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Using hermeneutics to inform bibliometric research: A mixed methods approach

Matthew Kelly

Department of Information Studies, Curtin University, Perth, Australia

Abstract: The problem of bringing semantic context to subject categories as expressed in ontologies such as the OCLC Conspectus—when the goal is to understand the overall epistemic message that the expression of selection decisions aimed at a particular branch of knowledge with varying degrees of scope and depth provides—
is a difficult undertaking both in terms of finding ways to interpret the relationship between subject domains and to impose reasons for the choice. It is argued here that there are significant areas of shared interest in hermeneutically and phenomenologically informed philosophy of social science and naturalistic equivalents and that a pluralist approach is appropriate to tackling the methodological issues associated with interpretation and systematisation in bibliometrics. Through the prism of phenomenological realism, a mind-independent view of the categories objectivated by the research is maintained as is the possibility that this can co-exist with active perception and reflection to reveal the complexity inherent in simple categorisation.

Keywords: Bibliometrics, Hermeneutics, Mixed Methods Research, Philosophy of Social Science, Information Science, Phenomenological Realism

1. Introduction

The use of bibliometric techniques to understand large and complex data sets associated with library collections has had fortuitous results and has contributed to better understanding of the context within which information is managed, especially at the local level and with reference to priorities identified to create value for user groups. Research into bibliometric methods has tended to be situated within a largely empirical paradigm consistent with the need to control, identify, classify, predict and describe literatures, information systems and publishing formats. Just as these goals require data analysis and modelling, other applications of bibliometrics require researchers to trace, design, improve, develop and evaluate various solutions, methods of qualitative analysis and syntheses of data to better make sense of the context in which it is created and organised. The data which forms the core of the analysis and the results of such

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inquiry has human, subjective and, ultimately, interpretive qualities (Connaway & Powell, 2010, pp. 82-83). While there has been a great advance in the ability to interrogate large data sets, with resulting increases in verifiability and reliability to better appreciate the flow of scientific knowledge, the process of mapping knowledge domains that allow a level of semantic certainty (or efficacy) to be attained at more than quite simple levels (co-word, co-citation, automatic algorithmic sorting) is both difficult and time consuming (Boyack, 2004, p. 5192). There are also problems associated with the reticence of researchers to undertake research which includes both quantitative and qualitative aspects for fear of "muddying the waters" of the research stream they are confident in applying. Cresswell outlines the main issues with mixed methods approaches as being associated with sampling methods, how merging of qualitative and quantitative data is conducted and how philosophical approaches are incorporated (2008, p. 529). Outlining why the last two factors should not be so much of an issue is seminal to the argument presented here. The arguments made are made in the context of an ongoing research project which incorporates a significant bibliometric component within a hermeneutically oriented overall methodology.

The problems which initiate the need for a mixed method research program and create issues of division in how qualitative and quantitative methodologies are discharged ought to have been reasonably reconciled by now, but unfortunately, they are not. They are unresolved because significant questions associated with the philosophy of social science are unresolved. The complexity and diversity of the arguments made in support of various approaches are freely acknowledged and the associated issues are tackled here, as far they can be, in the spirit of social theoretic inquiry as it is conventionally undertaken in information science. As such, the approach is a social scientific approach, and is neither an exercise in technical science nor philosophy. This being said, the analysis looks to the philosophy of social science for much of the interpretive validity for the arguments made and through engaging with this domain attempts to provide something of a waypoint for other information science researchers looking to ground methods in more solid foundations (especially where they may be seeking to interpolate quantitative findings on to qualitative settings or contexts).

The specific nature of programming research into the knowledge domains that characterise public libraries has motivated the inquiry that forms the background of this particular discussion. While the aim of the research is to understand the way in which knowledge is represented for a civil society cohort (and has distinctly hermeneutically oriented aims), the methodology requires (I aver) a protracted, empirical research project which objectivates the knowledge domains which are the *prima materia* of the research, even though this is, at one level, inconsistent with the broader aims of the research (which seeks to understand how librarians nuance such meta-theoretical and epistemic concepts).

What is outlined here is a series of considerations which relate to how the problems associated with working with what some regard as incommensurable

paradigms (Bunge, 1996; Guba, 1990) might be seen as less tenebristic in nature. A tentative description of how this problematic mixing of light (science) and dark (interpretivism) can be reconciled through recourse to a phenomenological realism (Ales Bello, 2015; Morris, 2007; Spielberg, 1940) and a dialectical playing out of the issues is provided with the aim that the antinomy associated with the polarised positions can be harmonised (if only just). Through this exegetical (observational) method, which allows for the strengths and weaknesses for each method to be carefully articulated and placed within a historical and ontological context, what seems to be problematic from an epistemological perspective is naturalised through use of a more-hermeneutical approach which avoids many of the problems associated with incorporating declaratory and apophantic sociologies of knowledge into the research design (Kelly, in press). By this I mean approaches that seek to decontextualise and delegitimise evidence gained from historical or ethical methods in defining truth claims. Two differing views can be seen in Bleicher and Bunge that reflect this. Bleicher contrasts scientism with hermeneutic reflection and points to how the origin of sociology in science "should not obscure the difference between the study and control of natural and social processes—even though the latter may, in given historical conditions, appear in a quasi-natural form…The self-understanding of sociologists working within such a framework is shaped by a view of science as a supra-historic, neutral enterprise and as the sole mode of acquiring true knowledge" (1982, p. 3). Bunge however, takes issue with ontological (but not epistemological) constructivism for its solipsistic idealism and the conflation of theory with fact. It "discourages exploration of the world and thus the search for objective truth" (1996, p. 297). He also takes issue with philosophical hermeneutics for its tendency to "favour analogy and metaphor over hypothesis" (p. 93); its inability, as "humanistic social studies," to demonstrate scientific characteristics (norms, laws, theory) and to commit to the study of social phenomenon as potentially able to be studied with confidence scientifically (p. 191); to take the word of all (*toto in verba*) uncritically as of equal value (p. 291) and finally, to mistakenly believe that "the scientific method can be applied only to observable facts" when it is, in his view, applicable to "all knowledge problems" (p. 345). Hermeneutic procedures (which presumably stay rooted to textual matters) should follow the simple methodology Bunge outlines, those using them will not traverse onto shaky ground if they follow the advice. The advice sees apprehended meaning give rise to questions of function or purpose; apprehended understanding to hypotheses or theory and the hermeneutic circle to a data-hypothesis-data zigzag. These are really the only reasonable uses of the interpretive method for Bunge as they are not running parallel, or in competition with, science as generally understood.

2. Methodological Problem Formulation

The primary question addressed by the research referred to here, which the bibliometric method contributes to answering, is: What factors influence the selection and evaluation of adult non-fiction monograph collections in

Australian public libraries? In order to answer this question a series of waypoints has been identified relating to how subjects are distributed; the commonalities in distribution that reveal prioritisation or neglect; the structural character of collections (relating to range and depth of coverage); the balance between selection practice—determined by available materials in the book market—and selection based on the epistemic values of librarians. These waypoints help to contextualise and understand the criteria that librarians bring to bear on

i. their selection and evaluation decisions
ii. considerations of what knowledge is core knowledge for civil society

2.1 Why mixed methods for this research?

The use of a mixed methods approach for this research was chosen because there were no bibliometric studies conducted to provide data on how the subject breakdown or the collection structure of public libraries (in either Australia or in other countries) was constituted. Without this quantitative data (Kelly, 2015) the qualitative data (discussion with librarians about their practice) would be uninformed and essentially context free. To answer the question *What factors influence the selection and evaluation of adult non-fiction monograph collections in Australian public libraries?* involves understanding the collections as objects separate from

i. the received wisdom of the profession regarding collection practice
ii. the local approach to meeting information needs of users (which is derivative of the above)
iii. the personal and idiosyncratic approach of the librarian's beliefs about the value of knowledge
iv. to civil society

In addition to this, attempting to make sense of the quantitative data without reference to the qualitative approach of interviewing could be lacking on a number of fronts but, most specifically, it is potentially removed from the fact that the answer to the primary research question might reasonably be that human interpretative factors associated with the diagnosis of information needs influence selection decisions. As this aspect of the research has not been conducted no more can be said about it here. What forms the primary focus of this paper is an explication of how the quantitative data can be interpreted—specifically the use of hermeneutics to inform bibliometric research—and what precedents exist in the philosophy of social science to allow for this intra-methodological mixing and what they say about imposing beliefs on raw data.

Prior to outlining this it is worthwhile to explain the approach taken. The collections of 27 municipal libraries in Australia were analysed using the Online Computer Library Centre's (OCLC) Collection Evaluation tool. The aim was to gain the data relating to non-fiction subject holdings which are in a conspectus format. In the conspectus there are approximately 500 categories which

aggregate 7000 subjects (OCLC, 2009); the aggregation from classification scheme *subjects* to conspectus *subject* (there is an explicit act of theming at work which is interdisciplinary) is based on recognised classifications schemes such as the Dewey Decimal Classification and the Library of Congress Classification.

These categories formed the basis for the analysis of the 27 libraries' non-fiction book/e-book collections and they were ranked by title numbers and assessed as a percentage of the total collection. The collection was then broken into 5 tiers (>1%. 0.5%-1%, 0.25%-0.5%; 0.1%-0.25% and <0.1%) to facilitate a means to understand the structure of the collections. Various forms of the collection structure were examined with the primary aim of looking for patterns that might be common to the collections. Several patterns were identified and are reported in a pilot study (Kelly, 2015) where a smaller number (8) of libraries was sampled. The main pattern identified in that study is that a power law seemed to be in operation with, by and large, 80% of collection titles represented by 20% of possible categories. Attempts were made in that pilot study (in which the collections of the 8 libraries were aggregated for analysis) to understand what the similarities in clustering of categories (conspectus subject categories such as "Domestic Engineering" or "Sports") might mean. These were identified in the following way and corresponded to the percentages of the collection that the groupings represented (>1%. 0.5%-1%, 0.25%-0.5%; 0.1%-0.25% and <0.1%).

Tier 1: The Self: Home and Family
Tier 2: Outside of the Self: The Civilised Mind
Tier 3: Onward the Enlightenment: Specialised Science, History and Culture
Tier 4: Democratising Knowledge: The World of Generalities
Tier 5: Deep Natural and Social Science: The Borders of Academic Knowledge

The collection aggregated in the pilot study comprised 334, 544 titles.

2.2 Why bring hermeneutics into this research?

The explanation provided in the pilot study for the use of hermeneutic phenomenology as a methodology to analyse fairly basic information, such as in Table 1., and to infer meaning from it was that it "provides a well-defined ontological grounding in how we conceptualize the nature of the knowledge that an information expert (such as a collection developer in a public library) might be called upon to deploy and to engage—in a dialectical sense—with the community of users and the community of knowledge creators." It provides a thoroughly explicated epistemological framework which can entertain the possibility that its assumptions, beliefs and rationality can aid the researcher in grafting a reasoned interpretation on to the sample results so as to "uncover something of the design of knowledge representations" (Kelly, 2015, p. 44).

Table 1. The Tier 1 Category from Kelly (2015)

Subject Category	**Percentage of Sample**	*cont.*	
Domestic Engineering	4.62%	Graphic Arts, Drawing, Design	1.57%
Sports	3.02%	Motor Vehicles, Aeronautics, Astronautics	1.53%
History - Oceania, South Seas	2.91%	Economics - Industries, Land Use, Labor	1.52%
Handicrafts, Arts & Crafts	2.81%	English Philology & Language	1.51%
Decorative Arts, Applied Arts	2.61%	Visual Arts in General	1.47%
History, General	2.40%	Animal Culture	1.43%
Family, Marriage, Women, Sexual Life	2.33%	Criminology, Criminal Justice	1.38%
History - Great Britain	2.25%	Photography	1.22%
Plant Culture	2.18%	Architecture	1.17%
Individual Psychology	1.88%	Public Health, Public Aspects of Medicine	1.15%
Business, Business Administration	1.71%	History - Eastern Asia, S.E. Asia, Far East	1.14%
Literature on Music	1.67%	Religions, Mythology, Rationalism	1.01%
Painting	1.66%		

What is central to this approach—which favours the use of the decidedly interpretive, *the hermeneutic* and the decidedly subjective, *the phenomenological*—is that it allows linkages to be made between raw, (semantically inert) data such as that found in Table 1. and the collection tiers (knowledge organisation units) that are identified above (which are at present simply *topoi*, objects with heuristic validity rather than objects of scientific

instantiation). It is hoped that the research might help to explain how and under what circumstance these topoi may transmute into fully-formed articulations of scientific objects and in so doing provide a more stable ground for the type of epistemic inquiry relevant to relationships of belief and knowledge in this type of socially defined information science setting. Johnsen discusses how Quine's project of naturalising epistemology incorporated both the beliefs that "observations alone cannot justify theories" (2005, p. 83) but also that theories are "answerable ultimately to our perceptual experiences" (Johnsen, 2014, p. 961). He points out that

> *there are neither deductive, nor rational- reconstructive nor inductive links to be found between evidence and theory, and that if we want to understand how the two are related we should settle for psychology—we should study how we relate the two, that is, how we actually construct our theories from our evidence. (Johnsen, 2005, p. 84)*

I hope to elucidate, in an introductory way, how the approach of Quine on re-visioning epistemology is well-commensurable with the tone of hermeneutic phenomenology. Both approaches are less concerned with the normative aspect of belief formation than with the process within which beliefs are formed and "how we do in fact construct our theories from our evidence" (Johnsen, 2005, p. 87).

Johnsen explains how in the "significant relation between rational reconstruction and psychology…both promise to illuminate the relation between evidence and theory." Quine's advance, according to Johnsen, is that in "learning the psychological truth that we relate evidence to theory in conformity with scientific method, we [also] learn the philosophical truth that evidence is related to theory by scientific method" (87). Rysiew (2016, 3.2) points out that criticism of the naturalising of epistemology in this way, that is the claim that it loses the normativity (ability to justify rather than just describe) so critical to the pursuit, is missing the fact that Quine self-confessedly was about naturalising this process rather than simply abandoning it.

3. Philosophical and Paradigmatical Issues

What I wish to discuss here is how the act of interpolating subject categories on to the library's users and their civil society knowledge needs is made (while the research project canvasses librarians' ways of doing this, I am primarily looking here at how I do it in the research process). Is there an act of psychologising taking place—in a situation as Brentano says where "contents are treated analogously to objects, among which we distinguish some which have their being only in a loose and improper sense, in the mental act, and some which have being in the strict and proper sense outside of it" (1911/1960, p. 72)—or is a more traditionally epistemological process in play when subject category and society are connected? Bibliometric analysis can show that many such decisions are made but it cannot tell us why they are made without an attempt to

understand the intentionality involved in such decision making. It would seem that there is a gap then between this identification of decisions and explanation of how it is that librarians (either consciously or unconsciously) add their own aesthetic, political, scientific or sociological imprimatur on collections. It is argued here that hermeneutical phenomenology (and like approaches) through recourse to a research modality which is able to appraise and incorporate the situatedness of the research in terms of the human-being-in-the-world, allows its substance or *Ding an Sich* (thing-in-itself or the subject matter or even "the will" in Schopenhauer's view) to become more clearly understood, or, less obscured by either (i) the relationships between objects known by reference to the senses (and those apprehended by the mind) or (ii) the circular problem of verification of meaning. Schopenhauer points out that

> *the phenomenal world is conditioned just as much by the subject as by the object, and by isolating the most universal forms of its phenomenon, i.e., of the representation, [Kant] demonstrated that we know these forms and survey them according to their whole constitutional nature not only by starting from the object, but just as well by starting from the subject, since they are really the limit between object and subject and are common to both. [Kant] concluded that, by pursuing this limit, we do not penetrate into the inner nature of the object or the subject and consequently that we never know the essential nature of the world, namely the thing-in-itself. (Schopenhauer, 1819/1966, pp. 421-422)*

Hermeneutical phenomenology inclines researchers to seek to understand consciousness (cognitive action) with reference to Heidegger's insight that it is "not separate from the world…but is a formation of historically lived experience" (Laverty, 2003, p. 24). The situatedness of the research is in a sense noumenal (unobservable) and concerned with articulating (or at least revealing) the haecceity—the thisness rather than whatness of the human experience of being associated with the particular matter at hand— (the human research question). Cross discusses this Scotist concept, which attempts to explain individuality, as "the whole common nature *is* in each instantiation of it. But the whole common nature is *not* to be understood to be identically (numerically) the same in each instantiation…" (2014, 2. Common Natures, italics added). The point is not just that an account of numerical singularity in general is required, that is the "indeterminate unity by which anything in a species is said to be one in number" (Cross, 2014, 3. Haecceity in Duns Scotus). What is required, rather, is an account of the individuality of any given particular, and this account will explain its being indivisible into subjective parts.

What does hermeneutic phenomenology face in its relations to ordinary science? There are strong critiques against it but there are also approaches that provide qualified support, even if the rationale is not necessarily in alignment. Gordon takes the view that "value judgments do enter in significant ways into all domains of scientific inquiry" and that social phenomena (social science

studies) exemplify this in more robust ways. There is no implicit need for this to require objectivity to be abandoned. What Gordon calls a "realistic view of scientific knowledge and its potential for further development" abandons only absolute certainty as goal and ambition, we can both "have some objective knowledge of the world" and "we can improve that knowledge"; what follows is that some "perfect insulation of science from value judgments" is misconceived and, here is the hermeneutical tone, "we must regard our knowledge as contingent….The instruments of scientific inquiry cannot furnish apodictic truths about the world, but they can enable us to obtain limited and tentative knowledge about it and, in some areas, that knowledge is sufficiently reliable to serve practical purposes" (1991, p. 666). Gordon is, in the end, not that far from Gadamer's view on tradition. Gordon's *ne plus ultra* view of scientific modernity, with methodological individualism and empiricist epistemology inscribed on its twin pillars, nevertheless allows for a commensurability to be achieved with the view of science that those concerned with civilisation in its historical and philosophical guises often propose. Gordon's view is that

> *Objectivity, then, like certainty, must be regarded as a philosophical ideal rather than a characterising property of scientific knowledge. Most philosophers of science, including most of those who have abandoned positivism, hold that it is desirable to make our knowledge of the world more objective and more certain. This is, of course, a value judgment, but it is one that serves the process of scientific inquiry rather than rendering it as problematic. (Gordon, 1991, p. 666-667)*

Gordon cannot but help buttress the walls against subjectivity's assault (while he can bring himself to say "deconstruction" he cannot say "Derrida" in the same sentence). Scientists can use value judgments, but they use them more responsibly "in selecting problems for investigation, in framing theoretical concepts, and in drawing inferences from empirical data." Science, unlike other forms of academic practice, "requires the use of informed judgment as well as the application of formal logic and the rules of empirical methodology" (667). Gordon is on the right track when he defines the need for a pragmatic path to be followed (he is not exercising a casuistic reasoning when he states that objectivity used by scientists must be pragmatically oriented toward the means for elevating and sustaining objectivity).

Weber's notion of *Wertfreiheit*, requires that social scientists ensure their work is "free of value judgments" (Gordon, p. 661). Hennis describes this independent, value-free approach to science as "a science which does not allow itself to become hastily 'tied down,' and which insists, as its particular inalienable responsibility, on the thinking through of principles" and a conscious holding back of those views which would impact efforts to maintain an ethical neutrality (1994, p. 125). Runciman describes Weber as having located four main "candidates" to what might differentiate natural and social science: "the potential intrusion of value judgments; the subjective nature of social action; the

uniqueness of historical events; and the irreducibility (or not) of sociology to psychology" (1972, p. 15). Motive is, for Runciman's Weber, essential to social-scientific explanation and this is "compatible with an unwavering belief in the unity of science" (17). If not actually defending Weber's positivist credentials (as Hennis points out Habermas actively criticises them), Runciman compares them to charges of idealism (as does Bunge):

> *...it may be as well to cite at once his insistence that ideas are conditioned by psychology, not by logic; that mental and cultural events are no less "objectively" governed by laws than any other events; and that human action is not less explicable—indeed it is more so—when it follows from the self-conscious pursuit by the most effective means of a freely chosen end. (17)*

Scientific explanation of the naturalistic variety "renders the explanandum predictable in principle by identifying it as one of a class of states of events whose occurrence either necessarily or with a specified probability follows from the conjunction of observable initial conditions and at least one relevant general law" (Runciman, p. 18). But can we await the finessing of sociology which would allow it to provide a general law that will allow for art, human-created art or for information, human-created information, to be explained in this way? In a sense it is a solipsistic assumption but there are ways out of the lonely maze the question throws us into and the relationship of particular and general explanation (facts and hypotheses) is important in conceptualising what Runciman asserts Weber holds true, that is, "the quest for empirical generalisations is only an adjunct or preliminary to a fully satisfying historical explanation of self-conscious human conduct" (19). Hesse's critique on how all scientific theories are underdetermined by facts" (1978, p.1) and that they are also "irreducibly theory laden: i.e., they presuppose concepts whose meaning is at least partly given by the context of theory" is helpful in bringing the "pragmatic criterion" into analyses of what progresses (the prediction and control mechanism) in a natural or social scientific theory change (over and above "a modification of the traditional empirical criteria of confirmation and falsifiability"). The criterion "filters out both simplicity criteria and other value judgments" (1978, p. 4) but additionally, successful prediction independent of conceptual schemes creates the setting in which "pragmatic knowledge can be obtained without an absolutely theory-neutral descriptive language" (5) to support it. Notwithstanding the negative light in which value judgments are seen for lacking objectivity/promoting bias, value goals remain a worthwhile alternative (or adjunct) to predictive success for science according to Hesse (8).
Methodological individualism stipulates that sociological collectivities reflect the action of real individuals, these are the only agents whose motives can be understood, and that there is an integral link with interpretive explanation and action as "intentional state" (Heath, 2015). According to Heath's reading of Weber

> *Action-theoretic explanation is central to social-scientific analysis...because without knowing why people do what they do, we do not really understand why any of the more large-scale phenomena with which they are embroiled occur...the goal is not to privilege the individual over the collective in social-scientific explanation, but rather to privilege the action-theoretic level of explanation. This privileging of the action-theoretic level is methodological because it is imposed by the structure of interpretive social science, where the goal is to provide an understanding of social phenomena. Actions can be understood in a way that other social phenomena cannot, precisely because they are motivated by intentional states. Yet only individuals possess intentional states, and so the methodological privileging of actions entails the methodological privileging of individuals. Thus the "individualism" in methodological individualism is more a by-product of its central theoretical commitment than a motivating factor. (1. Origins of the Doctrine)*

Both Heath (2015) and Schütz (1967) discuss how Weber's methodological individualism prioritises rational action theory as integral to social-scientific inquiry (Heath) or to put it another way, attributing meaning to a type does not allow a correspondence to be made to the "subjective meaning-context in the mind of a contemporary actor" (Schütz, 1967, p. 199). They both look to how Weber discusses collectivities as inseparable from the modalities of individuals and that the acts that result are the forms that are subjectively understandable agency (Weber, 1922/1968, p. 13). Dallmayr and McCarthy (1977), in the context of outlining the development of theories of explanation versus theories of understanding, point to how this action-theoretic/methodological individualism encompasses the investiture of subjective meaning to some part of human behaviour and that the social aspect to it requires some form of intentionality and interaction with other actors. Positivists arguing against Weber's notion of a scientific understanding tended to come at the idea as if it were "psychological empathy" or "'reproduction' of mental and emotive processes" (Dallmayr & McCarthy, 1977, p. 6). Barber notes how, in defining a phenomenological sociology, Schütz's Weberian and Husserlian influences allowed for "getting behind constituted meanings to the temporal processes by which actors build up the meaning of their own actions" (2014, 2. Para. 5).

Baert points to this "middle ground position" of Weber's over the *Methodenstreit* argument (over objectivity) and highlights that the approach Weber took was to not conflate the research question with the research process but to agree with the hermeneutic tendency that "values and norms held by the researchers affect their choice of topic or what is being put into focus" leading to the view that there is "no 'objective' analysis of culture in the sense of an analysis independent of any viewpoint that may select or organise the phenomena" (2005, p. 42). Baert dissects Weber's view of culture, expressed in *Die 'Objektivität' sozialwissenschaftlicher und sozialpolitischer Erkenntnis*

(1904) in the social science research context, and pares it down to a very small slice of the world of researcher and researched—very little that might be interpolated onto the range of meanings of real people in a real world will have "relevance to their central values." What follows for Baert in his reading of Weber's view of appropriate objectivity is that researchers in social science are "bound selectively to appropriate and represent the material depending on their value orientation to it…. exhaustive causal investigation[s] would be equally unfeasible and nonsensical" (42) and, in the same vein, meaning is not correlative with putting one's views on a subject in a box and hoping that better empirical data can, thereby, be encountered. What emerges from Baert's analysis, grounded in the broader context of Weber's methodological individualism (including respect for research specialisation and opposition to materialist approaches to history) is that the sociologically focused researcher must of necessity admit that the quest for certainty, in this context, inturbidates both the opportunity that the subjective presuppositions provide for reflection (which would aid further refinement of method), but also that the limited context of social science problem formulation is lost in the quest for completeness. Gerhardt states that the Weberian view of objectivity is one where the associated "conceptual schemes are neither realist nor idealist"; explanation will hinge on an analytical approach (2011, p. ix). Value-freedom is approached as freedom from ideology which might "interfere" with such analyticity.

Shils, in a foreword to Weber's *The Methodology of the Social Sciences* (1949, p. v), is apposite when he describes Weber's strength of purpose in wanting to "know the grounds for his own actions" and, not only that, but also the link between dignity and the practical ability of rational self-determination. For Shils, Weber's approach is aimed at countering those whose

> *confidence in the rightness of their moral [or, intentional] judgment is so weak that they feel the urge to support it by some authority such as the "trend of history" or its conformity with scientific doctrine in a sphere in which the powers of science are definitely limited.*

Gerhardt relates how Weber's *Die 'Objektivität' sozialwissenschaftlicher und sozialpolitischer Erkenntnis* was seminal in making "scientific judgement, empirically grounded, an accomplishment distinct from value judgement" and that "presuppositions about what society is, or should be, like…had nothing to do with science" (2011, p. 20). Gerhardt locates as critical to Weber's formulation of the ideal type his view that "the naturalistic prejudice inherent in concepts that wish to create something similar to the natural sciences, has led to misconceptions concerning the meaning that theoretical ideas can have." Weber's lesson is that of course one can do theoretical research in abstract theoretical subjects using historical data but where this is then used to "*deduct* from given real premises *quantitatively* definite results" an error is made, that is, of seeing contingent areas of history as unfailingly determined by human

agency, of making nomological what is, in fact, discovered through the original research. Even in simple cases where attempts are made to deduce laws from data-oriented social research it would be necessary for "the totality of historical reality including all its causal relationships [to] be taken [as] 'given' as well as *known*." (Weber, 1904, p. 20, Gerhardt's translation).

Bringing a broadly hermeneutical approach to bear on the issues of interpretation which arise in bibliometric research helps to tell the best story that can be told given the interplay between ideal types (the subject and domain knowledge) and the historicity and philosophical contingencies which provide the background context against which data becomes knowledge; in this setting the hermeneutic approach to rationality in human inquiry is complementary to naturalism, rather than antithetical to it; its empirical successes or failures should be the measure of how we judge its value to practice. While objectivity and truth coalesce, truth is not necessarily epistemic. It can be, but it is also related to our ontological, pre-scientific understanding of nature and society.

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