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## Book Reviews

**Classification Theory in the Computer Age: Conversations Across the Disciplines.** Proceedings from the Conference, Nov.18-19, 1988, Albany, NY. Albany, NY: Univ. of Albany, Nelson A. Rockefeller College of Public Affairs and Policy 1989. 108p., ISBN 0-933581-07-0

In William James's dichotomy of persons into the tender-minded and the tough-minded, all cognitions and actions are based on a fundamental epistemological "choice" (which itself flows from an even more fundamental metaphysical "choice" -- though these choices might more safely be called just "predilections" or even "styles"). The relation between these three levels (behavior; epistemology; *Weltanschauung*) are for most persons implicit. Many of the presentations in this volume of conference-proceedings attempt to render explicit the relation between the several relatively epiphenomenal systems of subject access (classification(s), full-text searching,...) and their relatively sub-stantial epistemologies. Aristotle is most often indicated (indicted?) as the epistemological source of the whole idea of classification, taking this last as the erecting of stable structures of concepts; Wittgenstein is not so often named, but seems to lurk behind the attempt to "do" subject access without structure or vocabulary control, but with computer-speed and linguistic analysis as the sufficient means thereto.

But -- to the volume at hand. This one calls itself a "proceedings", and even uses the word "conversations" in its subtitle. In several of the presentations there are allusions to complementary presentations, so that the reader becomes aware of mutual awareness among the presenters. But there is no report of the discussions that almost certainly followed each presentation. One can legitimately argue that a volume with the title-element "proceedings" should be one that makes available not only the formal presentations that took place at the conference (or their edited residues) but also the less-formal (but often highly informative) parts of it *as an event*. This is of course not a failing of this volume alone... (the number of misprints, though, is disconcerting even when the correction can be guessed -- which is all too often *not* the case. One cannot but wonder, even when there is no obvious typo: Is *this* particular sentence hard to understand because of an omitted word rather than because of the conceptual difficulty involved in it?)

As usual, any conference-report is sure to include a variety of subjects, of modes of treatment, and of styles of presentation, but whereas I can issue the judgment that presentation *x* is superior to *y* in content-interest to myself or some other possible reader; or *a* to *b* in such stylistic characteristics as wittiness, humor, or just get-

ting the point across with grace; or *p* to *q* in clarity -- I cannot (as easily as so often appears to be the case, from my reading of reviews of such collective volumes) charge this volume with incoherence (nor do I mean to give the impression of damning with faint praise: this feature is a considerable accomplishment).

Classification theory is dealt with, in most of these presentations, not in isolation but in relation to some other object, approach, or aspect. As already noted, there is a fairly constant search for philosophical (usually epistemological) underpinnings -- and an equally prevalent *comparative* methodology, the philosophical pole over against Aristotle-influenced classification being most commonly a form of subject access derived from the linguistically corrosive late Wittgenstein: his notion of "family resemblances" seen by many here as a looser and thus more safely persuasive basis for the establishment of classes of documents (or, perhaps better, for the establishment of relevance-relationships between the ideas embodied in those documents and the ideas posed in users' queries).

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There was a moment fifteen or twenty years ago when everyone concerned with classification theory of information retrieval or even just subject access would have been likely to have heard of Borges' Example of a bizarre classification exemplified in "a certain Chinese encyclopedia", familiarity with this already two-level citation may have been mediated (as in my own case) by its citation by M. Foucault in *The Order of Things: an Archaeology of the Human Sciences* (1), in which animals are divided into:

(a) belonging to the Emperor, (b) embalmed, (c) tame, (d) sucking pigs, (e) sirens, (f) fabulous, (g) stray dogs, (h) included in the present classification, (i) frenzied, (j) innumerable, (k) drawn with a very fine camelhair brush, (l) *etcetera*, (m) having just broken the water pitcher, [and] (n) that from a long way off look like flies.

We can all have a good laugh at the unsystematicity of this seemingly random enumeration of isolates within a class of topics, at its lack of any intelligible principle of order or of characteristics of division. *We* do better than *that*, we say to ourselves: we can do well enough, indeed, to accommodate all these *bizareries* and all the rest of the class as well (here, animals).

One of the presentations here, that by R.S. Halsey, may be more Wittgensteinian than Aristotelian, but is even more striking to me by its mentioning of an image alternative to the Borgesian, that of Italo Calvino in *Mr. Palomar*, wherein is rejected the classifying of cheeses by such easy-to-recognize (but external) characteristic-polarities as "dry [as against] buttery [or] creamy", or "by [external] form -- bar, cylinder, dome, ball"; in favor, that is, of a classification of what actually *matters* to the cheese-eater, the flavors of the varieties of cheese

(internal characteristics). We can again laugh: here we laugh not at the unsophisticated outsider who doesn't understand what can animate a classification even unto usefulness, but *at ourselves* for seeing that what is useful may well be impossible to achieve even if we clearly see what is needed to produce usefulness, just because the internal characteristics may so often be ineffable. Who would be so foolish as to venture to classify flavors *in themselves* (however easy it would be to do something *similar* to a classification of cheese-flavors by associations such as "flavor *A* = the flavor of sharp cheddar", "flavor *B* = the flavor of brie", etc)? But the image remains, and the more one allows its influence to penetrate, the more we may come to doubt whether we have not always done just this cowardly thing: easy association (confusion?) of the (object-internal) ineffable with the (object-external) obvious, together with unwillingness to admit that this ineffable itself is all too often the only thing that would truly help. How often have our users said, when we give them the document(s) that is/are the best the system has come up with, "Well, maybe... What I really need, though -- well, I can't quite figure out how to say it"?

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This conference has as focus the overlap of the conceptual "areas" CLASSIFICATION THEORY AND COMPUTERS. This could imply either the two "areas" in their full generality; or the overlap of some smaller "area" on one side or the other with the (general) other "area"; or the overlap of some smaller "area" on both sides. A smaller "area" within CLASSIFICATION THEORY is (the theory of) a particular extant system such as DDC, and Batty's presentation overlaps that with COMPUTERS; Williamson's presentation overlaps another system, LCC, with COMPUTERS. A smaller "area" within COMPUTERS is ARTIFICIAL INTELLIGENCE, and it is that which Travis's presentation overlaps with CLASSIFICATION THEORY: Another smaller "area" within COMPUTERS is COMPUTATIONAL LINGUISTICS, which is overlapped with CLASSIFICATION THEORY (especially in its relational aspect) in Scott's presentation. Some presentations are more general-theoretic (Dahlberg, with hardly any overlap with the other side), some are more of the research-report type (Markey & Demeyer), some more logistical/applicatory (Mandel; Williamson). But for most of the presenters there is a polarity within the CLASSIFICATION-THEORY "area", i.e., that between *structured* classification systems and *heuristic* free-text searching-strategies. They may see more hope in one or the other pole, or they may try to let useful features (leaving aside less-useful ones) of either pole be applied so as to ameliorate deficiencies of the other pole, or they may try to synthesize the two poles into a wholly new (and presumably even more useful) approach. But the little-spoken-of point behind all these efforts is that CLASSIFICATION THEORY is *not just the theory of classification systems*, in some old-fashioned sense, but is theoretic for the most unstructured search systems

as well, because *these too are (in some sense) classificatory*. The primordial question then<sup>1</sup> is whether there is an epistemological sub-stantia that can be depended on over time to be an adequate basis for a variety of subject-access systems; and whether, if this unitary epistemology be *not* adequate, there may be instead a variety of such bases for a variety of systems: could Aristotle (or whoever) be an adequate basis for a "fixed structure" (Dahlberg) classification, but inadequate for a "query initiated" (Miksa) search system? And, *mutatis mutandis*, could Wittgenstein (or whoever) be adequate for the latter type of system but inadequate for the former? Or would it be contradictory to find an epistemology that is adequate for one "area" of the "world" (CLASSIFICATION THEORY conceived as embracing every kind of subject access) but is at the same time inadequate for the complementary part? Or is it -- the 'pop'-classification-theoretic opinion of choice these days, it seems to me -- that each epoch of subject access is based upon its "own" epistemology, that each is different from the preceding one, and thus that nothing that is permanently adequate can even be hoped for?

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The topics of each presentation have been ably resumed in these pages (2), so instead of plowing that field again I shall try to harvest from each what seems to me to be its peculiar crop.

BATTY's presentation might seem old hat in such a rapidly developing field -- because it was written in 1972 for another conference, the proceedings of which never got published. But the idea that he would promulgate is unlikely to change greatly unless computation takes giant strides (on the order of actually being able to "learn" what a document "means", so as to be able then to "think like" a querier, and then to put the two ends of the transaction together in the course of searching vast banks of full text). He sees a historical progression that might remind one of Hegel at Jena, 1806: from a place-classification of up to the mid-19th century, through the "complex topics" for which Cutter and Dewey and the IC classification were a response; the trend became more formalised in the general categories of UDC, with citation-order rules at least implicit; the apparent apotheosis of all this came with analytico-synthetic faceted systems; but the fixed structures of even this less structured approach (remember "a system *for* classification" and then the "freely-faceted" approach?) could be loosened up further for those who still saw value in a more-than-purely-atomistic approach by the use of relational operators to join isolates into syntagmata with no other hierarchy than that between the isolates and their facet. PRECIS, an indexing system for the DDC used in the British National Bibliography, provides such a synthesis between the structured and what is, though not "query-initiated", at least document-initiated.

But *did* philosophy in fact reach its end with this quasi-Hegelian synthesis?

DAHLBERG asks whether knowledge-organizations can be updated without being based on fixed-structure classifications? But she does no such historical survey as in Batty; she wants to go beyond the analytico-synthetic methodology of Ranganathan, to an even deeper analysis, an analysis of that from which could be built up not just the obvious synthetic products of the analysis, but even the concepts themselves that would have to be available for any sort of message-system to function (and information-storage-and-retrieval is surely that, at least). much of what she proposes, taken a sentence at a time, is obvious, and correct -- but to put it together the way she does has not been done before: her "obvious" means something more than "it goes without saying", it is closer to *apodictic*. Despite her knowledge of fixed-structure classifications and her awareness of the value of a more-than-atomistic approach, despite her realization that *relations* between concepts are crucial, she gives us here neither suggestions for better structure nor even a Ranganathanian system *for* classification -- she gives us instead the *techniques of analysis* of concepts as they are born and grown and assimilated into each other: out of such analysis something truly radical may come.

It is a pity that she was given no chance from the part of the editor to correct the many misprints and omissions introduced into her contribution.

TRAVIS is, first of all, a pleasure to read.

Her hopes, in terms of what computers can do for classification, is pinned on artificial intelligence, especially on expert systems. She describes experiments in which a computer-stored network of definitions can absorb new information (at least almost) without human intervention. But the flow of ideas and of advantageousness is not simply from ES to IR: it is classification (= definition by parts/kinds/relations) that makes the AI work in the first place, and humans have to show the computers how to do this. Such systems can dispense information just as they can absorb it, but AI could be used at earlier stages in the process as well, e.g., to function as a sort of spelling-checker in regard to citation order, in doing table look-up and number-building in LCC, and of course (all too easily, perhaps) in generating a chain-index. But there is a feeling, after reading the Markey & Demeyer and the Williamson presentations, that there is a vast amount of spade-work to be done before any of these sanguine prospects can become anything more than inspiring experiments<sup>2</sup>.

SVENONIUS hopes to establish (a) what an ideal classification system would be like in an online environment, and (b) whether such a system is even possible. To design any new classification system must mean to decide about purposes and applications: do we intend a classified catalogue or a shelf-arrangement (or both)? If the former, there must be made available the means for as many occurrences of each document-surrogate or schedule-node as could be useful -- a kind of need not forced upon a mark-and-park scheme. But to talk of only

the latter application in the same breath with talk of computers is close to pointless. So she enunciates and comments on several canons that should be true in such a design. The over-arching value she wants to see furthered is what I would call Wittgensteinian: any and all relationships and associations should be available for manipulation by the searcher, all sorts of corpora of "guidance-lists" (authority files, system schedules) should be to hand in helping to formulate the query -- Wittgensteinian, that is in its undogmatic agnosticism about any particular solution as permanent or even momentarily determinative.

The primary question, for her, then, is: "What are we designing?" But I emerge from her presentation thinking that what she has actually focussed on more than design of something to *classify with* (whether systematic or alphabetical, whether manual or online) is *searching* itself: What is it possible to hope for from that activity? How to arrange the world so as to advantage that activity is less described than evaluated in terms of its inherent preconditions.

MARKEY & DEMEYER report on research - and their presentation may be in danger of being overtaken by events and supplanted by further work not just by other research teams but even by their own efforts. In contrast to a more cataloguing-oriented paper, "Analysis of a Bibliographic Database Enhanced with a Library Classification" (3), the presentation here is more reference-oriented. The focus of the research is the question: Why did searches fail? The most general answer is *from a failure in the index*, but this is too coarse-grained a summary. For instance, another cause that this research uncovered was class numbers being broader than the documents classed under them. What Markey & Demeyer do, then, is to validate the complaints that many working reference librarians already know, but only know impressionistically.

But my over-all reaction to this presentation is (a) that its results are too tentative to allow any wide-ranging policy conclusions to emerge, and (b) that the scale of data-gathering and-preparation necessary even to get this far is vast. To get to the point where wide-ranging conclusions *can* be drawn... (Such caveats should make salutary impressions on the more optimistic researchers at this conference, and again it would be useful if the readers of the conference-proceedings could have seen what such optimists said to Markey & Demeyer, and what their responses were.)

WILLIAMSON urges greater editorial use of computers in the management of classification systems, in maintenance of the whole schedule first of all, and then perhaps in use (in such a sense as the construction of new numbers through table-look-up), and eventually in searching and output. We may never be able to start over from scratch, so we need to improve what we have, and to do that means to *analyze* and thus to understand. Computers can be useful here, though the work leading

to such analysis is still at the stage of a tentative format for the data. LCC is notoriously variable in its internal structure, but the tentative formats for the various classes seem to be converging, so this application of the computer may indeed result in enhanced analytical understanding of the system -- something that has been slow in coming before the use of such tools.

But the over-all impression is that to get beyond such surface scratches, to deal with the whole mass of the corpus of data to which LCC has been applied, is an operation vast and intricate: let the optimist beware!

SCOTT's focus is natural language: Can we do without paper, without catalogues and indexes? Or, put another way: Can computers read? And, a computer having read, can we *talk* with it so that it can answer us out of the voluminousness of its reading? This is a paper subtle in its awareness of the subtleties of reading and conversing -- e.g., it knows that "there is no text *plain and simple*", that intelligibility often resides not in perfect match between read word and asked-for word, but between the two contexts (in the mind of the querist, and in the "mind" of the computer), the contexts in which not only word but concept *alpha* function at the two poles of each such transaction. Occurrence is not enough: interpretation is needed as well, and the use of every thesaurus, classification-schedule, authority file of any sort embeds the target concept in (at least minimally) different interpretative contexts. Context is also omnipresent in the very structure of all systems of subject access, from classification systems to PRECIS: all class-numbers set up particular hierarchies for the target concept, i.e., they display the target concept in a variety of *relations* with a variety of *other concepts*, relations both paradigmatic and syntagmatic. A useful direction for research would be a comparison of these relational contexts for a range of target concepts; this analysis may be useful as applied to automatic classification and retrieval, and may be a necessary stage towards and advantageous design and use of such advanced storage-and-display devices as CD-ROMs and hypertext.

MIKSA takes up a *historical* task again, but one quite different from Batty's, one more concerned with the kinds of belief that were operationalized in the various systems of subject access than with the systems themselves as a cataloguer would visualize them. For the reader to deal well with the conceptual richness of such a presentation it may well be wise to have become familiar with Miksa's ideas as more generally developed in his magisterial work *The Subject in the Dictionary Catalog from Cutter to the Present* (4). One of his most apposite topics is: Why do we keep on making up answers before questions have been asked? (This is what indexing does, after all.) If the subject-access system is "query-initiated", will it not be likely to be also more query-specific? But even the idea of such a match is something historical: it only arises in an epoch in which beliefs are there to ground it. The epochs that Miksa proposes, their characteristic beliefs, and the sorts of

subject-access systems that are grounded in those beliefs, are

1850/90: subjects are "established elements of a self-evident and hierarchically structured universe of knowledge": Dewey and Cutter

1890/1940: subjects "were coming to be viewed primarily as attributes of documents": LCC and LCSH

1940/--: "documents have subjects much as people have personalities": Ranganathan's "universe of subjects" [NB: no longer "of knowledge"].

But along with Ranganathan's attempt to "recover logic and order" (as in the first epoch) we also see the rise of the (apparently) wholly non-ordered systems of subject access such as KWIC and of non-syntagmatic systems such as MeSH. But Miksa finds himself in a profound ambivalence: he sees the advantage of order over non-order in subject access, but wonders quite penetratingly whether a perfect system would not require as many orders as there are querists. Can a situation in which that is made true be called "ordered"?

Perhaps, he suggests, we can have the advantages of query-initiated searches by introducing a "query clarification and exploration system" upstream of the actual matching operation. He wants first a focus on classification of the sought *concept*, and then a mapping of this enriched concept onto available systems (analogous to Scott's relational-comparison project), and finally a better informed and more multi-variate searching process. This may be more formalized and more sophisticated than what good reference librarians have always done, but it *is* at least close to a reinvention of the wheel. This part of his presentation seems many levels below the quality of the rest of it, and of his path-breaking book.

MANDEL attacks more than one central theme in her presentation, and it is accordingly more of a congeries of free-floating ideas of interest than a cogently developed argument. One probe criticizes the epistemological basis of such classification systems as DDC and LCC as being "hopelessly crippled... by nineteenth-century thought"; but though she sees that IR should be based on a non-outdated epistemology free of 19th century deficiencies, she neither names nor outlines the salient features of the epistemology that is to replace it -- if it is not available for consultation, are we to build it up for ourselves?

Her other probe is in the direction of more mundane considerations:

- How do scholars actually use books?
- Avoid storage; scholars want to browse. Therefore shelf-classification *is* worth doing.
- But let shelf-classification derive from classification for IR, rather than there being a separate process to generate a separate product.
- Set up computer files linking LCSH with LCC; computerize table-additions by algorithm; compu-

terize shelflisting (new entries can be inserted by algorithm).

Class-number assignment can be made more consistent, though to go further "down" in the number than the subject part may be unwise.

(This last point may be less wise than it looks, if it means to enforce a lock-step attitude among libraries using LCC. I agree with Sanford Berman in thinking that LCC numbers are suggestions of something that may be useful at the Library of Congress, in the midst of LC's voluminous collection, but are all-too-often anything but useful in any other (= smaller) collection. But consistency at LC in the assignment of its own numbers is useful even to those in the wilderness.)

But I wish I could avoid or somehow subjugate the feeling of hostility suggested (even to me!) by what I have written: I disagree with much of Mandel's presentation, but am very positively impressed by her awareness that what we have and claim to use (e.g., LCC and LCSH) are not always used *to the hilt*; if they were, better results could emerge, deficiencies of detail/fact would be sensed and (conceivably) improved upon, understanding of the principles of the system would grow and could lead to structural improvement. Mandel does encourage such progressive moves.

HALSEY (the convenor of the conference-event) sees classification in all aspects of life, and feels that its being unnoticed is not a bad thing: it is a means that is essential but which (like the transmission in an automobile) is most advantageously functioning when unnoticed (better, perhaps: "when its use is wholly internalized"). But this does not mean that he argues that its workings should not be brought out into full consciousness as part of professional library/information-science education. The driver can use the transmission of his/her car well without noticing it, but the mechanic cannot repair it with the same level of consciousness in action. Surely, if any of these presentations are to emphasize professional education, we would expect such emphasis from the dean of such a school. And his point is all-too-well taken: that while online searching is taught in all such programs, and most at least give familiarity-training in (at least a few of) the "old" systems, classification theory is largely ignored as being too abstruse.

His vision of the future gives a picture of the currently reigning epistemology that is far distant from what Dewey or Cutter or Ranganathan would have agreed implied a *universe* of knowledge or even a universe of subjects<sup>3</sup>: the classification of the future will arise from the tendency of

the delinearization and digitalization and decentralisation of knowledge [to] encourage us to think laterally.

His intoxication with indeterminacy, frankly, frightens me: it seems unreliable because too unguided. Halsey's central image, laterality, is more adumbrated than defined. For him,

Lateral thinking is the pattern of the creative artist and scientist. This pattern is a purposive lack of pattern, a kind of serendipity...

Querists exist for whom this may be all to the good in what they expect and receive from their systems of subject access; but is it necessary or even anything but an impediment for the student seeking a Marxist or a feminist interpretation of Kafka's father-fixation in "Das Urteil", or for the professor compiling a list of recent research reports on deforestation for his students to summarize? What such querists need is *not*, I think, serendipity, but predictability.

The old gods may be dead, but the advent of those occupants of a new pantheon may generate more a desperate hope than an actual confidence in their power to give information-salvation to yearning humankind.

HOLIDAY is a student participant at the conference and her presentation shows this fact in both good ways and bad. She is trying to break into the big time, and accordingly anxious to be impressive -- and thus seems to try too hard. She traces the seam that separates/unites librarianship and information science, but does not emerge with a statement of the bifurcation that generalizes the many authorities called upon: Vickery, Daily, Soergel, Miksa, Shera, Lawrence Rosenfield. Some judgments seem wisely suggestive (e.g., that the facet-concept

opens the mind to the idea that the relationships among concepts and subjects constitute the universe of knowledge, as opposed to the universe being the sum of all [its] topical parts.

But her discussion of facets seems wide off the mark, seeing them as "hypostatized" aspects of passively known reality, which in turn she derives (following Rosenfield) from Aristotle. The Stagirite may indeed be the originator of many faulty ideas, but to focus on the passive in his epistemology shows a lamentable lack of familiarity with the whole crucial topic of the passive *and the active* intellect in it. She comments that in early 19th-century attempts at classification "little attention was given to principles of subdivision"; this lack has always struck me too (at least in the published rubrics of each such system), but there is evidence that the *practice* of these collectors/librarians went well beyond their theory. Jefferson's catalogue (5) shows that he was indeed intimately concerned with principles of subdivision and their embodiment.

Holiday seems throughout to see information science either as having the better arguments or as being the source of whatever moves, at least attempt to remedy librarianship's deficiencies; but there is, for her, still something to hold on to in librarianship's way of doing business: "Librarianship's continuing concern is recognition of what values are being represented in classification..."

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This last appeal can serve as a useful hint of a summation of the conference: this volume shows librarians who are aware of the value of computers in the subject-access enterprise, but who also see the value of classification (variously defined, of course). Information science, in Holiday's presentation, is the background of the full-text, non-metalinguistic systems that rely for their invigorating feedback on the thesaurus: but what is a thesaurus if not a *classification* of either a natural language (as a whole) or of a discipline's vocabulary (a sector of a natural language)?

Jean M.Perreault

#### Notes:

1 Though not necessarily primordial in point of time: it has taken a long time for this point to incubate far enough to be so stated as being applicable in a *general* way -- though Miksa is surely one of the presenters here who has been explicit about its applicability to various systems of subject access emanating from the Library of Congress.

2 Here is the sort of point at which reports of *conversations* between the presenters would have been even more valuable than the presentations themselves -- though I can sympathise with anyone who hesitates before the task of reducing such inchoateness to publishable form

3 This latter connotes, for me, a considerable lessening of the integration among the elements of the universe, and therefore a step in the direction of the atomistic epistemology.

#### References:

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(3) Drabenstott, K.Markey; Demeyer, A.N.; Gerckens, J.; Poe, D.T.: Analysis of a bibliographic database enhanced with a library classification. *Libr.Resources & Techn.Serv.* 34(1990)p.179-198

(4) Miksa, F.: *The Subject in the Dictionary Catalog from Cutter to the Present*. Chicago: Amer.Lib. Assoc. 1983.

(5) Gilreath, J.L.; Wilson, D.L.(Eds.): *Thomas Jefferson's Library: A catalog with the entries in his own order*. Washington, DC: Library of Congress 1989.

**SATIJA, M.P.: Colon Classification (7th Edition): A Practical Introduction.** New Delhi: Ess Ess Publ.1989. 236 p., ISBN 81-7000-103-X

The Preface of Mr.Satija's book begins with a quote from D.W.Langridge: "Colon is the embodiment of an ideal. As an introduction to the principles and practice Colon Classification remains invaluable". Who among us teaching and practicing classification would not concur with this observation? If we take classification seriously, we must pay homage to Ranganathan, and in this we must struggle to remain up-to-date. It is for this reason that Mr.Satija's introduction to the 7th edition of

the Colon Classification (CC7) is so welcome a tool. It is especially welcome in that CC7 has introduced many changes and has achieved a new, rather frightening, level of complexity. Also, as Mr.Satija himself confesses, it is plagued with "organic weaknesses and inner inconsistencies" (p.VII). Further, it is riddled with misprints. All the more necessary then is Mr.Satija's reliable practical introduction into its use.

The first half of this introduction to the use of CC7 is an exposition of the major concepts underlying the classification. Beginning with a discussion of its structure and basic principles Mr.Satija considers in sequence the common schedules, common isolate, devices, basic subjects, complex classes, phase relations, and notation. There then follows a select bibliography of works about CC7. The second half of the volume presents, with examples, the basic structure of 33 of the CC7 special isolate schedules, beginning with Generalia and ending with Laws.

What is good about this introduction to CC7 and what deserves criticism? To begin with the good, Mr.Satija is an experienced and colorful writer. One sees in his writing the flair of style, particularly in the use of metaphor, and the love he bears for his subject that characterized the writing of his "revered and valiant father Ranganathan". It is quality truly to be appreciated. Secondly, Mr.Satija is very clear and frank in his exposition; he has the ability to simplify without distorting. Thirdly, Mr.Satija is knowledgeable and is able to guide his readers through CC7 avoiding the shoals of inconsistency and misprint (for the most part: is the superimposition device used in CC7 or not? Cf. pages 24 and 40)). At the same time he levels frank and appropriate criticisms. Fourthly, the examples he gives of the CC7 syntax are interesting and simple, yet they show off well the sophistication of CC7 (e.g. "Saturday nights in the summer of 1987"). Such examples, a great boon to student and teacher alike, constitute a valuable complement to the classification itself.

Useful as Mr.Satija's introduction to CC7 is, there are matters that might be improved upon when he comes to write another such introduction. (Hoping that CC7 is an interim manifestation of the CC, he regards his own work also as interim in nature.) Foremost is the need for a better index. So much of the terminology associated with CC7 is technical, the beginner is prone to ask again and again "what does this mean?" Yet a search of the index often produces disappointment. For instance "isolate" does not appear there; and while "basic subject" does, the section of text dealing explicitly with this topic is not indicated. Surprisingly the index lacks cross references and, thus, lacks vocabulary control. The CC terminology is such that it needs both a good index and a separate glossary to explicate, for instance, the relationships among terms like "Speciator", "Special Component", "Special Constituent", and "Specials". Another reason to have included a glossary is that sometimes it is necessary to use a technical term before it is formally