The Method of Problems versus the Method of Topics

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ABSTRACT Confused students researching papers not knowing where they are going. Articles, lectures, and books on exciting topics that turn out to be boring. Such familiar phenomena are symptoms of a widespread, largely unconscious methodological habit of focusing on topics rather than problems. This habit rests on views about knowledge that are deeply ingrained in commonsense knowledge and in the methodology of mainstream social science. Such views saturate the understanding of scientific inquiry assumed by most methods textbooks. This article criticizes the method of topics and contrasts it with the method of problems. The word "topic" suggests that there is some surface to cover, but not why covering it might be interesting. Interesting research is problem-driven. It begins with a sense that something is amiss with existing knowledge and requires explanation. Problem-driven research begins, not with collection of data or facts, or with clarification of concepts, but with identification of inconsistencies or gaps in existing knowledge. It seeks to solve problems through free invention and severe criticism of hypotheses.

A student says to me "I've been in the library reading and reading about my topic, but I don't know where I'm going." A colleague talks about his or her work on some exciting topic, like "anti-poverty policy," "Balkan nationalism," or the "Arab-Israeli conflict." "Yes, but what is the problem?" I ask. "What are you curious about? What puzzling questions need to be answered?"

These are examples of the malady of inquiry without problems, missing the spark of curiosity, which I call "topicism." Topicism is not just a malady of students who have not learned how to conduct research properly, as it also affects a significant proportion of professional scholars. Topicism rests on views about knowledge that are deeply ingrained in commonsense knowledge as well as mainstream social science.

"Topic" comes from the ancient Greek *topos*, or place. To "cover a topic" suggests that there is some surface to cover, like a wall to be painted, or a blank slate, a *tabula rasa* (Locke 1996) to be written upon. One "gathers data," or goes to the library to "collect facts." This view of inquiry is ingrained in the standard view of scientific method advanced by Francis Bacon in the early seventeenth century. And it is still taught in social science methodology courses. "A discoverer merely observes facts diligently, collecting as many of them as he can. The rest is up to Mother Nature . . ." (Agassi 1975a, 75). "The deliberate, business-like nature of the whole undertaking will ensure that it is cumulative" (Quinton 1980,55). In other words, as Jarvie puts it, scientific method is seen as "a means of letting Nature directly dictate knowledge of herself to us" (Jarvie 2003, 187). Theories are simply shorthand for regularities in the real world that repeat themselves. Thus, even theory turns out to be a form of topic-covering.

I propose the method of problems as an alternative that is likely to be more fruitful. The method of problems is standard in the advanced natural sciences—at least at their frontiers. The social sciences are not entirely devoid of problem orientation, yet topicism is rampant in the social sciences.

The search for knowledge, writes Karl Popper, "does not start from perceptions, or observations, or collection of data or facts, but from problems" (Popper 1972, 258; 1976, 88). "In order to know what to observe, we must have in mind some question which might be decided by observation" (Popper 1972, 259). Observation never proceeds from a blank slate. It must be preceded by some question that might be decided by observation, or by pre-established categories that are, for some reason, considered to be relevant (e.g., how many men, and how many women [Cf. Popper 1965, 61]?) "[E]very problem arises from the discovery that something is amiss within our supposed knowledge; or, viewed logically, . . . from the discovery of an apparent contradiction between our supposed knowledge and the supposed facts (Popper 1976, 88)."

In a similar vein, Murray Davis notes that "a new theory will be noticed only when it denies an old truth (proverb, platitude, maxim, adage, saying, common-place, etc.)." What distinguishes an interesting theory from an uninteresting theory, he argues, is that an interesting theory "denies the truth of some part of their routinely

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held assumption-ground. If it does not challenge but merely confirms one of their taken-for-granted beliefs, they will respond to it by rejecting its value while affirming its truth. They will declare that the proposition need not be stated because it is already part of their theoretical scheme: "Of course." "That's obvious." "Everybody knows that." "It goes without saying" (Davis 1971, 311).

The Baconian prescription that scientific inquiry should begin with a complete purge of all prejudices rests on the illusion that this is possible. Yet as Popper points out, "all knowledge is theory impregnated, including our observations." … "We always identify problems against a background of knowledge or dispositions which were there previously." To begin, background knowledge includes language that always incorporates many theories in the very structure of its usages, as well as many other theoretical assumptions that are unchallenged, at least for the time being. Even our sense organs have theory-like expectations built into them and are blind to stimuli they are not built to react to. Thus, an observation becomes the starting point of inquiry only if it reveals a problem with our pre-existing knowledge, expectations, and theories (Popper 1965, 46; 1976, 89; 1972, 71–72, 145, 165).

The word problem comes from the ancient Greek *problema*, which means hurdle. There are different kinds of problems, depending on the nature of the hurdle—for example, practical, ethical, political, and intellectual problems. In scientific inquiry intellectual problems are the hurdles. I argue, following J. N. Hattiangadi (Hattiangadi 1978), that intellectual problems are logical contradictions, which solutions resolve.

LOGICAL INCONSISTENCIES AS DRIVERS OF RESEARCH

"What motivates research," Hattiangadi argues, "the reason we search for a solution to a problem is that a problem is a logical inconsistency" (Hattiangadi 1978, 352). The logical inconsistency may be rooted in explicitly or tacitly held beliefs, in the interpretation of an observation, in an hypothesis being considering for adoption, or some combination of these. Beliefs need not be held *consciously* to be constituent of a problem. We may start with nothing more than a vague *feeling* that something is not in order with the knowledge we possess. We may be unable to pin down just what makes it problematic. It may be difficult, sometimes even impossible, to articulate all the beliefs that, taken together, are logically inconsistent. Beliefs held unconsciously [such as those embedded in language and methodolgy] are particularly important because they can be exceedingly difficult to recognize and articulate. As Poincare notes, "ideas unconsciously held are the most dangerous of all" (cited in Ogden and Richards 1923, xxiv).

What is it about a logical inconsistency that drives one to inquire? A "logical inconsistency has a *systemic effect*," Hattiangadi points out. "It destroys the effectiveness of our system of beliefs, in that from a logically inconsistent set of statements *any statement follows*. A logical inconsistency *forces us to seek an explanation*. For, left unexplained, it *undermines our entire system of beliefs*" (Hattiangadi 1978, 352).

"Problems appear when our expectations are disappointed, or when our theories run into difficulties. They may arise within a theory or between two theories. They may result from a clash between our theories and our observations. Often it is only by encountering a problem that we become conscious of holding a theory. It is the problem which challenges us to learn, to experiment, and to observe. An observation or fact or data becomes the starting point of inquiry only if it reveals a problem with our pre-existing knowledge, expectations, and theories" (Popper 1976, 88).

BACKGROUND ASSUMPTIONS AND COGNITIVE INTERESTS: UNPROBLEMATIC AND PROBLEMATIC

What questions people ask always depends heavily on their background knowledge and on what they are interested in. Yet this need not necessarily disturb scientific debates. First, findings made within different frameworks may be complementary rather than inconsistent. An ornithologist, an entomologist, a horticulturalist, and a real estate agent may all gather facts about the same piece of land, and give entirely different accounts of it. Yet all of these accounts may be true and consistent with each other. Marxists, liberals, and conservatives often give different and inconsistent accounts of reality because of their differing theoretical assumptions and background knowledge. However, sometimes, despite such differences, they may give differing accounts that are true and consistent with each other. Their differing accounts, rather than being incommensurable, may just be different perspectives on the same reality (cf. Wisdom 1980). Yet background assumptions frequently are at the roots of problems. If one believes that selfish behavior must have negative consequences for society, Adam Smith's demonstration (Smith 1776) that selfish behavior can result in public good will be surprising. Conversely, one who believes that Smith's "Invisible Hand" always results in public good will have to explain instances where it apparently does not. If one believes that a socialist party, because of its ideology, will follow democratic and participatory norms, Roberto Michels's observation that socialist parties tend to be as dominated by their leaders as are traditional conservative parties, will be surprising (Michels 1911). An important genre of genuine problems in the study of public policy consists in explaining the gap between policy makers' intentions and the results of their policies. One would assume that policy makers want to devise policies that work. Surely, no one would want to waste money and effort on policies that are not expected to succeed. Yet policies often do not work. Why? All of these examples illustrate that what is a problem for one observer will not be problematic for another observer who does not hold the assumptions that make it problematic.

THE NOTION OF AUTONOMOUS REALITY AS A TOUCHSTONE OF TRUTH

The method of problems retains the aim of finding explanations that may be tentatively shown to be true or false. Yet, as discussed in the last section, there may be very different explanations of the same reality that are all true and consistent with each other. The explanations of a veterinarian, a microbiologist, and a molecular biologist of the same animal may all be true and entirely consistent with each other. As long as their assertions about reality are not inconsistent, there is no problem. Yet of course hypotheses formulated in different frameworks often do contradict each other precisely because of assumptions embedded in the frameworks. An autonomous reality which all participants in a scientific debate believe to exist outside of all frameworks, can serve as the touchstone of truth or falsity. Hypotheses cast in any and all of these different frameworks can be tested, to some extent, against reality and critically discussed in light of such tests.

It is the assumption of a reality existing outside of all frameworks, independently of what anyone thinks, that gives unity to science. This assumption is consistent with recognition that all

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statements about reality involve interpretation and are biased by background knowledge, including the frameworks in which they are cast. Often, when observed facts conflict with a framework (or paradigm), researchers will challenge the facts and stick with the framework. However, under certain circumstances, as Popper notes, observations can "destroy even the frame itself, if they clash with certain of the expectations. In such a case, they can have an effect upon our horizon of expectations like a bombshell. This bombshell may force us to reconstruct, or rebuild our whole horizon of expectations . . ." (1972, 345).

Experience of reality and beliefs about reality may differ greatly from one individual to another. And perception, interpretation, and reason are, of course, all subject to bias. This unavoidability of bias implies that not only verifications, but *even falsifications*, will always remain inconclusive. Any falsification will only be an *apparent* falsification since every observation of a supposedly falsifying event involves interpretation. Nevertheless, an important lesson is learned from the advanced natural sciences: knowledge may sometimes progress through the invention and criticism (including tests) of hypotheses that are advanced to solve problems.

BELOW THE LEVEL OF CONSCIOUSNESS

Most background assumptions, both in science and in common sense, come from language, culture, tradition, and other taken-for-granted sources. We assimilate them, largely unconsciously, and are not even aware of holding many such beliefs. This helps explain why people so often talk past each other. Background assumptions are taken as self-evident. Misunderstandings are often due to clashes among the differing self-evident truths of different people. Often it is only when some newly encountered theory or observation clashes with unconscious background assumptions that we become aware of them.

The state of debate in any science will always be shaped by prevailing theories, methods, and metaphysical views. In the natural sciences, many background assumptions are provided by paradigms (Kuhn 1962) or scientific (Lakatos 1970) or metaphysical (Popper 1982; Agassi 1975b, 1975c, 1975d) research programs. Michael Polanyi has drawn attention to the crucial role of what he calls tacit knowledge in giving meaning to raw sense experience. Much background knowledge in science is tacit, that is, acquired through practice, and cannot be fully articulated. Tacit knowledge includes standards that determine which views are taken seriously and which are not (Polanyi 1967). Often, tacit knowledge exists below the level of consciousness, and this may be an important factor blocking scientific progress.

CONCLUSION: NO COOKBOOK FOR THE METHOD OF PROBLEMS

Some readers will recognize what they already practice in the method I advocate. Problem-driven research is by no means a monopoly of the advanced natural sciences. Much classical and much of celebrated contemporary social science is unmistakably problem driven. One need only think of the work of Marx, Durkheim, Weber, Freud, Pareto, Mosca, Michels, Keynes, Nisbet, Schelling, Milgram, Barber, Dahl, and Schattschneider, to name a few. The work of many classical and contemporary political thinkers is also unmistakably problem driven—Plato, Hobbes, Machiavelli, Rousseau, Constant, and Rawls, again to name just a few.

However, a cursory glance at social science literature shows topicism to be rampant. Moreover, it is not only students who lack problems to focus and drive their research, Many established scholars, including many celebrated ones, also follow the method of topics, whether or not they know it. In addition to countless student papers there are countless scholarly lectures, books, and articles that are uninteresting because they are devoid of problems.

The distinction between problem-driven research and research that is devoid of problems does not run between description and problem solving. In the advanced natural sciences, a substantial part of the scientific enterprise amounts to description. Descriptive research is intimately bound up with theorizing, and much of it involves problem-solving. The crucial distinction is that description, in the advanced natural sciences, is ordinarily subservient to problems, and thus not topic-oriented. In the social sciences, description is all too often not subservient to problems and thus topicist in character.

Frequently, struggling students, rather than being helped to formulate a problem, are given a template, that is, some outline to fill in or set of procedures or steps to follow. Such templates often "help" students cover their topics without addressing problems. Even what is called *theory* in the social sciences sometimes fulfills a template function. A topic is "covered" by channeling data into the framework and terminology of some so-called theory without addressing a problem.

Method-driven research tends to be "topic-oriented" or "template-steered," and not problem-driven. Most methodology textbooks, qualitative as well as quantitative, provide students with templates. The procedures prescribed by the textbooks tend to steer students towards topic-oriented rather than problem-driven research.

It is striking how little attention is given in the methodology texts to notions as central to science as "problem" and "explanation." And even when these words are used, it is rarely in the sense of the curiosity-driven research at the heart of the present discussion.[1] In many widely used methods texts, the words problem and explanation do not even appear in the index. (See, for example, Kolb 1978; Reason 1988; Shively 2002.) In others, although the words do appear (one or the other or both), discussion of them is typically cursory (Babbie and Benaquisto 2002). And often the words are not used in the sense of curiosity-driven research (See, for example, Carlson and Hyde 2003; King, Keohane, and Verba 1994; Kolb 1978; Manheim, Rich, and Willnat 2002; Neuman and Robson 2007; Selltiz, Wrightsman, and Cook 1976).[2] Sometimes, even texts that stress the importance of problems use the word problem synonymously with topic. (See, for example, Jones and Olson 1996, 22–29; Del Balso and Lewis 2001, 38–39; Sullivan 2001, 88–94.) Or the texts provide examples of problems that are undeniably important, but, on closer examination, turn out to be practical, ethical, or political problems that have not been intellectualized. In other words, while the practical, ethical, or political hurdles may be clear, it is unclear what is puzzling about them. (See, for example, Sullivan 2001, 85–87.) Rather than helping students formulate and grapple with intellectually challenging problems, these textbooks generally teach them how to "collect" or "gather" data, and look for correlations.

It is easy to confuse problems with topics. These two very different approaches are commonly confused, both in ordinary language and in scholarly inquiry. The word problem is often used in the sense of topic, and the word topic is often used in the sense of problem. Such confusion can be traced at least as far back as Aristotle, who wrote that problems are questions. This sounds

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plausible, but it leaves unanswered the question of what it is that distinguishes an idle question from a problematic question (Hattiangadi 1978, 354)?

Many social scientists, even highly accomplished ones, describe research as a process of gathering data, seeking support for hypotheses, or clarifying concepts. They view research as a process of accumulation and systematization of facts. As Popper puts it, "they try to copy the method of natural science, *not as it actually is* but as it is wrongly alleged to be" (Popper 1972, 186; see also Popper 1982, 5–8). Or, as Davis writes, students "who follow to the letter all of the injunctions of current text-books on 'theory-construction', but take into account no other criterion in the construction of their theories, will turn out work which will be found dull indeed" (Davis 1971, 310).

It is easy to agree that problems are important, as even many topicists enthusiastically do. It is quite a different matter actually to conduct problem-driven research. The human psyche is uncomfortable with open problems and usually struggles to ignore or suppress them. The desire to follow a template is understandable. Yet templates tend to freeze their own order into research. As Marx Wartofsky writes, "ontology recapitulates methodology" (Wartofsky 1976, 112). That is, the picture of reality that results from research is shaped and colored by the method used to produce it.

Following a template need not necessarily lead to topicism. Paradigms, scientific research programs, metaphysical research programs, and scientific theories are all templates of sorts that serve as rough roadmaps for research. In the advanced sciences, research begins when such roadmaps run into trouble, or when they point toward the counterintuitive, or the unknown. It is sensitivity to flies in the ointment, that is, to problems, that is the hallmark of a good scientist.

Formulating research questions that are genuine problems often requires much imagination and struggle. And problems often dissolve as researchers discover that taken-for-granted underlying assumptions are naive or otherwise false. As Einstein once said, "If we knew what we were looking for, it wouldn't be research, would it?" Grappling with open problems requires a high level of tolerance of ambiguity. There is never a guarantee that a scientist will succeed, even in formulating a genuine problem, let alone in finding a solution.

There is no cookbook for the method of problems. ■

NOTES

1. There are good reasons for this, although an adequate discussion would go beyond the scope of this article. A strong inductivist bias runs through the methodology textbook literature. Despite all the qualifications made by various authors, a diffuse but hardy inductivism saturates the pictures of scientific research that they present. Moreover, the methods textbooks typically assume without question a narrow construction of empiricism as definitive of any genuine science. This rules out as non-empirical many assumptions that are integral to the structure of genuine scientific problems. Such an understanding of empiricism also severely dampens the creative, imaginative aspect of science that is always bound up with formulation and solution of problems (Cf. Cartwright 1995, 276; Mende 2005). "[T]he natural sciences," notes Popper (Popper 1995, 90), "do not begin with measurements, but with great ideas."
2. Neuman and Robson (2007) include a fairly substantive discussion of explanation (16, 33–38, 40–41), and of "probing questions" (274–275). Yet even this does not convey a clear sense of curiosity driving research.

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