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Measured Time: Imposing a Temporal Metric to Classificatory Structures

Abstract: Describes three units of time helpful for understanding and evaluating classificatory structures: long time (versions and states of classification schemes), short time (the act of indexing as repeated ritual or form), and micro-time (where stages of the interpretation process of indexing are separated out and inventoried). Concludes with a short discussion of how time and the impermanence of classification also conjures up an artistic conceptualization of indexing, and briefly uses that to question the seemingly dominant understanding of classification practice as outcome of scientific management and assembly line thought.

1: Time and the Ethic of Twentieth Century Classification Practice

Classification, broadly, is the identification of concepts and the relationship that obtain between those concepts. In a strict sense we can add the requirements of bibliographic classification – that we have hierarchical a systematic order, and that the classes (those names for concepts) are mutually exclusive and jointly exhaustive. When we place documents into classes, we have to first interpret and represent their subject matter. This basic activity happens in time, and as we will discuss below, it is important to consider time when considering the functionality of classification and its evaluation.

Classification, as a professional practice, has inherited the assembly-line work ethic of early Twentieth Century scientific management (Day 2001). The ideal of this ethic is that effort is made to make sure the classmark is assigned appropriately, and only once. If it is assembled through a strict, logical, and repeatable method, the process results in a trustworthy, or to some, a scientifically permanent assertion of the class to which the document belonged. The key here is the assumption of permanence.

Shifting from the assumption of permanence in classification schemes has taken time in the Twentieth Century (Miksa 1998). Where we were once concerned, in classification theory, with finding those things which were real and true, and hence permanent, in the universe of knowledge, we now look for the most useful ways of organizing collections of documents, in ways that are efficient for information seeking or conducive to human self-realization, rather than singularly beneficial to one group and detrimental to others (Olson 2002). This means we have already given up on one previously fundamental conception of permanence: that there are constants in documents that can be identified and represented independent of context. Permanence, from our newfound perspective then, is not to be seated in the interpretation, but rather the representation of classes and relationships between classes – the installed base (Bowker and Star 2001) of the classification scheme, which itself is an institution (Furner 2007). There is another kind of impermanence in classification as well.

We understand from classification theory that as new documents come into our collections, we often see new subjects. That is, the universe of ideas expands. We have this scenario: (1) an institution, x, uses, for example, Edition 18 of a classification

scheme. (2) A new document is collected and needs to be classed. (3) The classifier interprets the document and decides one of two things: (a) yes, the subject, as interpreted, can be represented coextensively with the classes listed in this scheme or (b) no, the document's subject cannot be represented coextensively, but gets classed in the best approximation or closest fit. Two things happen in this instance. One: the classifier makes a decision about the match between her interpretation of the document and the extant classes available to her in the scheme used for her collection. And two: this decision results in the document in hand always being classed with other documents. We now have two potential sets of classed documents: those that *fit* the scheme and are successfully and fully collocated in the collection, and those that *do not fit*. If a significant number of documents are published and interpreted to be outside the extant scheme (the evidence for literary warrant), then the scheme is revised. When this happens new classes are added to classification schemes. However, every time we add a new class to a mutually exclusive, jointly exhaustive scheme, the relationships between classes change. This may then have an effect on the extension and intension of the classes, especially in regard to the body of texts linked to particular classmarks – those before the addition of new classes. To say it another way: if we build a classification scheme to be mutually exclusive, jointly exhaustive, hierarchical, and systematically ordered in array we offer the classifier a set of classes, in fact, the only set of classes, available to class documents. Once we add a single new class to this, we have changed the relationship between interpretation and representation using the classification scheme.

This characteristic of classification practice calls into question the concept of permanence, especially if extension and intension are used in deciding where to class the document in the first place. The scheme changes. Interpretation practice changes. This means that the results of interpretation are based on changing and changeable evidence even at the smallest level. Without permanence we must consider the function of time in the act of classifying. We must also consider the function of time in evaluating the artefacts classification: specifically classmarks, and the relationship between classmarks and documents (cf., Beghtol 1986).

This paper takes as its purpose the identification and characterization of impermanence (what we will call the temporal metric) of classmarks in schemes. Acknowledging this we open up another avenue for critique against the assembly-line conception of classification. There are three levels of analysis that we will explore below: long time, short time, and micro-time. After introducing these scales of impermanence we then consider the theoretical import of these scales in influencing classification practice, specifically in the routinization of interpretation and representation in time. But first we start with a rationale for this work.

2: Rationale

Classification schemes are designed to be sets of mutually exclusive, jointly exhaustive classes arranged in a meaningful hierarchy and systematic array. This means four things: (1) there is only one place (the class) for a document in the scheme, (2) there should be a place for any document in this universe (that is, the document's subject does not reside outside this universe), and (3) documents with the same extension (breadth) and intension (depth) are classed together, (4) in a linear order that makes sense and helps the user find relevant material on the shelf (or in a linear

arrangement in a screen display). Classification schemes are built to do these four things. The ethos behind it is that these affordances help users. If classification schemes do not achieve these four things, then they fail in their designed purpose.

However, there is a challenge in maintaining all four of the goals of the functionality of schemes. Each of these is predicated on fixity – on permanence. A hierarchy and systematic arrangement need to be maintained, and perhaps most importantly, we need a permanent place every class and its constituent documents. Yet, as discussed above, and what will be developed below, things change. When we acknowledge the impermanence of classes in the practice of classification we then need to identify how to maintain the designed functionality of classification schemes even though classes are impermanent.

3: Long Time: Versions and States

Up to the end of the nineteenth century, classes in schemes were considered permanent. This changed in the twentieth century (Miksa 1998). Twentieth century classification schemes and the work associated with them assume an expanding universe of subjects. This was the very assumption on which Ranganathan built his dynamic theory of classification, the theory that resulted in faceted classification (Ranganathan 1989). His concern was how to add classes and retain the four functional requirements of classification schemes listed above. Working tirelessly, he was able to address this particular concern – at least if interpretation were permanent. But if interpretations are not permanent, then one challenge left to his design methods was in the relationship between new classes (and their accompanied documents) with old classes (and their accompanying documents). For example, the advent of multidisciplinary work like biotechnology would ultimately elicit, though literary warrant, a class on the subject, but also throw into question the relationships between similar extant documents that were classed proceeding this term in the scheme – say under either biology or technology separately.

Adding new classes is only one form of change editors introduce into classification schemes. Revisions happen over time. These revisions, while complex and varied in nature, are all of the same basic types (Tennis 2007). Revisions, once complete, result in one of two things: a *version* or a *state*. We can then observe scheme versioning over time, specifically, by looking at versions (and intervallary states) to draw conclusions and create models for how schemes change (Tennis and Sutton 2008, Tennis 2002). These then help us understand the long time involved in the impermanence of classification schemes.

The difference between versions and states lies in the degree to which changes are considered substantive. Versions are substantive changes that move the editor to reissue the scheme *in toto*. In the context of versions we can also see that we might not want to make major changes, just some slight enhancements that would not substantively change a particular version. Thus we can see how versions one and two might be substantively different, but a version 1.1 vs. 1.2 might not be. These different enhancements can be so identified as *states* or sometimes *snapshots* if we were trying to accentuate their fixity. In the context of scheme versioning, then we have two different temporal punctuations: (1) the version and (2) the state. With this we begin to see how time can be measured, in versions and states. These two units we might consider to be

the longer units in a temporal metric of classificatory structures, hence metrics of long time in classificatory structures.

4: Short Time and Forms

Short time forms occur during indexing. We define indexing as the analysis of documents for their significant characteristics in order to represent those characteristics, using some tool, in an information system for some user(s) (Langridge 1989, passim.). If we follow this definition we see that indexers engaged in a time-situated act: analysis for users using particular tools for particular information systems at a particular time. This leads to two concepts: forms and evidence, which appear at each act of indexing. Form here means a repeating act, in a particular manner, done with intention, to invoke some meaning. This is, in effect, what can be said of all indexing – assembly line or otherwise. The indexer recreates the act, in (short) time, and using evidence available at that particular point in time, ties the document to the long time of versions of classification schemes and other indexing languages. Indexing, in short time, is the fulcrum and purpose of the enterprise. We want to analyze and represent documents, and we do so in the context of a particular version of a scheme. However, this form – the form of indexing – has ramifications for future interpretation acts, especially with regard to intentionality if we are indexing to reinforce the design of classification then we approach the form and evidence of indexing in one way. And yet, they are not the smallest unit conceivable in the indexing process.

5: Micro-time: Semiosis and Stages in Indexing

The final unit of time we want to discuss is micro-time. Here we can draw on Mai's semiotic analysis (Mai 2001) and add to it; identifying many steps in the analysis of documents – the same analysis as used in the definition of indexing above. Mai identifies three steps. The steps are (1) document analysis (examining the document for its subject, looking at title, abstract, etc.), (2) subject description (attempt to create a cohesive statement about the document's subject matter), (3) subject analysis (naming the subject in language). These, as Mai puts it, are postulated to describe the logic of the indexing process. It is a protraction of the process, which usually lasts a few minutes for most document indexing activities. Drawing on our metatheoretical study of indexing theory (Tennis 2005), we can add two more steps, one before and one after Mai's three steps, bringing the number up to five steps. Metatheory is the pursuit of creating a synthesis of theory from different theorist's work. Our micro-time stages are: pre-analysis stage and indexing evaluation. These stages influence the short time forms of indexing because the indexer must have some evidence and or intuition about how to settle on an interpretation, and this is in turn influenced by intention. These stages are also influenced by the materials present during indexing like the classification scheme, extant collection, and the like. This means that we must consider these factors as well at the micro-time level when considering the effect of permanence on our work.

6: Arcs

The upshot of examining indexing along temporal lines and the reason for focusing our attention on a temporal metric with different units of analysis is to begin to remedy the problem beset indexing by the scientific management regime. Instead of an assembly-line modus operandi, we see indexing as a craft requiring artistic sensibilities, specifically those attuned to the aesthetic impact of artifact creation through time. That is, what we want to see is classification as a living work of art, crafted and re-crafted, by

aesthetically engaged artisans. Indexing considered this way is an art that demands more of us – as indexers – than we have previously conceptualized. The baseline expectation to meet user needs is still present, that is not eliminated by a temporal metric applied to our gaze of indexing. Rather, what we see from viewing indexing on long, short, and micro-time is that indexing is an act that happens at one moment, but that moment sends reverberations throughout time. What is more, the semantics of the act are part of an arc that starts with a presence of a document and ends with a situated interpretation (i.e., classmark affixed to a document for the purpose of collocation). And that situation sends ripples through a structure synchronically and diachronically, at that moment and through time. We often assume indexing only happens in short time and the indexing does not need to consider larger or smaller units of time. However, the relationship between meaningful interpretation and meaningful representation depends on the classifier's intention on maintaining the integrity of the designed system and its purposes. Thus with each indexing entry the artisan professional has sewn a small but important stitch in the embroidery of subjects.

Thus, this critique challenges the idea that interpretation and representation as done in piecemeal – adding small permanent semantic bits to the order established by classification regimes. What happens is the accretion of meaning through acts, situated in time, that form a pastiche which, while potentially motley, and because of this, demands the artisan-indexer to reshape the form and the version along an *arc* made of nested meanings and acts that instantiate those meanings – including user interactions.

7: Conclusion

The call that social tagging has sounded is not a call to democracy in indexing, but a call to refine the art and artfulness of indexing (Tennis 2006). Others have argued that standards fail to capture the complexity in indexing (Bade 2007, Bowker and Star 2001). While they have problematized the issue, the "installed base" of the standard form of practice and the codification of meaning in schemes and indexing languages, has remained. They are akin to manufacturing, steel mills, and the like. The assembly line approach to classification practice is not art because it removes the authorial or artist's presence. Yet it is still a major component of the institutions of long-term classification schemes (Furner, 2007).

Social tagging has offered us a space to consider the arts and crafts metaphor in indexing. We can see these tools and practices as a human act, full of art, where time is valued, not for quantity of production, but quality of production. Our time spent as indexers, can be time spent crafting a *heritage* of meaning, rather than a workaday techno-bureaucratic march forcing us into a *cage* of meaning.

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