, and that will be in existence in the dynamic continuum of the universe of knowledge. My present scheme is not perfect in that because it is not based entirely on seminal isolates. … The one I contemplate is a Seminal (Once I called it Primordial!) Classification Scheme. I do not know whether I will accomplish it. Anyway, I am able to visualise it. It is true for me (Ranganathan, quoted in Rahman 1965, 682).

7. Conclusion: Ranganathan's Mystic Rationalism

As we noted at the outset, it has become a commonplace in the literature of KO to identify S.R. Ranganathan's theory of faceted classification as a parade example of a rationalist approach to classification. Usually, the rationale for the attribution of rationalism to Ranganathan lies in his utilization of fundamental categories and refined logical structures within the classification that he created (e.g., Hjørland 2003, 107, Figure 5; cf. Tennis 2004, 104-105) – that is to say, its rooted in methodological aspects of his classification theory that are held to be consonant with rationalist epistemology. In this paper, we have adopted a somewhat different strategy of considering Ranganathan's theory of classification by examining his epistemology – his theory of how a cognitive agent comes to know – and then tracing out some of its consequences for his classification theory. We have seen that Ranganathan posited two primary routes to the attainment of knowledge. The first of these, intellection, involves the application of intellectual processes – abstraction, generalization, inference, and verification – to percepts (i.e., sense data) stored in the memory of a cognitive agent: because all of these processes operate upon percepts originally derived from sensory experiences, all knowledge resulting from them is *a posteriori* in nature. Although Ranganathan set great store by the logical aspects of these intellectual processes, the tenet that all knowledge ultimately arises from experience, in particular sensory experience of some type is more consistent with empiricism than with rationalism. By contrast, Ranganthan's second route to knowledge, intuition is a form of inner "seeing" that bypasses the mediation of the senses and the intellect altogether and puts the mind of a cognitive agent into direct contact with the "thing-in-itself" that is the object of its thought: in his view, it

may well have been a factor in his preference to consider his postulate of five fundamental categories as a hypothesis to be judged by its helpfulness, rather than to claim for it the status of a metaphysical truth.

yields insights into the nature of things or their significance that are unattainable by ratiocination alone. Now, insofar as the knowledge yielded by intuition is not derived from the normal channels of sensory experience, it constitutes a form of *a priori* knowledge. Because acceptance of the existence of *a priori* knowledge is the primary mark of rationalism *qua* epistemological position, it is Ranganathan's doctrine of intuition that warrants the characterization of his theory of knowledge as rationalist.

We have seen that the contrast between intellection and intuition informed Ranganathan's theory of classification design in a number of different ways. He enshrined it in his model of scientific research – the Spiral of Scientific Method –, arguing that one of the phases, the so-called hypothesizing phase, is characterized by the use of intuition as a means to uncover the fundamental laws, identified as hypotheses or normative principles, while other phases are dominated by intellection involving the use of inductive or deductive logic to build upon the insights of the hypothesizing phase. Espousing the view that the capacity for intuition and intellection are differentially distributed among cognitive agents and that the former is much rarer than the latter, he embedded the contrast between the two in his ideal model of the division of labor in team research for the development of classification, distinguishing between "intuitive classificationists" responsible for creating the general framework of a classification and "intellectual classificationists" charged with working out the details of this framework by incorporating new subjects into their appropriate places. On a more concrete level, Ranganathan held that insights gained through intuition provided a secure basis for the system of seminal mnemonics subtending the correlation between concepts and notations that he developed for his classification system, the CC. What is more, he presented intuition as the epistemological warrant for his postulational approach to classification, for he claimed that central postulates governing the very structure of the CC, such as the postulate of fundamental categories, are grounded in intuition.

Crucially, Ranganathan considered intuition to be a privileged mode of knowledge vis-à-vis intellection (Girija Kumar 1992, 50). This does not mean that he scorned or rejected intellection as a path to knowledge, for he considered intellectual analysis as a necessary means to develop and articulate the results of intuition.[23] Nevertheless, he did hold to the conviction that intuition constitutes the most holistic, comprehensive, and integrated mode of knowledge that a cognitive agent can attain. Ranganathan expressly identified the (trans-) cognitive experience of intuition with mystical experience (Ranganathan 1951-1952, 208), occasionally speaking of it as a form of "illumination" (Ranganathan 2006 [1961a], 180). His valorization of intuition and his understanding of it as a form of mystical experience casts a new light on the character of the rationalism commonly imputed to him. Past commentators

[23] One commentator has noted how this complementarity between intuition and intellection can be seen in Ranganathan's own life and work: "Ranganathan's core work has been conceived through intuition. He was of the unswerving opinion that "Much work at any discipline has first to be done at the level of intuition." But he always belaboured his intuitive results in terms of intellectual analysis and examination. This belabouring is also necessary to transform the cosmic product to intellectual product for communication to wider circles. Intellectual analysis is also necessary to fully exploit the intuitive results and also to discover and rectify the possible faults and kinks" (Satija 1992, 149).

have tended to emphasize the ratiocinative aspects of Ranganathan's rationalism, such as his use of fundamental categories and his strict adherence to logical principles in his methodology of classification design. Such an analysis is unquestionably correct with respect to his methodology. However, when viewed from the perspective of Ranganathan's theory of knowledge and his commitment to the epistemological primacy of intuition, his rationalism is perhaps better described as a form of mystical rationalism. Ranganathan's affinity for mysticism doubtless reflects, to a large degree, the influence of the Hindu philosophical traditions with which he was familiar. However, it is useful to recall that a tendency towards otherworldliness is a feature of rationalism in the Western philosophical tradition as well (Huenemann 2008, 8). At any rate, we must enlarge our notion of rationalism beyond its ratiocinative aspects if we are to take the true measure of Ranganathan's thought.

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