Classifying by phenomena, theories and methods:
Examples with focused social science theories

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Introduction

The León Manifesto <http://www.iskoi.org/ilc/leon.htm> argues that interdisciplinary research would benefit from a universal system of document classification that classed each work in terms of:

- The phenomena studied
- The theory(ies) and theory types applied
- The method(s) applied

Classification by phenomena, instead of disciplines, is being experimented with in the Integrative Level Classification (ILC) project <http://www.iskoi.org/ilc/> (Hong 2005). In ILC, main classes of phenomena are represented by letter codes, like:

T	artifacts
U	wealth
V	organizations
Vb	families
Ve	communities
Vn	states
Vr	federations
Vu	supra-national unions
W	cultures

Theories and methods can be expressed in the form of facets, introduced by the digit indicators 04 and 03 respectively. Thus, the subject "states studied by theory *x* and method *y*" will be notated Vn04x03y.

The theory facet has been the least developed element in this classification. Only a dozen grand theories have been classified (Szostak 2004). The purpose of this paper is to show that it is possible to classify documents employing narrowly focused theories. It will place theories from a variety of social science fields – some disciplinary and some interdisciplinary – into a typology, and develop ILC notation for classifying works using these theories.

Theories and theory types

Theories present a challenge to document classification because theory names are ambiguous: the same theory name can refer to quite different sorts of theoretical

argument, while quite similar arguments may go under quite different names (especially in different disciplines). The researcher wondering if a particular theoretical argument has been applied to a particular set of phenomena will receive limited guidance if the literature is classified only with respect to theory names. The recommended solution is that works also be classified in terms of a typology of theory types (Szostak 2007).

Szostak (2004) developed a simple five-dimensional typology of theory types through recourse to one of the simplest classificatory devices: asking the 5W questions, who, what, where, when, and why. These in the context of theory yield more precise questions (and in each case a mere handful of possible answers), which can be represented as facets `047`, `046`, `045`, `043`, `040`:

`046` Who is the agent? There are two immediate distinctions here: non-intentional (including volcanoes or institutions) versus intentional agency (of beings that can act on purpose), each of which can take the form of individual, group, or relationship agency. This can be represented by specific classes, taking their notation from ILC main classes (*extra-defined foci*: see Gnoli 2006) like `046g` matter, `046p` persons, `046t` artifacts, `046ve` groups, `046vn` institutions, etc.

`043` What does the agent do? There are three broad answers, which map imperfectly onto the six types of agency: `043e` passive (re-)action, `043i` active action, `043n` changes in attitude.

`045` Why does the agent do this? With non-intentional agents, action can only be understood in terms of `045b` their inherent nature. With intentional agents, scholars can explore the five distinct types of decision-making: `045y` rational, `045i` intuitive, `045p` process (virtue) oriented, `045v` rule-based, and `045w` tradition-based. For groups and relationships, scholars can also ask how individual preferences are aggregated.

`040` Where does the causal process occur? The concern here is with the generalizability of the theory: there is a continuum from `040o` nomothetic (highly generalizable), through `040m` half generalizable, to `040k` idiographic (situation- or causal-link-specific) theory.

`047` When does the causal process occur? Though inspired by the temporal question 'when?', the possibilities refer ontologically to directions of change. There are five broad time-paths that a causal process might follow: `047b` return to the original equilibrium, `047c` cyclical oscillation, `047e` movement to a new equilibrium, `047p` change in a particular direction, or `047s` stochastic/uncertain.

As the discussion above suggests, theories may occupy multiple cells in the typology. This may occur because a theory has changed through time, or because theorists have not provided clear answers to one or more of these questions.

Well-known and consolidated theories, like Classical political economy or Marxism, can be assigned a specific theory notation: `U04um` will mean "wealth studied by Marxism", and `Vn04um` "states studied by Marxism". Their characterization in terms of theory types can be recorded as a relation of dependence (Gnoli et al. 2007) on the appropriate types `047e 046n 043i` etc. On the other hand, works applying innovative, not well-agreed

or more narrowly focused theories can be classified only in terms of theory types: U047e046v "wealth studied by theories postulating movement to a new equilibrium and institutional agents". If the search interface is programmed appropriately (Gnoli & Hong 2006), users will be able to search for any work postulating movement towards some new equilibrium (047e): the system will retrieve both documents applying consolidated theories like Marxism (thanks to the relationship recorded in the database between 04um and 047e), and documents applying some other, less consolidated theory implying movement to a new equilibrium.

Methodology

A random selection of works housed in the library of European University Institute in Florence, Italy was used for this paper. A subject search in the online catalogue <http://www.eui.eu/LIB/Catalogue> under 'social science theories' produced thousands of hits; the first 100 books (temporally most recent) were consulted and those that surveyed several theories in a particular field were selected. Two books were added to the sample during this search because they were located near books being investigated and fit the search criterion. This methodology yielded five books from five distinct human science fields and with a mix of single authorship, co-authorship, and edited volumes.

Analysis of Five Books

We have already completed a first draft of this section, which outlines the theories identified in five books surveying quite different fields (see references), and provides ILC notation for these. This material is not included in this submission due to space considerations.

Concluding Remarks/Discussion

This paper has surveyed a handful of research areas in social science, and shown that the theories encountered in each can be reliably classified in terms of theory types and then provided with appropriate ILC notation. Such a classification, it has been argued, would aid researchers in identifying works that apply a particular theory type to a particular phenomenon.

In some cases, classification is rendered difficult by the vagueness with which certain theories are expressed, or by ambiguity in how a particular theory is interpreted by different theorists. Theory classification should thus act as a tool, and at the same time as a stimulus, for a more clear description and definition of theories. Authors could be encouraged to classify their own theories in terms of theory types and as compared with other existing theories. Author classification could then be overseen by classificationists to ensure that works are placed in suitable places in classification schemes.

The approach outlined in this paper, of classifying works in terms of phenomena studied and theories and theory types (and methods) applied is part of a larger model, which is described programmatically in the León manifesto (cited above). It may be that, at least for some uses, works should also be classified along other dimensions (Gnoli

2007) such as local viewpoint (Beghtol 1988), epoch of knowledge (Tennis 2002), and disciplines; ILC notation is available in each case. First experiences with indexing bibliographies by ILC suggest that dimensions occur with different frequencies in different domains: in a natural science domain like bioacoustics, method is expressed far more frequently than theory, while the opposite seems to happen in human sciences.

More experimentation is obviously needed to assess the effectiveness and the details of this approach, as well as the expression of theories and methods in domains other than social sciences.

References to the five Books Analyzed

Burchill, Scott, and Andrew Linklater (2005) "Introduction," in Scott Burchill, Andrew Linklater, Richard Devetak, Jack Donnelly, Matthew Paterson, Christian Reus-Smit, and Jacqui True, eds., *Theories of International Relations.* 3rd ed. Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.

Burke, Peter J. (2006) *Contemporary Social Psychological Theories.* Stanford: Stanford University Press.

Larrain, Jorge (1998) *Theories of Development.* Cambridge: Polity.

Muller-Jentsch, Walther (2004) "Theoretical Approaches to Industrial Relations," in Bruce Kaufman, ed., *Theoretical Perspectives on Work and the Employment Relationship.* Champaign IL: Industrial Relations Research Association.

Pressman, Steven (2006) "Alternative Views of the State," in Steven Pressman, ed., *Alternative Theories of the State.* Houndmills, Basingstoke, Hampshire: Palgrave Macmillan.

Note: Most other references in the paper are to articles in *Knowledge Organization* or ISKO conference volumes, or Szostak's 2004 book, *Classifying Science* (Springer). Full references are omitted for space reasons.