

*Psychological, Philosophical, and Educational
Criticisms of Harry Frankfurt's Concept of
and Views About "Bullshit" in Human
Discourse, Discussions, and Exchanges*

ROCCO J. PERLA and JAMES CARIFIO
University of Massachusetts, Lowell

ABSTRACT: Princeton University Press recently published the American moral philosopher Harry Frankfurt's book *On Bullshit*, which quickly made the New York Times best seller list. Originally published in the journal *Raritan* in 1986, Frankfurt's book has been heralded as an important theoretical development in the study of what he (and society) colloquially refer to as "bullshit." Frankfurt formally defines BS as a situation where one's inclination and obligation to speak about a topic or concept far exceeds one's knowledge of the topic, which most certainly has been a rising problem for a number of reasons over the past 20 years. However, Frankfurt's book, which purports to be a moral victory of sorts, and despite its popularity, is not only severely flawed and outdated from an educational, cognitive, and philosophical perspective, but it is also highly oppressive in several different but very important ways. Because this book and its main arguments are being cited favorably in a number of different academic circles (including the science education community), this paper highlights the limitations and flaws of this book and develops a counter-argument and model of BS that has important implications for science, mathematics, philosophy, and educational theory and research.

KEYWORDS: Cognitive development, discourse, generative processes, knowledge creation, language, learning, metaphoric operativity, proto-theory, psychologism, social and moral development.

Harry Frankfurt's (2005) recent book, *On Bullshit*, is a formal and succinct commentary on a very important and pervasive phenomenon in all human discourse, discussions, and exchanges: that is, *Bullshit*. Originally published as a journal article under the same title 20 years ago in *Raritan*, the book form published in 2005 by Princeton University Press has received, for the most part, favorable reviews and has been on

the bestseller list in a number of different markets. Frankfurt, an American moral philosopher with a specialization in 17th century rationalism, attempts to provide a theoretical basis for the study of bullshit, which, in his words, is produced “whenever a person’s obligations or opportunities to speak about some topic exceed his knowledge of the facts that are relevant to that topic” (2005, p. 63). Similar in many ways to Max Black’s concept of humbug (quackery, nonsense or pretentious, and deceptive misrepresentations that fall short of a lie), Frankfurt clearly takes a negative and pejorative view of what he calls bullshit. Unlike the liar who knows the truth yet chooses to deceive, the bullshitter ignores the truth and is, therefore, “a greater enemy of the truth than the liar” (p. 61).

Early on in his book, Frankfurt states very clearly that his intent is to “begin the development of a theoretical understanding of bullshit, mainly by providing some tentative and exploratory philosophical analysis” and to “articulate, more or less sketchily, the structure of its concept” (2005, p. 2). Frankfurt does, however, note the arbitrariness associated with the demarcation criteria for such a frequently and imprecisely used expression as bullshit, which evades a formal calculus presently.

Frankfurt’s book has struck a cord in our culture and with many people currently because there is, without doubt, a lot of Frankfurian bullshit anywhere one cares to look, read, or listen. And we all do need to be far more reflective, cautious, and circumspect when we express ourselves and our views in our fast-paced and fast-changing society, as well as professionally and in high stake situations, because of a pervasive “talking heads” environment and climate created by our own inventions and most particularly our invention of various mass media and the internet. This aspect and dimension of the problem and phenomenon, however, is not where we disagree with Frankfurt’s views or analysis. No, our disagreement is far deeper, and more fundamental and important in the long as opposed to the short run of our too instantaneously focused and somewhat fixated culture.

Although Frankfurt’s attempt to shed some light on this ubiquitous phenomenon is laudable, and his definition of bullshit reasonable and philosophically sound, his developing theoretical and conceptual view of bullshit has oppressive undertones and consequences, and is severely limited and outdated from linguistic, cognitive science, and learning theory perspectives – fields that have grown tremendously in the 20 years since Frankfurt’s article was first published. These fields address many of the key features associated with what Frankfurt is calling

bullshit (such as language, learning, memory, thought, and knowledge). Because Frankfurt's book has received positive attention and praise by some scholars and science educators (e.g., Good, 2005), many of whom are likely to embrace, operationalize, and teach some of these concepts, the gross limitations of this book (and the BS construct specifically) need to be identified and critically examined from a more contemporary academic (and not purely an armchair philosophical) perspective.

The purpose of this paper, therefore, is to briefly address some of these shortcomings and to present a more informed and balanced treatment of Frankfurt's *interpretation* of Bullshit (hereafter referred to as FIBS). Of course, an extensive treatment and cognitive rehabilitation of what Frankfurt defines as bullshit and all its related concepts, ideas, principles, and views – which would take several books – is far beyond the scope of this paper. Our aim here is to call attention to the severe limitations and implications of this popular academic book and to encourage educators in mathematics, science, philosophy, and related areas to consider their own views of what Frankfurt defines as BS in relation to their own views of pedagogy, educational theory, and educational research. It is our opinion that many of today's problems in educational research are the result of weak and theoretically groundless attempts to address the representational (system) question and outdated views and models of cognition versus more contemporary and main stream cognitive views (see Carifio, 2005). Frankfurt's BS construct is a recent example of this cognitive crisis and problem in a philosophical guise.

Objections to Frankfurt's BS Construct

Simply put, our discontent with Frankfurt's BS construct is that it is too naïve and simplistic to account for the complexities of human thought, language, memory structures, learning, and representational systems that have been uncovered in the cognitive sciences over the past few decades (see Ashcraft, 2002). We certainly recognize that some and in certain instances many people appear to flatly ignore the truth and are often compelled to discuss issues they are not knowledgeable about (including ourselves), and that these are key diagnostic features of BS according to Frankfurt. However, to just simply, superficially, and pejoratively dismiss (as Frankfurt does) all of these behaviors and instances as BS, without addressing the enormous weight of evidence in the cognitive sciences and related fields (including philosophy itself) that has led to a deeper understanding of human behavior, decision-

making, thinking, and learning, is, in our opinion, somewhat irresponsible intellectually. There are certainly different degrees and types of bullshit that are context mediated, but this finer grained analysis (or perhaps taxonomy) of BS is not suggested or developed in Frankfurt's book, but it is touched upon in this paper. A taxonomy of BS is important and fundamental for a large and broad number of different reasons, which will be clarified below.

The primary objections raised here relative to FIBS are not trivial, but are actually "theory-cracking" if not "theory-busting," as they require a diametrically opposite *interpretation* of bullshit as defined by Frankfurt, and one that demonstrates far more parsimony relative to important experimental and theory-based findings in the cognitive sciences and related fields. Our revised (cognitive) interpretation of BS can be succinctly expressed in the following terms:

Bullshit is not *always* bad or subversive to the truth; rather it is *often* a highly dynamic and necessary matrix for the *development* of expressive, creative, critical, and higher order thinking and representation that give birth to the truth or/and new truths.

This revised interpretation of bullshit (referred to here as RIBS, a more creative and discovery oriented acronym) provides a contrasting view from which to critically compare, contrast, and analyze FIBS (a more context of justification and policing oriented acronym).

In the RIBS, emphasis is placed on the highly dynamic nature of bullshit, whereas FIBS suggests that bullshit is a fixed, static, and inert linguistic and conceptual entity (similar to the early behaviorist and positivists views of knowledge and experience). Surely, someone can go from "talking bullshit" and from "bullshitting" to talking authoritatively and knowledgeably in a particular subject or domain. This transition, moreover, is often referred to and taken as demonstrative of *learning*, which is a concept and simple observational fact completely ignored if not completely missing from Frankfurt's views. However, this type of change, transition (and transformation) is not addressed in FIBS, which runs counter to decades of empirical research in the "novice to expert" continuum and developmental transformation, and basic research in the cognitive sciences (Ashcraft, 2002). Similarly, FIBS fails to address Chomsky's (see Ashcraft, 2002) competence/performance distinction and Vygotsky's (1978) zone of proximal development, both of which require transitions and qualitative transformations in an individual's ability to knowledgeably express her or himself through language, social

interaction, and enculturation. Furthermore, basic research in language acquisition and development has shown (and continues to show) convincingly that the use of words, concepts, and conceptual relations is a highly emotive process that is extremely difficult to develop, and that imitation, modeling and “talking above oneself” or “beyond one’s comfort zone” or experiences is necessary to develop increasing knowledge and skill in a particular area (see Bruning, Schraw, Norby, & Ronning, 2001; Schunk, 2004). This later point is especially true for highly complex instructional areas such as mathematics, science, philosophy, and other highly abstract and technical fields of study.

In expressing the inert, useless, and meaningless nature of bullshit, Frankfurt draws an analogy between excrement and bullshit, and in doing so he provides an excellent example of bullshit by his own definition. Frankfurt (2005) states:

Excrement may be regarded as the corpse of nourishment, what remains when the vital elements in food have been exhausted. In this respect, excrement is a representation of death that we ourselves and that, indeed, we cannot help producing in the very process of maintaining our lives. Perhaps it is for making death so intimate that we find excrement so repulsive. In any event, it cannot serve the purposes of sustenance, any more than hot air can serve those of communication. (pp. 43-44)

The problem with this statement is that it is a shallow, uninformed, and simply an incorrect biological (i.e., scientific) view of excrement. Excrement is vital for life and contains material that will decompose and unlock the chemical prerequisites for life. In this passage, Frankfurt is taking the opportunity, or feels the compulsion, to speak about some topic (biology) that exceeds his knowledge of the facts that are relevant to that topic. In other words, Frankfurt is, by his own definition, talking bullshit. Further, he is not only talking bullshit, but he is missing the key and critical point about this phenomenon because of his (outdated and inaccurate) schemas about the phenomenon as well as the hidden flaws in the *similes and metaphors* he uses to explore and investigate it.

More than simply pointing out an instance of Frankfurtian bullshit and why it has occurred, the above point demonstrates Frankfurt’s fixed and rigid view of FIBS that is untenable from a contemporary cognitive science and learning theory perspective. Just as excrement provides the raw materials for sustaining life, conceptual and linguistic bullshit (which Frankfurt associates with “hot air”) provides the opportunity to exercise one’s developing rhetorical style, imagination, storytelling

ability, humor, and creativity (Csikszentmihalyi, 1996). Perhaps more importantly, bullshit provides a vehicle for cognitive and social engagement and the opportunity to develop more “accurate,” cogent and informed ideas and views via discussions with more knowledgeable people (Schunk, 2004), however “more knowledgeable” people are defined. This last point is where Frankfurt’s interpretation of bullshit has both oppressive and intimidating undertones and consequences.

Perhaps without even realizing it, FIBS sends a message that suggests that one should avoid talking bullshit (almost all of the time and because of the risks and potential consequences), or of expressing a developing and non-expert view, concern, or opinion. In other words, leave the thinking, discourse, and decision-making to people who do not “talk bullshit” (with no definitive or even rough-gauge Turing test of this non-bullshit talk provided by Frankfurt), which is a view that seems to be particularly attractive to many educators, politicians, and mullahs of all persuasions today. The difficulties with any view that even suggests this type of restriction of intellectual and social engagement are manifest, and should be easily identified by most people (and especially by a moral philosopher!). In a world where knowledge (particularly scientific and technical knowledge) is growing exponentially, and, at the same time becoming so specialized, it is reasonable to wonder how many people actually exist who do not talk bullshit (or at least a good deal of the time), as well as who the final arbiter of such decisions should be.

Frankfurt is correct, however, in assuming that bullshit is ubiquitous, pervasive, and growing at an accelerating rate. But one must stop and ask why, and ask why in a fairly sophisticated and differentiated way. All BS may not be bad and something to be radically reduced if not eliminated in all contexts and situations, which is one of our central points here. Yes, a lot of BS should be scrutinized, and, as we have said, we all need to be far more reflective and circumspect when we express ourselves and our views professionally or in high stake situations without doubt. But something as ubiquitous as BS may exist for a reason and perhaps an important and good reason. In the RIBS view, it was stated that bullshit is a matrix for the development of higher-order thinking. The assumption here is that one can go from this (bullshit) matrix that is highly generative (and allows for the thinking and expression of ideas in a less inhibited manner that may not consider the truth or falsity of the expression) to more precise ideas and conceptions that may (or may not) be weeded out by some form of reason, experience, formal testing procedure, or logic. Without the

development component of bullshit, it would be difficult to understand how scientific ideas, facts, theories, and concepts developed from their metaphysical origins to “authoritatively accepted and blessed realities,” which is an idea (and process) that has been the basis of the work and contributions of some of the most important “post-positivist” philosophers of science such as Bacherlad (1938), Koyre (1968), Fleck (1935/1976), Kuhn (1962/1969), and even Karl Popper (1969). As Fleck (1935/1976) noted in his analysis of the development of the modern concept of syphilis, “many very solidly established scientific facts are undeniably linked in their development, to pre-scientific, somewhat hazy, related proto-ideas or pre-ideas, even though such links cannot be substantiated” (p. 23).

To the extent that these pre-ideas can be associated with bullshit, their development is a primary concern for anyone interested in understanding the development of knowledge and the transitional stages that a) reduce the frequency of creative and generative bullshit, and b) increase the frequency of formal logical, testable, falsifiable, and justifiable knowledge. And, as Gettier (1963) convincingly demonstrated in his refutation of Plato’s definition of justified true belief, knowledge is best viewed as a probabilistic concept. More recent empirical research in decision-making has likewise demonstrated that many people (including highly educated adults) are only partially rational and not reliable Bayesian probability agents (Tversky & Kahneman, 1981). Of course, another fundamental problem with FIBS is that it also completely ignores Polanyi’s (1964) distinction between overt and expressive knowledge and tacit knowledge, and the idea that we are not always be capable of expressing (at least in logical terms or forms) what we in fact know. Assuming Polanyi’s rather intuitive thesis is correct certainly calls into question the validity of the BS construct as outlined by Frankfurt. Therefore, as with excrement, the important point to be made here is that bullshit can be framed in a much more productive (cognitive) light.

What FIBS fails to recognize is the dynamic nature of the cognitive elements that constitute the bullshit construct (such as language, learning, memory, consciousness, and thought), and that bullshit is very often (if not always) an important developmental phenomenon that can be refined over time in a way that leads to more complex (valid) knowledge structures and greater (valid) knowledge capacities. What is missing in FIBS – and also in many psychological, philosophical, and epistemological models and theories of knowing – is a balanced treatment of the irrational, silly, fanciful, deceptive, and emotive nature

of thought and behavior, as well as the more logical, formal, and scientific ways of thinking and behaving. We have elsewhere advanced a comprehensive model of the development of scientific thinking, reasoning and decision-making. This model addresses the metaphoric operations as well as the hypothetico-deductive (or logical) operations that has defined human behavior, social interactions, and shifting epistemological standards, as they relate to the development of scientific knowledge and the philosophy of science over large expanses of time (Perla & Carifo, 2005). The metaphoric operations construct addresses many of the concepts implied in FIBS, but in a more complex, dynamic, realistic, and developmental context.

Metaphoric and Hypothetic-Deductive Operations

Based largely on the work of modern cognitivists and Carifio's (1976) criticism of Piaget's stage model of development that focuses almost exclusively on logical and hypothetico-deductive processes (such as proportional reasoning), we have advanced a model and theory of thinking, reasoning, and problem-solving that emphasizes both *hypothetico-deductive operations* and *metaphoric operations* (see Perla & Carifo, 2005). Our model and theory has many different layers and descriptions that vary in their degree of complexity. However, the basic and core proposition of the theory is simple and argues that the decisions and behaviors of any individual or era are best understood by developing an *epistemological profile* for the individual (singularly) or a specific era (collectively). Instantiate (concretely and operationally profile) the *epistemological standards* (criteria used to judge the meaningfulness and validity of knowledge claims and experiences) of a group or individual, and you are close to understanding and even predicting the behaviors, decisions, tendencies, commitments, and views of the group or individual.

Our analysis of the history and philosophy of science (and the analysis of many other scholars also) suggests the dynamic presence of *two broad or macro cognitive operations used to regulate epistemological standards: namely, metaphoric operations and hypothetico-deductive operations*. Table 1 provides an overview of the basic cognitive features and a sample of the theoretical referents associated with metaphoric and hypothetico-deductive operations. Of course, any separation of metaphoric and hypothetico-deductive operations is an artificial separation, as both operations are assumed to function and interact in parallel to varying the degrees and also along different trajectories for

different individuals and groups of individuals, with one or the other operation being the *dominant* operation that determines a behavior or action.

Table 1. The Basic Cognitive Features and Theoretical Referents Associated with Metaphoric and Hypothetico-Deductive Operativity

Metaphoric Operativity
<p><i>Basic cognitive features.</i> Encompasses concepts such as intuition, emotion, revelation, artistic ability, creativity, poetry, society, spirituality, metaphysics, divergent thinking, analogy, fantasy, dreaming, motivation, ethical and moral development.</p>
<p><i>Representative theoretical referents.</i> Metaphoric operativity is linked to Freud's (1959) psychoanalytic theory, Guilford's (1967) research in dreaming and cognition, C.S. Lewis' (post atheist) commentary on the societal motivations of science that portray science as a customized commodity for each social epoch, Kohlberg's (1981) stages of moral development, Bandura's (1986) reciprocal determinism, Merton's (1996) classic work on the reward system of science and in the sociology of science in general, McClelland's (1961) research on achievement motivation, and the view of renowned biologist Athena Andreadis (2003), who argues that science needs fantasy and science fiction to push the frontiers of progress.</p>
Hypothetico-Deductive Operativity
<p><i>Basic cognitive features.</i> Hypothetico-deductive operations can be thought of as the formal logic of philosophy and mathematics (e.g., transitivity and <i>modus ponens</i>) and all the functions associated with the pinnacle of cognitive development in Piaget's model of formal reasoning, which includes deduction, combinatorial reasoning, proportional reasoning, probabilistic and correlational reasoning, and the control of variables (Piaget & Inhelder, 1969). Hypothetico-deductive operativity as defined here also includes inferencing, which is a probabilistic/statistical cognitive activity requiring testing for verification or falsification</p>
<p><i>Representative theoretical referents.</i> The strong version of hypothetico-deductive operativity could be linked to logical positivism and the Lwow and Warsaw philosophic schools in Poland during the 1920s-1940s, both of which rejected metaphysical speculation and equated meaningful and sustainable epistemic discourse with strict formal logic and methodological standards (i.e., pure philosophy of science).</p>

The challenge of our theory and model is to try and understand how the different macro cognitive operations (and their associated micro operations) are hierarchically distributed and define the epistemological profile at some point in time (because the profile changes through learning and experience).

The point here of briefly discussing our theory of decision-making is to highlight the idea and concept of *metaphoric operations*, as this macro cognitive operation is where one is likely to recover the behaviors that Frankfurt associates with BS. The point is also to show theoretically how highly speculative and metaphysical claims, and epistemological views and theories, which in many instances meet Frankfurt's definition of bullshit, develop, and are refined (or "weeded out" of a knowledge base) over time through use of the cutting tools of reason that are associated with hypothetico-deductive operations of scientific inquiry, which is where one is less likely to recover behaviors that Frankfurt defines as bullshit. This knowledge development or weeding process is not possible if one adopts Frankfurt's very limited, pejorative, non-developmental, and non-contextual view of BS. It is also worth noting at this point that many prescient scientists, natural philosophers, writers, artists, politicians, and artisans ignored the "truth" of their day in the process of creating new and often revolutionary works. Many of these great thinkers and visionaries were condemned as quacks, liars, charlatans, and dreamers if not delusional (see Nuland, 2003), and what one could reasonably refer to today as bullshitters, or what Kohlberg observed and referred to as the "saint and the sociopath" problem in his research on moral development. Although these types of individual cases of BS may be exceptional cases of BS, they would still be condemned under Frankfurt's simplistic and pejorative model and interpretation of BS. However, as Kohlberg observed, one can specify reliable criteria to distinguish between "saints" and "sociopaths;" namely, valid and invalid individual cases of a complex and differentiated concept or idea, which is one of our central points.

Context of Justification

At its epistemic core, FIBS is a view that looks to distinguish uninformed claims and assertions that ignore the truth of the day from informed claims and assertions that acknowledge the truth of the day. Of course, this type of distinction implies that there are a set of logical criteria or rules for making this type of distinction (or *demarcation*)

between informed and uninformed claims and true and false claims. The development of criteria used to demarcate these types of claims (true vs. false and informed vs. uninformed) has been a central objective of modern philosophers and logicians (particularly philosophers of science in their quest to distinguish science from pseudoscience), and is referred to as the *context of justification*. Since the context of justification is used to test the validity of knowledge claims using logically constructed criteria, it is often associated with hypothetico-deductive operations. Therefore, as Frankfurtian BS is and can be identified as a by-product of the context of justification, it is closely linked to this epistemic context.

However, modern epistemologists, scientists, psychologists, sociologists, philosophers, and historians specializing in different fields of study are quick to point out that there is also a *context of discovery*. Unlike the context of justification, the context of discovery is focused primarily with the ways in which a new and/or revised theory, view, idea, or hypothesis is initially conceived and constructed and not with the formal logical processes used to critically analyze, validate, and accept or reject them. By most accounts, the context of discovery, is messy, fuzzy, noisy, creative, exploratory, and often lacks any steadfast commitment to the truth of the day or conventional wisdom. As mentioned above, many early (prescient) thinkers were often characterized as wayward, hallucinatory, wrong, misinformed, and perhaps as bullshitters in Frankfurt's sense (see Nuland, 2003). Clearly, the context of discovery is more consistent with metaphoric operations than hypothetico-deductive operations or formal logic.

The point that should be stressed here is not that one epistemic context (discovery or justification) or cognitive operation (metaphoric or hypothetico-deductive) trumps the other, but that metaphoric operations and the context of discovery often provide the initial insight or inspiration that leads to views, theories, and ideas that can then be subjected to the context of justification and hypothetico-deductive operations. Modern historical analysis shows us that most speculative ideas fail falsification tests and never further develop, with only a rare number of highly speculative ideas demonstrating the ability to successfully develop into true and substantiated knowledge. Understanding exactly why or how some speculative ideas persist and develop into highly respected truths and dogmas is an extremely complex challenge, and one that may never be fully understood. Fleck (1935/1976) emphasizes this difficulty and phenomena over 70 years ago in his classic book *Genesis and Development of a Scientific Fact*:

Many very solidly established scientific facts are undeniably linked in their development, to prescientific, somewhat hazy, related proto-ideas or pre-ideas, even though such links cannot be substantiated. (p. 23)

Proto-ideas must be regarded as developmental rudiments of modern theories and as originating from a socio-cognitive foundation. ... The value of such a pre-idea resides neither in its inner logic nor in its "objective" content as such, but solely in the heuristic significance which it has in the natural tendency of development. And there is no doubt that a fact develops step by step from this hazy proto-idea, which is neither right nor wrong. (p. 25)

To Accept FIBS is to minimize the positive and developmental effect that the context of discovery and metaphoric operations has had and continues to have on individuals and groups. In this regard, FIBS does more than throw the baby out with the bathwater: it both outlaws and shuts off the very act of creation! Surely, there is a lot of Frankfurterian BS "out there and about" just now, but this is due in great part to the nature of the current society we have created with our development of the "science, research, and technology machine" over the past 100 years. This state of affairs, however, is no reason to become a Luddite and shut the machine off, if not break it. That is more than oppressive and particularly so to students who are seeking to grow, develop, discover, and acquire more sophisticated epistemological standards. We are not talking so much about the "grand discoveries" or the "grand extensions of grasp" here as the small every other day if not occasional ones that help if not propel our intellectual growth and development; namely, micro-RIBS which we must create and nurture as educators in addition to the ability to recognize and reduce FIBS events and behaviors in ourselves and others.

Psychologism

Psychologism is the epistemological view and position that knowledge is best understood through studying the cognitive structures and mechanisms that can be traced back to Locke. The main thesis of psychologism (as a way of knowing) incorporates the *prescriptive* aims and practices of philosophy and logic (i.e., the types of inferences people *should* make) with the descriptive aims and practices of psychology (i.e., the types of inferences people *do* make) in developing the most comprehensive and realistic views and models of knowledge, and in particular scientific knowledge.

Although psychologism provided an interdisciplinary approach and model to studying the nature of scientific (theoretical) knowledge, psychologism was rejected by Western philosophers such as Frege in favor of antipsychologism. Antipsychologism, championed by the likes of Husserl, Popper, and Frege, argued that philosophy and psychology should be kept separate and not combined or intermingled in the study of epistemology, for fear that the more descriptive (and less rigorous) claims and methods of psychology would dilute the formal logical rigor that defined 20th century Western philosophy (Thagard, 1988). One of the major problems with accepting the descriptive epistemology of psychology, as argued by philosophers, was that it opened the door to relativism (the idea that all knowledge is relative and can change from person to person with no objective standard). However, as is discussed below, some forms of psychologism avoid this criticism.

It is important to point out that there are different degrees or types of psychologism. The most useful but implicit model and description of the different types of psychologism is offered by Thagard (1988) who uses Artificial Intelligence procedures to develop computational models of scientific thinking. Based on the work of Haack, Thagard defines three types of psychologism: weak psychologism, strong psychologism, and antipsychologism. *Weak psychologism* is the view that "logic is prescriptive of mental processes" (p.7), which is a view consistent with Piaget's genetic epistemology. *Strong psychologism* "is the view that logic is descriptive as well as prescriptive" (p. 7). *Anti-psychologism* is the view that "logic has nothing to do with mental processes" (p. 7). *Frankfurt's interpretation of BS (FIBS) implies antipsychologism, because it is a purely philosophical analysis of a concept that is largely informed by psychology and the cognitive sciences.* Leading edge philosophers and cognitivists such as Thagard would not consider this approach acceptable today.

Thagard and others have convincingly argued that a weak version of psychologism is the epistemic framework of greatest potential because a) it is a less extreme epistemology (compared to the strong and antipsychologism positions), and b) it maximizes the epistemic gains that result from interdisciplinary research (such as exposure to a wider and different repertoire of concepts, theories and views), while avoiding the charge of relativism. Table 2 provides a profile for each version of psychologism outlined by Thagard and also identifies where FIBS exists in this matrix.

Table 2. Profiles for the three different types of psychologism.

Logic of mental processes			
Types of Psychologism	Descriptive	Prescriptive	Escapes Relativism
Weak	Somewhat	Somewhat	Yes
Strong	Yes	Yes	No
Anti ^a	N/A ^b	N/A ^b	Yes

^aFIBS can best be described as antipsychologism.

^bAntipsychologism argues that logic has nothing to do with mental processes, hence the descriptive and prescriptive categories are moot and not applicable.

Conclusion

Is Harry Frankfurt's theory of BS correct or BS? The answer to this question is that Frankfurt's theory of BS is largely incorrect and is, again by his own definition, unquestionably BS. Frankfurt's theory is BS because he feels the compulsion and need to discuss in detail a largely psychological concept without addressing any (never mind modern) psychological concepts, principles, and views. The fact that Frankfurt would publish the same ideas and views over a 20 year period with no consideration of the developments made in fields of study that most directly inform his theses suggests that the BS in his book is not even fresh or warm, but rather quite stale.

Table 3. Comparison of the BS construct for FIBS and RIBS.

FIBS ^(a)					
Factor structure	Cognitive operation	Epistemic context	Associate discipline	Unit of analysis	Value judgment
Simple	Hypothetical deductive (H-D) / falsification	Justification -anti-psychologism	Philosophy -positivism	Explicit knowledge/ language	Neg.
RIBS ^(b)					
Factor structure	Cognitive operation	Epistemic context	Associate discipline	Unit of analysis	Value judgment
Complex	Metamorphic <i>and</i> H-D	Justification <i>and</i> discovery -weak psychologism	Interdisciplinary -post-positivism	Explicit & Implicit knowledge/ language	Pos. & Neg.

^(a) Frankfurt's interpretation of BS.

^(b) Revised interpretation of BS.

As shown in Table 3, which summarizes the arguments and criticisms of FIBS in comparison RIBS (i.e., a more modern cognitive view), Frankfurt's BS construct is overly simplistic, pejorative, "linear," non-developmental, and embraces *anti-psychologism* and the *context of justification* as its guiding epistemology. However, all is not lost with Frankfurt's apparently self-destructive thesis. By adopting a more balanced (cognitive) view of BS like the one advanced in this paper, FIBS can itself develop, just as we have argued that BS constructs can be developed (or weeded out) over time in a way that makes them more consistent with the bodies of knowledge that inform them. Much of this paper provides the framework needed to further develop different categories or taxonomies of BS from a cognitive perspective. However, such a process requires an interdisciplinary approach that includes the cognitive sciences.

What is more disconcerting than the limitations and shortcomings of FIBS is that so many educated people and teachers (including science

educators) view this book as some sort of moral victory to be immediately implemented in the classroom. They fail to identify the problems of FIBS and to recognize its outdated, naïve, simplistic, oppressive, and non-developmental thesis, relative to a concept that is so pervasive and actually very developmentally important in the classroom; namely BS, and BS that reflects a striving to think and speak beyond one's immediate grasp in order to learn, develop and qualitatively change and improve one's views. Attempting to reduce the occurrence of BS to zero in our daily lives and discourse only to the obedient parroting of the views of authorities and catechisms currently in fashion, particularly in classrooms (never mind the daily discussions in a democracy) will prevent the events that will lead to the birth (slowly and over time) of the next Tessler, Edison, Kekule, Semmelweis, Darwin, Pauling, or Gell-Mann from occurring, never mind the even more important events of the daily intellectual growth and development of self-regulating and higher-order learners and students in our classrooms. One must really ask why people seek to speak beyond their grasp and ask if the reasons are always the same and the same in all contexts. And one must ask what is the price and the consequences of just simplistically and unilaterally severely reducing and choking off bullshit in daily discourse, particularly educationally. Maybe a completely bullshit free society would not be such a complete moral or desirable victory after all. And maybe "deception" is a far more interesting phenomenon than most of us think or realize.

It has been suggested by some scholars that a lack of training in the foundation disciplines (e.g., philosophy, psychology, learning theory) is to blame for some of the shortcomings in educational research as well as educational practices, views, and policies (e.g., Fensham, 2004; Matthews, 2005). However, the failure of educators and scholars alike to identify distorted psychological arguments and models may be more a lack of basic *cognitive literacy* and training in cognitive psychology and the cognitive sciences than these factors (see Carifio, 2005 and Perla, 2006). It would be interesting to assess the interpretations of Frankfurt's extremely short book (that can be read in two hours or less) by academics and educational researchers to gauge their level of cognitive literacy. Our professional experiences suggest that the problem of *cognitive illiteracy* in academic research may be worse than we suspect and may be masking many of the problems with sound, theory-based educational research. More research is needed to substantiate this claim to ensure that it is not BS.

NOTE

There is no first or second author of this work. This work is a collaborative, interdisciplinary work to which both authors contributed equally.

REFERENCES

- Andreadis, A. (2003). The double helix: Why science needs science fiction. *Thought & Action*, 19(1), 9-17.
- Ashcraft, M.H. (2002). *Cognition* (3rd edition). New York: Prentice Hall.
- Bachelard, G. (1938). *La formation de l'esprit scientifique*. Vrin: Paris.
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. New York: Prentice-Hall.
- Bruning, R., Schraw, G., Norby, M., & Ronning, R. (2001). *Cognitive Psychology and Instruction*. New York: Prentice-Hall.
- Carifio, J. (1976, January). *Piaget's need for a construct of metaphoric operativity*. Paper presented at the annual meeting of the Eastern Educational Research Association, Boston, MA.
- Carifio, J. (2005, July). *Toward a standard integrated information processing/cognitive model of learning*. Paper presented at the biennial meeting of the International History, Philosophy and Science Teaching Group, Leeds, England.
- Csikszentmihalyi, M. (1996). *Creativity, flow and the psychology of discovery and invention*. New York: Harper-Collins.
- Fensham, P.J. (2004). *Defining an identity: The evolution of science education as a field of research*. Dordrecht, NL: Kluwer Academic Publishers.
- Fleck, L. (1935/1979). *Genesis and development of a scientific fact*. (F. Bradley & T. Trenn, Trans.). Chicago: University of Chicago Press.
- Frankfurt, H. (2005). *On bullshit*. Princeton, NJ: Princeton University Press.
- Freud, S. (1959). *Collected papers*. New York: Basic Books.
- Gettier, E.L. (1963). Is justified true belief knowledge? *Analysis*, 23, 121-123.
- Good, R. (2005, October). *Science, pseudo-science, and just plain bullshit*. Paper presented at the Science Education at the Crossroads Conference, University of Connecticut.
- Guilford, J.P. (1967). *The nature of human intelligence*. New York: McGraw-Hill.
- Kohlberg, L. (1981). *The philosophy of moral development: Moral stages and the idea of justice*. New York: Harpercollins.
- Koyre, A. (1968). *From the closed world to the infinite universe*. Baltimore, MD: The John Hopkins University Press.
- Kuhn, T.S. (1996). *The structure of scientific revolutions* (3rd edition). Chicago: University of Chicago Press. (Original work published 1962)

- Matthews, M.R. (2005, June). Review of the book *Defining an identity: The evolution of science education as a field of research*. International History, Philosophy & Science Teaching Group *Newsletter*.
- McClelland, D.C. (1961). *The achieving society*. Princeton, NJ: Von Nostrand.
- Merton, R.K. (1996). The reward system of science. In P. Sztompka (Ed.), *On social structure and science* (pp. 286-304). Chicago: University of Chicago Press.
- Nuland, S.B. (2003). *The doctors plague: Germs, childbed fever, and the strange story of Ignac Semmelweis*. New York: W.W. Norton & Co.
- Perla, R.J. (2006). *Use and augmentation of a formal model and theory to develop instructional materials to teach undergraduates about the nature of science, scientific knowledge, and scientific change*. Unpublished doctoral dissertation, University of Massachusetts, Lowell, MA.
- Perla, R.J., & Carifio, J. (2005, July). *Pseudoscience and metaphoric operativity: Making the case for a cognitive model of scientific change*. Paper presented at the biennial meeting of the International History, Philosophy and Science Teaching Group, Leeds, England.
- Piaget, J. & Inhelder, B. (1969). *The psychology of the child*. New York: Basic Books.
- Polanyi, M. (1966). *The tacit dimension*. New York: Doubleday.
- Popper, K.R. (1969). *Conjectures and refutations: The growth of scientific knowledge*. London: Routledge and Kegan Paul.
- Schunk, D.,(2004). *Learning theories: An educational perspective* (4th edition). New York: Prentice-Hall, New York.
- Thagard, P. (1988). *Computational philosophy of science*. Cambridge, MA: MIT Press.
- Tversky, A. & Kahneman, D. (1981). The framing of decisions and the psychology of choice. *Science*, 211, 453-458.
- Vygotsky, L.S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Authors Address:

c/o Dr. Rocco J. Perla
Department of Mathematics and Science Education
University of Massachusetts, Lowell
c/o 35 Academy Road
Leominster, MA 01453
U.S.A.
EMAIL: perla98@medscape.com