**Missing Ingredients: How Activity Modeling Can Establish Research Lacunas**

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S.R. Ranaganathan wrote prolifically on the methods for designing classification schemes - specifically faceted and analytico-synthetic schemes (e.g., 1937, 1953, 1957, 1960, 1965, 1967). And his work has enjoyed elaboration posthumously (e.g., Gopinath, 1989; Neelameghan, 1997). In reading these works, it came to my attention that we had (1) evolution of thought on the design, implementation, and evaluation of schemes of classification, (2) what seemed like essential components of Ranganathian theory present in some works and absent in others, and (3) an opportunity to stitch this all together to see where we might go forward.

To that end, I started a metatheoretical investigation of Rangathan’s theories on classification (cf., Ritzer, 1991). Part of this metatheoretical work classifies the distinct time periods of Ranganathan’s work (Tennis, 2011; 2012). Another part models the classification process as described in his work (Tennis, 2017). It is this latter part of the metatheory that I want to expand on in this paper.

In order to examine the classification process, as outlined by Ranganathan and his acolytes, in detail, I have chosen a formal analysis method of activity modeling. This is a form of conceptual modeling. The formalism used to isolate classification activities, their inputs, controls, mechanisms, calls, and outputs, is IDEF0 (FISP, 1993). This is visually represented using boxes and arrows like you see here.

Diagram

Description automatically generated

An abstraction of the IDEF0 Modeling Formalism (FISP, 1993)

Each of the activities described in Ranganathan’s classification theory, across his various works and the works that build squarely on his ideas are placed into boxes and into relation with one another. To this we can add any inputs mentioned, any rules or technologies that control the activity, any mechanisms needed to make manifest the activity, anything called to aid the activity, and the output of the activity. In the case of classification, it might look like this.

Diagram, schematic

Description automatically generated

IDEF0 Modeling of Ranganathan’s Classification Theory

The boon for engaging in this form of conceptual analysis of classification is clarifying through the formalism what is agreed upon across the texts and what is not. We can also see where we have gaps in the process. Finally, we can also see where work not cited by Ranganathan can be incorporated to enrich our understanding of the potential methods of classification practice.

This paper will pick illustrations of these three areas of illumination that stem from the conceptual modeling of Ranganathan’s oeuvre using IDEF0.

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