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CONCEPTS AS DEPTH-PROBES, CONCEPTS AS INQUIRY-BLOCKERS

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The article is devoted to the problem of the ambivalent role of concepts and conceptual frameworks. Two sides of concepts are taken as a basis of investigation: concepts as Depth-probes, Concepts as Inquiry-blockers. Every new revolutionary theory in science have had some resistance from a common views of its times, but being adopted it as well becomes a common view in a scientific world. Thus any new theory has to overcome some dogmatism and authority. The social sciences may be especially prone to using concepts beyond their range of fruitful application. This means that greater attention needs to be paid to the ambivalent roles concepts and frameworks may play in inquiry.

Keywords*: social sciences, methodology of science, totalitarianism.*

THE AMBIVALENT ROLE OF CONCEPTS AND CONCEPTUAL FRAMEWORKS

No thought is possible without concepts, therefore no science is possible without concepts. Concepts shape and guide thought, both fruitfully and unfruitfully. Sometimes concepts lead inquiry to previously unimagined depths. Sometimes concepts lead astray, or block thought and prevent inquiry from going anywhere. Sometimes the most penetrating and fruitful of concepts become inquiry blockers. All concepts, even the most penetrating and fruitful, may block as well as probing. What it is that makes some concepts and frameworks serve as depth probes, while others impede inqiry? What is it that makes some concepts and frameworks depth probes under certain conditions, and inquiry blockers under other conditions?

This paper explores the roles concepts, frameworks, and methods play in capturing reality and preventing its capture. It explores the conditions under which concepts that have served as depth-probes may transmute into inquiry-blockers. It suggests practical guidelines for becoming aware of the qualities that distinguish depth probing concepts from inquiry blocking concepts, and which distinguish fruitful from degenerating research programs.

To give the reader some sense for what I mean by depth probes, I will begin by looking at some obvious examples of universally-recognized depth probes. These include digital numbering systems, the heliocentric theories advanced by Copernicus and Galileo, Newtonian Mechanics, and Darwinian evolutionary biology. Additional examples that might also be included, were it not for space limitations, would be Pythagorean geometry, Mendeleev's Periodic Table of Elements, Mendel's Laws of Inheritance, DNA, Koch's

germ theory of disease, Pasteur's discovery of immunity to disease, the invention of the calculus, statistics, and game theory.

I will also inquire into why it is that some breakthrough ideas are easily accepted, while others are stubbornly resisted. Why is it that some breakthrough ideas have the effect of revelations, while other depth-probing ideas meet with widespread resistance? Why were the breakthrough findings of, Newton, Fleming (penicillin), Semmelweis (anti-sepsis), and Roentgen (x-rays) so readily accepted? And why were the discoveries of Koch (germ theory), Pasteur (immunization), and Einstein were so fiercely resisted by specialists in their respective disciplines?

To be sure, most of these unambiguous examples are taken from the natural sciences. However, depth probing can also take place in the social sciences. Breakthroughs in the social sciences[1], although there have been many, and although many have been important, tend to be more ambiguous, less dramatic than the big breakthroughs of the natural sciences. This is not because law-like statements about society and individual behavior cannot be made, as is so widely believed. On the contrary, it is because countless law-like features of human society and behavior belong to common sense. Nature became alien when anthropomorphic conceptions of nature were pushed aside. Before the triumph of modern science, the world of nature was assumed, as E.A. Burt puts it, "not only to exist for man's sake, but to be likewise immediately present and fully intelligible to his mind. Hence the categories in terms of which it was interpreted were not those of time, space, mass, energy, and the like; but substance, essence, matter, form, quality, quantity-categories developed in the attempt to throw into scientific form the facts and relations observed in man's unaided sense-experience of the world and the main uses which he made it serve" [1, c. 18]. By abandoning all pretensions to understand nature in terms of human experience, science lost control of the picture of reality. It allowed nature to present surprises, and it helped drive inquiry into nature to increasingly greater depths.

The social sciences share the aim of the advanced natural sciences of understanding reality in such objective terms. However, knowledge of society and human behavior remains, to a significant extent, direct and intimate. Every person possesses a vast store of general knowledge about the society in which he/she lives, and about other people. To be sure, this store of general knowledge is a potpourri of objective and subjective knowledge, true and false belief, profound wisdom, imagination, stupidity, and superstition, which are often difficult to distinguish from each other. Thus, in striving to probe deeper into social reality, social scientists face much stiffer competition from commonsense than do natural scientists.

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[1] In their 1971 article in Science, Deutsch, Platt, and Senghaas present an analysis of 62 advances since 1900, which they consider breakthroughs. A more recent article in Science [2] provide an update. They do not use the word "breakthrough" in surveying the frontiers of knowledge in the social sciences. They write of "progress" (usually reflects an interplay between theory, data, and tools), "areas of innovation" ("principally data and tools ... now pushing at the frontiers"), and "real promise in advancing these sciences from descriptive to predictive ones." The use the word "breakthrough" in referring to what they think is yet to come. Some of the "breaktrhoughs" discussed by Deutsch, et. al. have something of the feel of probing, while the underswtanding of social science of Butz and Boyle-Terry does not appear even to consider it as probing in the sense discussed in the present paper.

LANGUAGE, THE HUMAN MIND, DEPTH-PROBING AND THOUGHT-BLOCKAGE

Such problems are, of course, bound up with how the human mind makes use of instruments, such as language and mathematics to interpret a reality assumed to exist outside of and independently of thought, language, and mathematics. The mind strives to create order out of chaos. It works constantly, for the most part automatically and below the level of consciousness, to impose order on the chaotic mix of signal and noise coming in from the environment. The human interpretive apparatus does not simply transmit and interpret information; it predetermines what is signal and what is noise. Mind and language actually construct much of human reality. Once conceptions of reality are established, they tend to congeal, and are often difficult to break out. (See figure I [3]).

The order provided by the conceptual frameworks and the theories embedded in commonsense background knowledge enable individuals and societies to function more or less smoothly and comfortably. Disorder causes distress. When people are confronted with disorder, they often gladly adopt a conceptualization that is less confusing, more appealing, or otherwise more comfortable. This helps explain the appeal of demagogic leaders and simplistic ideologies in chaotic periods.
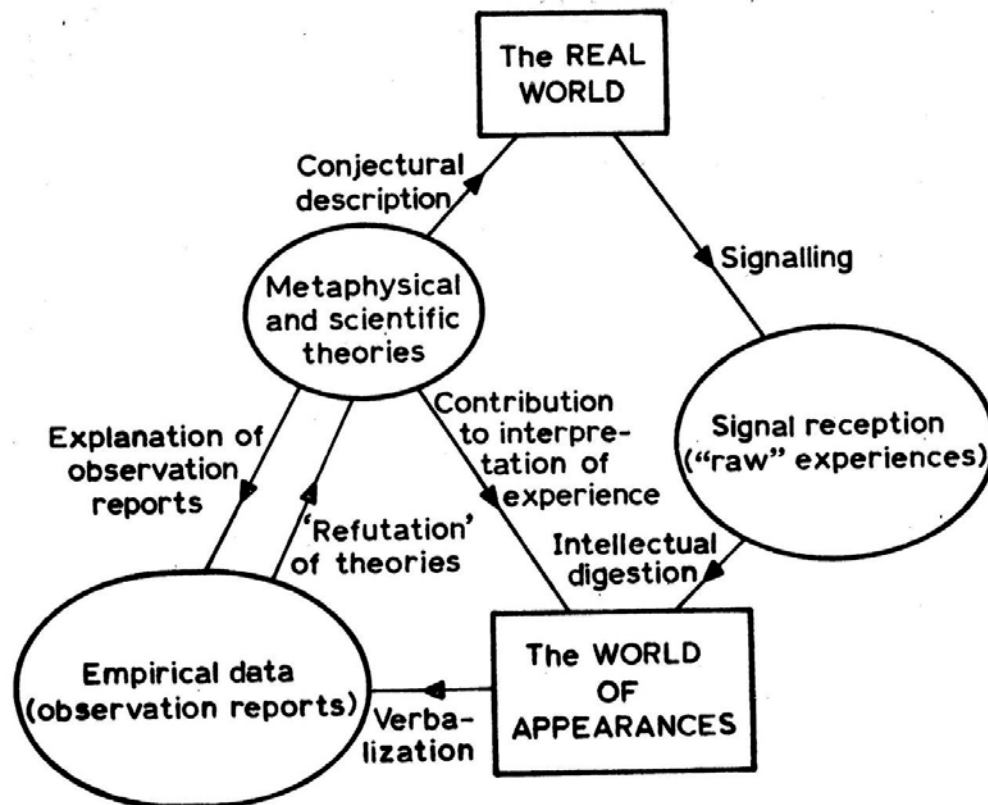

Fig. 1.

Figure 1: The real world and the world of appearances

Individuals and whole communities typically hold stubbornly to frameworks. Even if a prevailing framework is flawed, and a better or simpler one put forward, many people will be unwilling to undergo the stress of wrenching their minds out of the picture to which they are accustomed.

The earth is flat. Almost all of human experience, even today when every schoolchild knows that the earth is round, supports the view that it is flat. When Colombus set out to sail around the world, many were reluctant to accept the view that the earth was round. Because the heavens appear to revolve around the earth, Copernicus's heliocentric theory encountered great resistance. Since Newtonian Mechanics ogranizes so much of human experience easily and with great precision, many physicists stubbornly refused even to take Einstein's theories seriously. The inertia of the familiar, the fear of abandoning familiar ways of seeing things goes a long way toward explaining resistance to new ideas.

Language often serves as an instrument of probing and clarification, yet it can also distort and obfuscate. Language serves not only pursuit of truth; it also serves the purposes of rhetoricians, propagandists, advertisers, and swindlers. Social scientists are admonished to be on guard against bias and color in the language they use. In the present context, I take for granted that social scientists heed such warnings, and strive to avoid biased and obfuscating language. I will therefore not deal with intentional deception and careless bias and obfuscation. In the present context, I am interested in the largely unconscious thought-blocking and thought-liberating characteristics of language.

CONCEPTS, METAPHYSICS, AND SCIENTIFIC REVOLUTION

Conceptual breakthroughs represent switches in underlying pictures of reality. That is, they are switches in metaphysics. Examples would be the switch from the view of the earth as flat to the view that it is round, and the switch from the geocentric to the heliocentric astronomical model. These are examples of the kind of big conceptual breakthrough that Thomas Kuhn calls "scientific revolutions" [4]. However, throughout the history of science, there have been countless smaller conceptual or ontological switches that, although narrower in scope, represent the same kind of mental phenomena. They might fruitfully be called "mini scientific revolutions." Examples would be Fleming's discovery of penicillin, Roentgen's discovery of x-rays, Koch's discovery of disease-causing germs, and Pasteur's discovery of immunization. All of these represent breakouts from previously-prevailing pictures.

Imre Lakatos uses the term "scientific research programs" in referring to the frameworks underlying and guiding scientific research [5]. However, Lakatos's scientific research programs are in themselves, metaphysical, not scientific. The only thing that makes them "scientific" is that they play an important role in scientific research. As William Bartley writes: "This [scientific research programs] was an idea that [Lakatos] took over completely developed from the accounts by Popper, Agassi, and Watkins of 'metaphysical research programmes'. "Lakatos had the good sense to see that the word 'metaphysics' presented an insuperable public-relations obstacle to the professional philosophers of scientific bent who lacked his own sense of humour. So he calmly changed the word 'metaphysical' to the word 'scientific' and won the acclaim that he had intended for the notion [6, c. 38].

The conceptual (metaphysical) switches underlying scientific breakthroughs are logically and psychologically prior to their being brought into science. Scientific breakthroughs are usually attributed to the scientist who brings a conceptual switch (a new picture) into science. John Dalton is usually credited with discovery of the atomic theory of matter. Harold Clayton Urey is usually credited with the discovery of heavy hydrogen. However, these discoveries could not have been made if the concepts underlying them had not been present in background knowledge. The atomic theory of matter was invented by the Ancient Greek philosopher, Democritus. Dalton brought it into science by finding a way of measuring the size of a molecule. The existence of isotopes, and specifically isotopes of hydrogen, had long been suspected, but it was not until the refinement of spectroscopic techniques that Urey was able to separate heavy water from water, and test for its presence.

Conceptual breakthroughs have methodological and heuristic implications. They suggest visions, rules, and prescriptions that guide and inspire the conduct of research. This is true, not only of Kuhnian-type scientific revolutions, but also by much less earthquake-like breakthroughs. The breakthrough concepts of antibiotics, invisible rays, and disease-causing micro-organisms opened windows. They inspired mini programs of the genre Kuhn calls normal science.

THOUGHT-BLOCKAGE AND THOUGHT-LIBERATION

Sometimes, the penetrating, eye-opening character of a new concept or conceptual framework is recognized immediately. Roentgen's discovery of X-Rays was accepted without resistance. So was Fleming's discovery of the anti-biotic effect of the penicillin mold. Newtonian Mechanics has served as a penetrating research program that has led to deeper and deeper understanding of the world, not only in physics, but across a vast range of disciplines.

It is impossible, to think ourselves back into the framework of a numbering system without zeros, to actually feel what it would be like to think without the aid of digital numbering systems. The Romans somehow managed, however, it is interesting to speculate where civilization would be today, had digital numbering not replaced the Roman numbering system? One could cite countless examples of depth probing that digital numbering has made possible. The binary numbering system that makes communication between humans and computing machines possible is only one dramatic example. It has of course led to all the depth-probing made possible by computing technology.

We are amused by the apparent ignorance of those who scoffed at Colombus's belief that the Earth is round. Yet the view that the Earth is round is counterintuitive. It flies in the face of almost all the experience, not only of people living in the times of Colombus, but also of people living today. It rarely occurs to us that a breakthrough in thought was necessary to establish the theory that the earth is round. It was a conceptual switch-- metaphysical rather than scientific, that drove the effort to establish the round earth hypothesis.

Jacob Bronowski notes that "it cannot be an accident that the New World never thought that the earth is round, and never went out to look for the Old World. It was the Old World which set sail round the earth to discover the new" [7, c. 190]. It was, he

speculates, because the New World lacked "that great dynamic image that so moved the Old World--the wheel. The wheel was only a toy in the New World," Bronowski writes. "But in the Old World it was the greatest image of poetry and science; everything was founded on it. This sense of the heavens moving round their hub inspired Christopher Colombus when he set sail in 1492, and the hub was the round earth. He had it from the Greeks, who believed that the stars were fixed on spheres which made music as they turned. Wheels within wheels. That was the system of Ptolemy that had worked for over a thousand years" [7, c. 194].   This underlying image of the wheel was metaphysical, not scientific. Yet, fruitful, testable theories were invented, which incorporated this image. It was Colombus's discovery of land instead of his falling off the edge of the earth that convinced people of the truth of the round earth hypothesis, and led to all the discoveries that followed from adoption of this hitherto metaphysical vision.

The Roman Catholic Church's persecution of Galileo for entertaining the heliocentric theory of Copernicus today seems outrageous to most people. Even the Church has recognized that it was a mistake. The Copernican theory seems obvious and harmless to us, yet Copernicus's view that the Earth revolves around the Sun and rotates on its axis is counterintuitive and problematic [8]. "It is not clear," Bronowski notes, "how the earth can fly round the sun once a year, or spin on its own axis once a day, and we not fly off. It is not clear how a weight can be dropped from a high tower and fall vertically to a spinning earth" [7, c. 211]. Moreover, the Ptolemaic system was quite plausible, and had worked well for over a thousand years. At the time of the Galileo affair it was possible to make better astronomical predictions within the Ptolemaic system then within the Copernican [8].

The most dramatically penetrating concepts and conceptual frameworks are usually quickly and thoroughly assimilated into background knowledge. They become second nature, so it is hard to fathom how people could not have seen things as we see them now, benefiting from such conceptual breakthroughs that became obvious once they were made. It is possible even to be bored by stories of how such conceptual breakthroughs came about.

DIGITAL NUMBERING SYSTEMS AND METRIC MEASUREMENT

The switch from the English System of measurement to the Metric System only made measurement easier and more efficient; the switch from Roman numbering to digital numbering represents a revolutionary breakthrough. However, in both cases, some of the same charateristics of human psychology are apparent--the tension between the inertia of established conceptual systems and the appeal of new and better conceptual systems.

Since the Metric System of measurement was adopted in France in 1791, all countries, except for Burma, Liberia, and the United States have adopted it. The Metric System is easier and more efficient to use, thus is thus easy to understand why almost all countries have adopted it.   Systems of numbering and measurement are conceptual systems--thought structures. Although the Metric System does not enable deeper probing than the English System, it is far more efficient. The additional time required to make calculations using the English System no doubt entails significant, unrecognized costs. The greater ease and efficiency of the Metric System has been apparent enough to persuade most jurisdictions to adopt it, yet its advantages have not carried enough weight

to persuade the United States to adopt it. Moreover, many Canadians have fiercely resisted metrification since its adoption. Even today, more than 30 years since adoption of the Metric System, many Canadians still use and prefer the English system in those areas of life where it is not necessary to use Metric. Digital numbering systems, in contrast, are not only more efficient, they also possess depth-probing qualities. Digital numbering systems have opened the way for creative minds to make discoveries that would have been unthinkable had they not been invented.

Digital numbering opened the way to the invention of the binary numbering system. "Ones" and "zeros" translate into "on" and "off" for the switches in computers. This has made possible the link between human thought and computing machines, with all the depth probing that follows. However, computer technology can lead, not only to unimaginable practical applications, inventions and depth probing in a wide range of disciplines; it can also lead to thought-blockage. Impressive is too weak a word to characterize the sometimes breathtaking depth-probing made possible by computer technology. Yet, as in so many areas of human thought, dramatic success tends to inspire mindless application. "Scientific success," writes Ian Jarvie, "like all success, tends to have its worshipers" [9, p. xiii]. The dramatic success of a theory, method, or technology leads some, even whole communities, to see magic in computer technology, guaranteeing success in all areas of inquiry. However, blind commitment to computer-based methods can lead researchers to the use computer technology outside of domains to which it is appropriate, thus stifling inquiry rather than probing.

NEWTONIAN MECHANICS: DEPTH PROBE AND INQUIRY BLOCKER

Newtonian Mechanics provides excellent illustration of such mixed depth-probing and thought-blocking. Newtonian Mechanics has been so thoroughly assimilated into commonsense, that it is next to impossible for a person living today in any modern society to imagine the state of knowledge before the Newtonian Revolution. Even religious people--orthodox believers, fundamentalists, and creationists alike--would not think to question most of the scientific knowledge that has developed within the framework of Newtonian Mechanics. Newtonian Mechanics is part of their subconscious, unquestioned background knowledge.

Philosophy is nowadays widely regarded as more or less irrelevant to science and everyday life, and this is at least partly due to Newton. Even philosophers of science do not, as a rule, feign to provide guidance to researchers in the advanced natural sciences. On the contrary, philosophers of science take the advanced natural sciences, especially physics, as the paragon of knowledge. They strive to understand what it is that makes the knowledge claims of science so special, what gives them 'scientific' status. However, it is significant that even today, doctoral degrees in advanced sciences, such as physics, chemistry, and biology, are called doctorates of philosophy. This is a symbolic residual of the state of affairs before Newton, when all disciplines were branches of philosophy. Newton established physics as a discipline independent of philosophy by inventing a powerful theoretical system which did not have to appeal to the authority of any philosophy.

Even today, the movements of the sun, the stars, and the planets, and many physical forces like gravity, inertia, and magnetism touch human emotions. Newton's subsuming

of so much of human experience under a few simple laws was awe-inspiring to his contemporaries. Its impact, not only on the search for knowledge, but on society and culture more generally has been revolutionary. Newton inspired the other special sciences, including the social sciences, to liberate themselves from philosophical authority, taking his physics as the model for all of science. Before Darwin's discovery of the Theory of Evolution by Natural Selection, many believed that despite the revolutionary power of Newtonian Mechanics in explaining the physical universe, it could never account for the immense diversity of life. Darwin's theory, which provided a simple, mechanistic, Newtonian-type explanation that brought all forms of life under a simple scheme was, like Newtonian Mechanics awe-inspiring. Like Newton's theory, it represents a powerful depth-probing research program that continues to develop and probe down to the present day.

LOGICAL CONTRADICTION: THE MASTER DEPTH-PROBE

To say that Aristotle's Laws of Logic are commonsensical would be an understatement. Aristotelian logic is so deeply ingrained in Western culture that we take it as universal, and as independent of any particular language and culture. It seems to us the only possible way to think. However, there are other advanced systems of thought that do not follow Aristotle.

According to the laws of Aristotelian logic, given any individual and any property either the property belongs to the individual or the property does not belong to the individual (excluded middle). Given any individual and any property, that property cannot both belong to and not belong to the individual (non-contradiction). In Aristotle's treatment of the so-called syllogism, if something is posited, something else necessarily follows. In logical sentences, when the antecedent is accepted, the consequent must be admitted [10, p. 2-3]. All of this seems trivially true, even boring. What could be more self evident than statements like this? At best, they would appear useful in helping people keep their thoughts straight. However, already in the tenth century, the Arab grammarian, Abu Said al Sirafi, noted the dependence of logic on language. There is no such thing as universal logic, al Sirafi agrued. Logic is "the logic of a particular language," and the "logic the logicians are presenting is a purely Greek logic derived from Greek language and grammar [11, p. xv-xvi].

Chinese logic also deals with separating and categorizing different things and relations. However, Chinese logic does not have a feature of syllogism [12, p. 181]. According to Aristotelian logic, if something is posited in a syllogism, something else necessarily follows. Moreover such logoi are there treated as formulas which exhibit variables in place of words with constant meaning; an example is 'B belongs to all A'. The problem evidently, though not explicitly, presented by Aristotle ... could be formulated as follows. What formulas of the prescribed type, when their variables are replaced by constants, yield conditional statements such that when the antecedent is accepted, the consequent must be admitted? Tiles and Yuan discuss the difficulties involved in translating universal affirmative and universal negative propositions in the square of opposition into Chinese. They show that these difficulties are rooted in the differing structures used in Aristotelian and Chinese logic to conceptualize "logical space". Tiles

and Yuan use two models of logical thinking to illuminate these differences—a tree model, standing for Aristotelian logic, and a focus-field model standing for Chinese logic.

The Chinese way of conceptualizing of reality may actually more faithfully represent reality than Western conceptualizations inspired by Aristotelian logic. The real world does not parcel into neat Aristotelian categories without often having to be forced into them and such forced categorization is often clumsy and misleading. All speakers of European languages, which incorporate Aristotelian logic into the very structure of their usage, sometimes run into difficulties attempting to fit everything into neat categories. Is a particular regime totalitarian or authoritarian? Is a particular politician a socialist or a liberal? Yet regimes and politicians often do not fit such neat categories, and forcing them into categories often engenders high costs in terms of distortion and suppression of relevant features.

However, it may be precisely such profound flaws in the way we think, following the Aristotelian logic embedded in our very language that accounts for the rise of modern science. Since something cannot simultaneously be both "A" and "not A," every hypothesis must be either true or false. If a hypothesis turns out to be "false," the scientist confronts a "logical contradiction." Aristotelian logic does not allow logic contradiction; hence the scientist is compelled to seek explanation in order to remove the contradiction. It is this dynamic that drives scientific research. The lack of sharp contradiction in Chinese thought and language may help to account for the fact that the Chinese did not develop a science that was as penetrating and powerful instrument of research as the European scientific tradition.

CONCEPTS AS THOUGHT-BLOCKERS

Plausibility would seem to be among the most highly desirable features for a concept to possess. What could be better than a concept's ability to make sense of reality? Nevertheless, I will argue against this commonsensical view. On the one hand, many concepts that liberate thought are highly implausible until the theories bound up with them have been so thoroughly tested that their implausibility is overcome. The theory that the earth is round is highly implausible. So are the theories that the earth revolves around the sun, the germ theory of disease, and the theory of immunity to disease. It is their implausibility that explains the resistance these theories encountered. On the other hand, the history of science, natural as well as social, is replete with examples of plausible concepts and theories that were stubbornly defended against new scientific theories that were clearly superior. The flat earth theory, the geocentric theory, and the phlogison theory of combustion are all highly plausible. To many people, alchemy, astrology, and creationism are plausible, and well-supported by fact.

Plausibility is a psychological quality that refers to a feeling that one has understood. However, where research concepts are concerned, plausibility has little to do with truth or fruitfulness. On the contrary, the very feeling of understanding may work as an inquiry blocker. Such concepts as totalitarianism, democracy, civil society, social capital all make sense. It is easy to apply them to reality and achieve a comfortable sense of "knowing" the phenomena to which they refer. However, when we attempt to pin down just what it is to which they refer, or to analyze, or measure them, we often find ourselves in a swamp of confusion. Sometimes, concepts that serve as depth probes, are applied too broadly due to

their plausibility, and turn into inquiry-blockers. Newtonian Mechanics, for example, a powerful depth probe for many aspects of reality, can become a thought blocker when applied outside its range of applicability.

Examples of concepts that tend to serve as thought blockers, deceivers and misleaders might be totalitarianism, authoritarianism, civil society, social capital, democracy, soft power, alchemy, and the humors theory of human health. All are plausible and appear to help make sense of reality. Yet, they are tend to stand in the way of deeper and sharper insight into reality. Examples of over-stretched conceptual frameworks, and what Lakatos referred to as "degenerating research programs" would be Newtonian mechanics, and evolution by natural selection, beyond their range of fruitful application.

Some concepts and conceptual frameworks can, from the very outset, act as both probes and as blockers. Examples would be functionalism, elite theory, pluralism, cybernetics and systems theory, rational choice, bi-polarism and multi-polarism, Marxist economism and Freudian psychoanalysis.

SEARCH FOR MEANING AS AN INQUIRY BLOCKER

The argument presented in this section may appear self-contradictory. I argue that too much stress on meaning can lead to inquiry blockage. Yet I also argue that social scientists should pay more attention to the real world things that are the objects of research. It may appear that these recommendations, rather than being in opposition, are actually the same thing. If a researcher wishes to understand some phenomenon, such as totalitarianism, democracy, power, freedom, reification, or social capital, does it not make sense first to clarify and define precisely the meanings of such concepts? Does this not help researchers to become clearer about the real world objects that are of interest? The appearance of contradictyion arises from the widespread disposition to confuse words and concepts with things, that is, to hypostatize (or reify) them. Concepts like "totalitarianism," "democracy," "power," "freedom," and "social capital" appear to be merely labels for things or patterns existing in the real world. They are meaningful and plausible. Yet, this does not imply that there are discrete, autonomous entities or patterns in the real world to which these concepts correspond. Rather, the concepts create an illusion of actually-existing real world things or patterns to which they correspond.

Genuine explanatory theories about "totalitarianism," "democracy," "power," "freedom," and "social capital"do not exist. By "genuine theories," I mean systems of interrelated, testable or at least criticizable, propositions that explain what happens in the real world. There cannot be genuine theories of democracy, power, and freedom, since these concepts are either ambiguous, and/or have multiple meanings. Some of these meanings are contested or essentially-contested, and mutually inconsistent. Moreover, taken seriously, democracy, freedom, and totalitarianism do not exist as things in the real world without interpretive add-on. Scholars many agree as to the criteria for regarding regimes as democratic, free, or totalitarian, or the concepts may be operationalized. However, neither the agreement of learned researchers nor operationalization is any guarantee for what actually exists in the real world. Definitions may create an illusion of reality rather than faithfully representing reality. More importantly, just because a regime fits into one of these categories it does not necessarily follow that it they shares the same dynamics as other regimes in the same category.

The concept of power is different. It may not be possible to formulate theories about power in all of its senses taken together. However, once power is broken down into its different senses, it becomes clear that some actually refer to real world relationships about which one could hypothesize or theorize.

'Social capital' suffers from a different problem. The concept suggests an analogy with capital in the economic sense. The concept of social capital is plausible, because the analogy with capital in the economic sense has surface plausibility. However, what is referred to as social capital is capital in a sense that is qualitatively, fundamentally different from money and labor as capital. There is, for example, no social capital market, and social capital cannot be withdrawn from one place and invested in another. The analogy creates an impression of sameness, which is illusory, and thus not fruitfully heuristic.

More generally, there are endless debates in the social sciences about the correct usage of words and concepts, yet these debates are not usually fruitful. Moreover, there is little genuine theorizing about patterns and things that actually exist in the real world. Some reflection on the nature of language should shed light on why focusing on the "true meanings" of words and concepts is not likely to be fruitful. Languages are products of human thought and culture. There cannot be more clarity, precision, information, or homogeneity of meaning in languages than is present in the cultures that generate them. To be sure, some concepts appear to be no more than labels. There is little ambiguity as to which things should be called stones, trees, water, wind, and gravity. There is also little ambiguity about the meanings of human artifacts like chairs, houses, and automobiles. Even words that refer to human institutions without clear physical referents, like universities, churches, and chambers of commerce can often be used unproblematically. However, the cultures that produce languages also generate concepts for things they do not understand, or are unclear about or which may not even exist, like ghosts, angels, and witches. Language inevitably reflects the philosophies and experiences of the cultures that produce them.

Languages grow more or less anarchically, without any sovereign authority controlling their usage and development. Multiple, and overlapping meanings come into usage, usually without speakers of a language even being conscious of them. Dictionaries may clarify how words are actually used, thus resolving some confusion. However, they are authoritative only as reporters of word usage, and cannot legislate or enforce usage. Dictionaries have no authority except insofar as people voluntarily accept their reports of the usages of words.

Governments sometimes attempt to exert control over language. Perhaps the best known example is the Académie Française, which acts as an official authority on the French language, publishing an official dictionary. However, its rulings are only advisory. They are not binding on either the public or government. Governments have, it is true, played an important role in the process of state and nation formation, in legislating which dialects, literary texts, and dictionaries would define standard languages. Sometimes governments have tried to "purify" their languages, for example, by purging them of foreign words. However, despite such attempts at control, all languages develop, to a large degree autonomously, independently of all conscious attempts to shape and control them.

Moreover, dictionary definitions cannot go deeper than actual usage. For example, most dictionaries take the unproblematic status of the word "reality" for granted. Reality is defined as "that which is real, the state or quality or fact of being real. It is something that constitutes a real or actual thing, as distinguished from something that is merely apparent." Such definitions work well over so much of human experience that few think to raise questions about them. However, they clearly beg the question. Reality is defined in terms of other forms of the same root, or synonyms of it. This gives rise to questions such as: "What does it mean for something to be real?" "What is the difference between an actual thing and a thing that is merely apparent?" "What does it mean for something to be authentic, factually based, true, actual, substantial, sensible, corporeal, tangible, or palpable?"

It should therefore not be surprising that the concepts underlying many words are, at bottom, fundamentally biased, vague, and possessing of multiple meanings. Autonomous though languages may be, they are products of human minds and cultures, with all their peculiar ways of packaging reality. They are integral components of human attempts to understand and function in society and the world.

Some concepts that refer to real things are, at bottom, contested or difficult to define – for example, reality, health, poverty, pornography, yet people routinely use such concepts without running into trouble. In his concurring opinion on a pornography case, U.S. Supreme Court Justice, Potter Stewart wrote: "I shall not today attempt further to define the kinds of material I understand to be embraced within that shorthand description [hard-core pornography]; and perhaps I could never succeed in intelligibly doing so. *But I know it when I see it, and the motion picture involved in this case is not that* [emphasis supplied] [13].

Even in the advanced natural sciences, there are many concepts that cannot be defined precisely, yet are quite serviceable. As Nobelist Richard Feynman points out: "It is important to realize that in physics today, we have no knowledge of what energy is" [14, p.2-4]. And if you "insist upon a precise definition of force, you will never get it!" [14, p.2-12]. Many words can be used unproblematically only if their meanings are left vague. Words like God, freedom, democracy, power, and totalitarianism all make sense to most people, and they can be used unproblematically in many contexts as long as there is no attempt to define them precisely.

"POWER":
A CONTESTED, THOUGH NOT ESSENTIALLY-CONTESTED CONCEPT

Some scholars consider power to be what W. B. Gallie calls an essentially-contested concept (Gallie, Collier). I will argue that while the meaning of power may in fact sometimes be contested, it is not essentially-contested. "Power" can be used unproblematically in many senses, without concern about its meaning, and without breaking it down into its different senses. Moreover, it is usually not problematic to use it in one of its specific meanings. It is only when one insists that there is the only permissible meaning, that such concepts becomes contested.

Essentially-contested concepts, for example, democracy and freedom, can also often be used unproblematically if their meanings are left somewhat unclear. Their essential-contestedness derives from their representing conflicting normative and metaphysical

views that cannot be defined away. Unlike power, democracy and freedom are essentially-contested, since irreconcilable normative and/or metaphysical views underlie their very definition. Nowadays most people understand democracy to mean representative democracy. However, Rousseau, for example, did not view representative democracy as true democracy. "The people of England regards itself as free;" writes Rousseau, "but it is grossly mistaken; it is free only during the election of members of parliament. As soon as they are elected, slavery overtakes it, and it is nothing" [15, p. 63]. Taking the model of democracy in Athenian *Polis* at face value, Rousseau argued that unless citizens are actually participating in governing themselves, there is no democracy. Advocates of representative democracy, in contrast, argue that too much participation, especially by people with insufficient understanding of the issues at stake can lead to chaos and disaster. Moreover, they would point out that most citizens are not interested in devoting as much time and effort to politics as the Rousseauian tradition appears to require. Most citizens are content to pass judgment on the performance of their elected representatives from time to time. These definitions of democracy usually coexist in everyday usage. One can believe in representative democracy, and still be partly persuaded by Rousseauian-type arguments that citizens should participate more in self-government. Attempts to define democracy precisely place such such contested aspects of concepts at center stage.

The concept of freedom provides another example of an essentially-contested concept. According to Hobbes, "Liberty is ... the absence of external impediments, [which] . cannot hinder him from using the power left him, according as his judgment and reason shall dictate to him [16, p. 79]. This would seem to imply that, if someone holds a gun to your head and says: "Your money or your life," you are free, since you can make a rational choice. Or, in Rousseau's view, "whoever refuses to obey the general will shall be ... forced to be free [15, p.12, p. 71]. Or, there is the phrase widely attributed to Hegel that "freedom is the recognition of necessity." These different views give a sense for the thorny issues at stake in the very definition of freedom and, as with democracy, these issues become even thornier when a single, precise definition is sought.

The concept of power bundles together a wide variety of different senses. Most, perhaps all of these different meanings can coexist comfortably if left somewhat vague or used to complement each other. The concept only becomes a contested and an inquiry blocker, if someone insists on a single definition, or that the meaning they are using is the only correct one. Many different kinds of power can be readily observed and studied. Some types, though certainly not all, can probably be quantified without hopelessly distorting the meaning of the phenomenon being measured. A transformational leader needs a kind of power that is different from the kind of power the bosses of large American cities used to wield. The ability to make things happen through good leadership skills, good networking, and good organization is another kind of power. Richard Neustadt sees the essence of Presidential power as the power "to persuade and bargain, not to command. When a president has to resort to commanding people, he is showing weakness" [17, p. 30]. The power to make things happen by rational persuasion on the merits of issues is yet another genre, as is the power enjoyed by a social class, an elite, or the power of organizations, like labor unions and other interest groups.

Sometimes, writers, especially textbook writers, attempt to define an aggregate concept such as power by identifying common denominators--essential features that run

through all or at least most meanings. The result is likely to be inquiry blockage. The common denominator definition may truncate the concept, detaching it from the realities to which its various specific meanings refer.

THE PROBLEM OF REIFICATION OR HYPOSTATIZATION

The word reification is used in many different ways, and its meanings are often confused with each other. This concept, though referring to an extremely important genre of inquiry blocking is currently so confused as to be virtually unusable. It has been little discussed in social science literature, apart from some Marxist-influenced scholars.

In her important article, "Rethinking Reification," Hannah Pitkin accumulates over twenty alleged meanings, senses, or aspects of reification. "Some of them." she writes, "are mutually consistent, almost overlapping; others are incompatible. Some are in accord with the dictionary definition, others not. ... The dictionary entry itself is rather slipshod, and interpreters have expanded the term's meaning almost indefinitely beyond it. ... The whole thing is a swamp [18, p. 285]. However, as with "power," while the meaning of reification may often be contested, it is not essentially-contested. Its different meanings can be sorted out, and one can make clear which of them one is using.

To reify, according to Merriam-Webster, means "to regard something abstract as a material or concrete thing" (s.v. reify). Wikipedia gives as synonyms: hypostatization, concretism, or the fallacy of misplaced concreteness. It refers to an abstraction (abstract belief or hypothetical construct) being "treated as if it were a concrete, real event, or physical entity." Some examples would be "regarding IQ tests as an actual measure of intelligence; the concept of race (even though genetic attributes exist), from the chosen combination of attributes or the labelling of a group of people, come from abstract social constructs; Astrology; god(s); Jesus; Santa Claus, black race, white race, etc. [19]. In the present discussion, I use the word reification in the sense laid out in the preceding paragraph, that is, as an error of reasoning.

Reification has occurred when concepts, frameworks, and theories freeze into pictures of reality that cannot be shaken by reality. Before the emergence of modern science, the natural world was also reified. Nature was anthropomorphicized, and descriptions of it were frozen. It was Natural to view concepts like political system, elite, social class, interest group, bureaucracy, and capitalism as existing as do stones, trees, and thunderstorms.

If there is no clear sense of what is "out there" in the real world, concepts tend to create worlds of their own "out there," without protest from reality. Facts can always be found that fit almost any meaningful concept. Facts support pseudo-science, ideology, and superstition, as they support scientific knowledge. A clear notion of social reality enables that reality to kick back and shatter propositions made about it. This reduces the potential for reification.

A clear sense of social reality is rare in social science research, and it is this that accounts for the persistent tendency in the social sciences to reify or hypostatize. There is a powerful tendency underlying all human thought and discourse to think of words, simply as labels for things. Sharpening notions of social reality can serve to combat the natural tendency to reify concepts. Assuming a real social world, I suggest, is the only means to combat reification. Research seeks to discover concrete sources of orderliness in social

reality that can serve as objective constraints on the hypotheses the research seeks to impose.

Many writers caution against confusing words and concepts with real world things. Whorf identifies a tendency to take our ways of thinking about the world "out there" for neutral labeling of natural things. Whitehead refers to the "accidental error of mistaking the abstract for the concrete ... Fallacy of Misplaced Concreteness. Quine calls it "object-posting" modes of thought. Hayakawa writes: The symbol is not the thing symbolized; the word is not the thing; the map is not the territory it stands for. Yet despite all cautioning and widespread awareness in principle of tendency to reify, social scientists continue to mistake concepts about things for the things in themselves. The terms reification and hypostatization are usually used pejoratively. It is a mistake that others are supposed to be making, but certainly not the person making the accusation. Someone else is allegedly confusing words and things, making a mistake the accuser always careful to avoid.

Max Weber made a valiant attempt to banish reification from his methodology. He made a conscious effort to avoid the widespread tendency in nineteenth-century social thought to treat entities like nations, classes as real, irreducible wholes. Weber represented social reality infinitely rich in atomic details in constant flux. He wrote that his ideal types were not descriptions of objects existing in the real world, but rather instruments social scientist creates to investigate the social world. Yet Weber's very efforts to articulate a methodology that avoided reification allow a new form of reification in back door. Without some objective notion of social things that can shatter the ideal types, it is difficult to see what might prevent the ideal types from selecting out the facts that fit them, with these facts then confirming the ideal type. There is nothing to constrain hypothesizing except the subjective judgment of the researcher.

This is not just a problem plaguing the social sciences. The natural sciences also strive to simplify and typify reality. As Popper puts it, all good science is "lucky oversimplification' or if you prefer the term, idealization" [20]. The scientist always selects out of infinite universe of facts only those determined, on a priori grounds, to be germane. Once selected, facts fuse psychologically with conceptual and theoretical constructs that determined their selection. In successful science, it is a clear sense of the reality constraining attempts to impose order that sets limits to the natural tendencey to reifiy or hypostatize.

ESSENTIALLY-OBFUSCATING CONCEPTS:
TOTALITARIANISM, FOR EXAMPLE

The collapse of the USSR was completely unexpected by those who studied Soviet politics. Most specialists were surprised and have paid little attention since the collapse to the processes and developments that had brought it about. The Soviet Studies literature is of little assistance in making sense of what happened. In retrospect, it seems obvious, even to non-specialists, why the USSR collapsed. Yet few specialists have devoted their attention to the question of why such so many of them were so blind to what was going on over the years. I suggest that a large part of the explanation for this blindness has to do with the framework of inquiry that dominated research–the "Totalitarian Model."

The term "totalitarianism" was coined and gained currency in response to what certainly looked like a new type of regime. Various writers, observing the Soviet Union under Stalin, Germany under Hitler, usually Italy under Mussolini, perceived, abstracted, and wrote about the shared "totalitarian" character of these regimes. The family resemblance is due to the fact that the regimes to which the concept was originally applied shared several dramatically visible features which made them appear to be unique and essentially similar to each other. The Nazi and Stalinist regimes were based upon totalist ideologies coupled to mass movements which were propelled and guided by these ideologies. These regimes actually attempted to remold society and its citizens along the lines of their totalist official ideologies. As William Zimmerman puts it: "Teleologically, the regimes seemed to entertain and seriously aspire to uniquely all encompassing goals. There was enough substance in the rhetoric of the building of a new Soviet man, for instance, as to suggest that these were novelly purposive political systems. Instrumentally, the regimes seemed to have developed a new form of rule in that terror was used systematically as a political instrument for engendering the rapid circulation of elites and the atomization of the masses...behaviorally, also, Nazi Germany and Stalinist Russia were thought to be set off from other authoritarian regimes... [since] the traditional distinction between state and society, between politicization and socialization, was erased. No longer was mere compliance tolerable; for the first time affirmation became the norm and affect totally mobilized" [21, p. 1279].

These features were abstracted from reality and the regimes to which they were applied were described as totalitarian by many scholars. As the abstraction became widely accepted, this set of features tended to become reified or hypostatized, viewed as a concrete thing. It became the preconceived theoretical model through which communist and fascist regimes were viewed. Of course, evidence could always be found to confirm the continuing correspondence of the model to reality--evidence of persistence of the essential traits of totalitarianism "behind the changing, observable events as a kind of permanent ghost or essence" [20, p. 136].

ARE THERE BREAKTHROUGHS IN SOCIAL SCIENCE?

Social scientists do not need to be reminded that conceptual breakthroughs are rare in the social sciences, if they occur at all. Most would agree that the social sciences are still awaiting their Newton. However, the situation with regard to breakthroughs in social science isn't entirely bleak. Stanley Milgram, Robert Jervis, Mancur Olson, Ervin Goffman, Herbert Simon, Elinor Ostrom, and Murray Edelman are examples of some post-War social scientists who have made breakthroughs. One might add Karl Marx's discovery of the impact of the socio-economic base on thought, Sigmund Freud's discovery of the unconscious, Emile Durkheim's discovery of social facts, and Max Weber's discovery of the link between Protestantism and capitalism. Some of the classics of political theory/philosophy have breakthrough character, for example, Plato's sociology and political theory, Machiavelli's theory of government, and Hobbes's theoretical solution to the problem of why free and equal human beings, born with natural right would submit to being governed. Although I have intentionally left out many celebrated, highly-competent, and useful scholars from my list, it is by no means intended to be exclusive.

CONCLUSION: IT'S LARGELY A MATTER OF AWARENESS AND ATTITUDE

It is difficult to formulate problems and hold them at the center of research. Formulating genuine research problems and holding them open requires determination, imagination and struggle. Problems often dissolve as researchers discover the naivete or falsity of assumptions underlying them. As Einstein once put it, "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 and uncertainty. And there is never a guarantee that a scientist will succeed, even in formulating a real problem, let alone in finding a solution.

The human psyche is uncomfortable with open problems, and routinely ignores or papers them over without addressing them. Many scientists design their studies in terms of prevailing paradigms and methods rather than confronting real problems. The desire to work within a set framework, to follow a formula or template is all too understandable from a psychological point of view. It is even more understandable when considerations like promotion and tenure enter the picture.

Formulae, templates, and methods impose and freeze their own order into research. As Einstein writes: "Concepts which have proved useful for ordering things easily assume so great an authority over us, that we forget their terrestrial origin and accept them as unalterable facts. They then become labeled as 'conceptual necessities,' etc. The road of scientific progress is frequently blocked for long periods by such errors." As Marx Wartofsky points out, "ontology recapitulates methodology" [22, p. 112]. We may believe that we are using methods that are free of metaphysical commitments. Yet the picture of reality resulting from research will shaped and colored a priori by the method used to investigate it. An x-ray photograph shows mostly bones. A picture made with infrared film shows objects in terms of temperature. A quantitative study will produce a picture of reality painted in numbers.

As challenging as the problems discussed in this paper may be, the situation is far from hopeless-even in the social sciences. The social sciences may be especially prone to using concepts beyond their range of fruitful application. This means that greater attention needs to be paid to the ambivalent roles concepts and frameworks may play in inquiry. All too often, social scientists fly blind; unaware of the impact their concepts, frameworks, and methods have upon their research. The fact that the social sciences are fraught with concepts and frameworks that can be both depth probes and inquiry blockers points to a special need for awareness of danger of interpreting and reinterpreting the world in various ways, without deepening understanding. There are many devices that help make it possible to overcome the inquiry blocking effects of most inquiry blockers. Most important is to formulate a live problem--a question that really makes us curious. It is a good idea to try out problem formulation(s) on one or more non-specialists. Does the problem as formulated make them curious? Too many studies are tailored to methods. To avoid and/or break out of conceptual blockage, the research problem should be formulated independently of methods and techniques. Methods and techniques should be subordinate to problems. If they suffocate the research process, they are not useful anyway.

It is possible for social scientists to break out of the prisons of their belief systems, but it usually isn't easy. If our beliefs are formulated as empirical hypotheses, they extend into the Real World, beyond the prison of any reification in which we happen to be

trapped. If an hypothesis is formulated boldly and sharply, if it asserts that something is true of the Real World, it may be refuted by information from the Real World. In this way, we can break out of our framework prisons. To be sure, each time we break out of the prison of a particular framework, we end up in another framework prison, though hopefully closer to the truth about the World.

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Эйдлин Ф. Концепты как глубинные зонды, концепты как блокаторы исследования // Ученые записки Таврического национального университета им. В.И. Вернадского. Серия: Философия. Культурология. Политология. Социология. – 2014. – Т. 27 (66). – № 1-2. – С. 11-29.

Статья посвящена проблеме двойственности концептов: концепты как углубляющие научные знания и концепты как блокирующие дальнейшие научные поиски. На многочисленных примерах из истории науки показывается: восторженность возможностями, которые появляются при создании новой теории, в некоторых случаях оборачивается догматичностью. Рассматриваются пути преодоления блокирующего фактора научных открытий.

Ключевые слова: общественные науки, методология науки, тоталитаризм.

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Стаття присвячена проблемі подвійності концептів: концепти, які поглиблюють наукові знання і концепти, які блокують подальші наукові пошуки. На численних прикладах з історії науки демонструється: захопленість можливостями, які з'являються при створенні нової теорії, в деяких випадках обертається догматичністю. Розглядаються шляхи подолання фактора, який блокує наукові відкриття.

Ключові слова: суспільні науки, методологія науки, тоталітаризм.