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Crises and problems seen from experimental psychology

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Abstract

Experimental psychology in the early 20th century was targeted by several authors who described a crisis – often expressed as a lack of theoretical and experimental progress. In the 21st century the crisis of competing theories has been largely overcome but several current emphases hinder the development of a mature experimental science. Central among these are an ethnocentrism that focuses on Western standards and populations, neuroscientism which often treats neurological evidence independently of mental and behavioral events, and the tendency for demonstration experiments to replace coordinated theoretical approaches.

In the early 21st century experimental, scientific psychology appears to be a healthy and growing youngster. This is in contrast to the crises of theories and progress that were discerned and discussed nearly a century ago. We are not currently in a crisis though psychology may best be described as being in an interregnum period – with much activity and no major leading directions or theoretical commitments. I shall first mention some of the previous crises and then move to a discussion of the current varied and sometimes confusing burst of activity.

Crises of the 20th century

An initial sense of a crisis in psychology can be located in 1899 when Willy (1899) argued for an “epistemological basis (for psychology) in the sense of a purely empirical theory, excluding all metaphysical presuppositions.” (p.250) The various crises of the experimental psychologies that followed in the early 20th Century were discussed at a 2008 conference (Hyman & Sturm, 2008).¹ The crises had been described in Germany, France, Austria and Russia and decried – in varying degrees – as a crisis of both theory and empirical progress. Karl Bűhler’s and Hans Driesch’s crisis discussions most directly affected the development of western experimental psychology (Mandler, 2007) and are described below. I note briefly some of the others. Nikolai Kostyleff in France in 1911 (Kostyleff, 1911) was concerned with the fragmentary nature of psychological research (much like the present situation), and with too much concentration on individual capacities. Later in the century, German psychologists responded to critics such as Driesch, and on behalf of Gestalt psychology Koffka and Köhler argued for a scientific emphasis on meaning rather than initially meaningless

¹ I mention only the “crises” in experimental psychology. The crisis notion proliferated in philosophical and general psychological circles.

sensory events. Vygotsky in the Soviet Union (Vygotsky, 1997) followed the Marxist argument and argued for a strict materialist approach to psychology. In 1925, the German biologist and philosopher Hans Driesch published *The Crisis in Psychology* (Driesch, 1925). He believed that the “crisis” was based on the necessity to choose “the road which psychology is to follow in the future.” This necessity refers to five “critical points”, including phenomenological analysis, the overcoming of association theory, and (surprisingly) the extension of psychical research.

The most influential crisis book was Karl B uhler’s critique of the psychologies of the early 20th century in his 1927 *Die Krise der Psychologie*. His concern was that various emphases and theories hindered the development of a unified scientific psychology (B uhler, 1927). I shall present a selected set of B uhler’s arguments, leaving out some topics, even though important, such as his dissection of the axioms of the psychologies of the early 20th century.

The influence of B uhler’s book is illustrated by its repeated reprints, the last one published in 1978. The theories that he saw as contending and to be seriously contradictory were classical Association theory, *Denkpsychologie* (which had merged into the beginnings of *Gestalt* theory), Psychoanalysis, and Behaviorism. B uhler also discusses various *Aspekte* – attitudes or approaches – of psychology, specifically focusing on of *Erlebnis*, *Benehmen*, *Leistung/Werk* (experience, behavior, achievement), all of which needed to be included in a successful psychological science. B uhler saw solutions in a *Methodenpluralismus* (a plurality of methods) as well as a theoretical stress on the psychology of language, which was not unexpected given his major interest in a theory of language. My purpose here is not to discuss B uhler’s specific arguments but to discuss the ways in which the situation has changed since 1927. I shall start with the four theoretical approaches in their pure form, and briefly describe their legacies to a contemporary psychology that does not involve strong

theoretical divisions. I shall then discuss aspects of current psychology that represent new challenges to our development toward a mature science.

Four theories and their legacies

Dominant arguments in the early 20th century discussions, and subscribed to by all the crisis writers, were critiques of association theory – a theory that implicitly (and sometimes explicitly) still underlies much of psychological thought. In the most widely held version at the time, *classical association theory* postulated the emergence of automatic links among psychic elements and the subsequent construction of psychic contents as a function of the strengths, combinations and competitions among these various associative “links.” An early modern critic was G.E. Müller who demonstrated that a number of mental combinations and variations were possible that would be difficult to account for within the classical model (though Müller maintained that he remained an association theorist). More specific than Müller’s were Selz’s formulations culminating in his constellation theory – an early forerunner of organization theory. The latter arose out of the work of Külpe and the development of *Denktheorie* which eventuated in the beginnings of Gestalt theory. Another legacy of Gestalt theory was the development of organization theory (provided mainly by Duncker and Katona) and the demonstrations how human associative memory depended on active organizational processes (Mandler & Mandler, 1964; Mandler, 1979).

These latter developments were direct outcomes of a thriving theoretical orientation – *Gestalt* theory. The formulations of Köhler, Wertheimer, and Koffka – initially in the area of perception - influenced much of early thinking of the importance of underlying holistic structures – in part a cousin of the then dominant *Jugendstil/art nouveau* in the arts.

Behaviorism – in its most extreme forms – rejected any introspective and related phenomena, but popularized a general human/animal experimental model and formalized the obvious advantages of reliable intersubjective observations. However, its major concern – learning theory – has quietly shrunk into the background.

In *Psychoanalytic theory* the unconscious incorporates material actively repressed from consciousness – material that the individual avoids confronting. Very little attention was paid to non-conflictful unconsciousness, and it was primarily with the advent of the emphasis on cognitive processes that the unconscious assumed not only a different but a dominant role in psychological theory. Today, it is generally accepted that the major memorial, conceptual and perceptual processes rely on unconscious processes. In fact, the emphasis on this all-pervasive unconscious delayed until the past quarter of century an examination of the functions and structures of consciousness – a reemergence of *Bewusstseinspsychologie* (Mandler, 2002). One of the legacies of psychoanalytic theory is the distinction among conscious, preconscious (activated) and unconscious processes.

It was the conflict among these – apparently irreconcilable - tendencies that concerned Bühler and others. As long as competing theorists could not talk to each other, progress of the science as a whole was unlikely.

The current scene

At the beginning of a new century it seems apposite to examine once again the stresses and strains of experimental psychology – not to proclaim a new crisis but rather to emphasize areas that would benefit from reexamination and new development. During the past century our field has made major and significant advances in several fields, such as memory, psychophysics, development, perception, to name just a few. Before

discussing some of the difficulties that are still facing psychology today, I shall indicate briefly how we have overcome the crisis that Bühler described.

The era of contending schools of psychology that claim explanatory power for most of the field's activities has passed – notions of Gestalt principles and organization have been absorbed into studies of perception, memory, and social psychology. Some aspects of a methodological behaviorism have been quietly adopted, and B. F. Skinner's reinforcement analyses of the acquisition and shaping of behavior have not only survived but continue to present an unsolved challenge to current theories.

Psychoanalysis is not a major contender for an explanation of experimental science. We have arguments that contrast theoretical positions, such as connectionist and associationist learning or symbolic vs. analog systems, but no one of these various theoretical excursions commands a dominating position.

The question of the unification of theory or of the language of the various psychologies has not been an important focus for experimental psychologists. In contrast to the concerns of the applied and philosophical psychologies, there were only isolated and uninfluential appeals for unification in the late 20th century, possibly because unification implied the adoption of some specific theoretical stance (see, for example Staats, 1983, who argued for a behaviorist unification). Such a lack of a common language can be found in other related fields, e.g., in Physics and Engineering or Biology and Medicine. More recently, Stam and others have argued that not theory but method has exerted a unifying influence on scientific psychology, that "unification of psychology is largely a disciplinary maneuver and not primarily an epistemological act" and "the discipline of psychology has been unified for some time around a series of methodological and functional categories" (Stam, 2004). In other words, what unites us is how we do our research, not the way we organize our knowledge. Bühler's recommendation that we adopt a plurality of methods has been implicitly accepted. Such

a plurality is particularly obvious when one compares it with the previous dominance of behaviorist methods in the U.S.

Current challenges

Despite the absence of multiple contending theories current psychological experimental science still has no dominant theoretical theme. Rather, in a throwback to earlier psychological approaches, there appears to be some tendency to be seduced by the conversational attraction of common language categories. Psychologically interesting situations and interactions involving everyday situations, unique disabilities and skills, and socially interesting encounters are often the subject of targeted research, but seldom in the context of a more general theoretical orientation.

An example is the use of “emotion” to cover any and all affective or even value-judgmental attributions – illustrated in theoretical forays over the past centuries. Gendron & Barrett (2009) have described the various approaches from the 19th century to mid-20th century and Gross & Barrett (2011) have shown that some 30 theories of emotion have claimed explanatory power, and similar – though rarely as extreme - examples can be found in other areas of psychology. It is unlikely that a subfield of any other science approaches this multitude of contenders. In addition, the current occasional appearance of taking common sense notions as valid scientific objects is possibly related to an incursion of postmodern thought which rejects the concept of a transpersonal and trans-situational “objective” consensus. The appearance of “interest” and “beauty” as emotional categories is an example of a reversion to pre-scientific thinking. Conversely the recent popular appeal to unconscious emotions resurrects phenomena for which prior approaches were available that describe the unconscious parallel representation of conscious emotions. I turn next to the major current trends that inhibit an independent general theoretical advance for scientific psychology – primarily neuroscientism and

ethnocentrism.² The former deals with the relationship between two related disciplines, the latter more with a bias as to the kind of research that is conducted.

Neuroscientism

The assertion of a physical basis for behavioral and psychological phenomena has been a solid basis of psychological thought for over a century. At various times the search for the physical, brain basis has been more popular than at others (cf. Mandler, 2007) but never more intense than during the past decade.³ With the advent of sophisticated neurological methods, and in particular the MRI and fMRI, much of psychological research has shifted to a search for the brain loci that correspond or respond to psychological events. At first, and still to some extent, the movement was intensely concerned with showing that some particular behavioral event has an accompanying brain event. Such demonstrations illustrate our basic materialism – after all, it would be sensational if one were to show that there are some psychological events that have no corresponding physical event. More important is the fact that psychological and neurological investigations are interdependent – without the psychology we would not know what corresponding brain event to look for. The existence of brain activity is uninformative about brain-behavior relations without an identification of the behavioral phenomena. Mind is not just neuronal activity.

The rush to show the current triumph of the brain has also led some investigators to overestimate their brain-behavior research findings. For example, Vul et al. have shown that a large number of analyses of fMRI correlations with personality measures

² In contrast to some other social sciences, psychology has been affected little by the postmodernist doubts about an objective reality, though there are still echoes and returns to our philosophical past – little modulated by a commitment to scientific method and evidence.

³ Hilary and Steven Rose have provided *inter alia* a wide ranging and persuasive commentary on the contemporary reductionism of mental matters (Rose & Rose, 2009).

inflate the correlations and sometimes yield spurious correlations. They conclude that these problems appear to be common in fMRI research of many kinds—not just in studies of emotion, personality, and social cognition (Vul, Harris, Winkielman & Pashler, 2009). A major challenge is the fact that a variety of complex mental processes can be mapped into a network of different brain processes – not just a single locus. Thus, Spreng et al. present evidence for a common neural basis of autobiographical memory, prospection, navigation, and theory of mind (Spreng, Mar & Kim, 2009). For the time being we are still confined by the anonymous paraphrased comment that “telling me where language is does not tell me what language is or does,” which applies equally to memory, emotion, perception, etc. For example, neuroscience cannot describe the social or cultural conditions that produce various kinds of behaviors and experiences, and conversely psychology has no information about the similar or identical mechanism that mediate apparently different behaviors and experiences. In illustration of the status quo an informal survey by Professor William R. Uttal of members of the Society of Experimental Psychology showed about a 50/50 split between those who did and those who did not think that neuroscience had “informed” cognitive science.

Generally, as Barrett (2009) has argued, phenomenological (psychological) events may be seen as constructed from more basic events that may have direct neurological equivalents/representations. Such an endeavor implies two theoretical domains – a psychological one and a neuropsychological one – in addition to bridging postulates between the two.

Ethnocentrism - the cross-cultural challenge

With few exceptions current social psychology focuses its investigation on Western, usually middle class, individuals. Recently the problem has been discussed intensively and extensively and the Western bias ranging from psychophysics to social

psychology has been persuasively demonstrated (Henrich, Heine & Norenzayan, 2010). Research reports are often written as if the results apply to the human race generally. The tendency to see Western society (and its cultural cousins) as the *experimentum crucis* of human values is a proclivity exhibited by philosophers as well as psychologists. Rarely if ever are societies without frequent Western contacts (or currently without cell phones, for example) considered as important examples of how humans can and do construct their ethical worlds. A recent review by Waldron (2009) demonstrates *inter alia* the common cultural blindspots of philosophers and psychologists when discussing ethics.

I illustrate further the lack of cross-cultural concerns by additional examples in order to show how supposed genetic uniformity may be expressed in large cultural differences. Two such distinctive divergences from Western standards are the cultures of the Khasi and the Na people. The Khasi are a North Indian culture of several hundred thousand people who are characterized as a matriarchal and matrilineal society (Bareh, 1985), see also Mandler (1997). Property (generally owned by the women) passes to the youngest daughter, who is also responsible for the family at large – a far cry from Western societies. The Na people of Northeast China are characterized – as the anthropological report is aptly titled – as a society without fathers (Hua, 2001). The Na are farmers in the Himalayan region; they live without the institution of marriage. Na brothers and sisters live together their entire lives, raising the women's children. Since, like other societies, the Na respect the incest prohibition, they practice a system of furtive or conspicuous night visits during which a man goes to a woman's home. So much for claims of the interest of males in the propagation of their genes, i.e. parent certainty. The Na are a counter example to the claim that men have “evolved solutions to the problem of paternity uncertainty: desire for chastity, desire for sexual fidelity, and abhorrence of promiscuity in a long-term mate” (Buss & Schmitt, 1993, p.216). Paternity

certainty is a Western but not a universal trait. Arguing for the evolutionary origin of this trait is an example of the burgeoning field of evolutionary psychology which has generated a number of hypotheses about the evolutionary origin of certain social and personality traits. However there is little in the way of evolutionary evidence behind these hypotheses – in contrast to genuine evolutionary biology. Instead there is an insistence that our current mental equipment dates back to our ancestry (the stone age?). Studies of the evolution of the human mind belong to our field but they should be actual studies of evolution. One such avenue would be the study of actual evolutionary hominid development.

Single phenomena or general principles

In many psychological research areas much of the research is concerned with exploring isolated phenomena, and mini-theories are developed for single experiments without tying them to more general theoretical possibilities. There are, of course, some areas of programmatic investigation pursued by individual investigators and small research groups, but little indication of proliferating general theoretical programs. Too often, idiosyncratic theories are presented for each unique experiment into some mental state or another.

Experimental psychology shows few signs of principles applied across subdisciplines, and the opposite trend of dealing with phenomena that represent unique situations may well be a sign of an as yet immature science. Our journals abound with unique demonstration experiments. However, similar situations can be found in the early stages of other sciences. After all, Galileo did not suggest that objects of unequal weights would drop at the same rate in order to test a general theory of relativity. The current situation may also well be in part a reaction to an academic climate that rewards a multiplicity of publications rather than large multi-part studies. Publication policies often

encourage short articles and presentations. In contrast, multi-experimental studies that are theory oriented – and also address phenomena across time (a neglected aspect of psychological theory) – are more likely to advance the science in general.

I suggested earlier that calls for unification are artificial; I argue for a search for general theoretical principles that address hypotheses about the nature of psychological reality. Overcoming the current tendency to overlook evidence from other subfields would play an important part in building such a scaffold. The popularity in social psychology to demonstrate interesting phenomena might well benefit from overcoming ethnocentrism and theory building by using such structures such as mental schemata to show how underlying representations are built in different societies but using the same schema-building apparatus. More generally, there are theoretical approaches that cover some part of the field, such as signal detection theory and connectionist approaches. Signal detection in particular provides a scientific explanatory system for a wide variety of empirical phenomena. Some of the mathematical models reach toward the goal of generality but, in Michael Watkins' (1984) apt characterization, these models are like toothbrushes, everybody has one but would never use anybody else's. In calling for theory-oriented research, I am not suggesting that a single theory for all of psychology is possible or even imaginable. However, theories that cover clusters of phenomena should be possible. For example such areas as emotion, affect, values and possible aesthetics might form such a cluster of related mental events, as would memory and learning. In general, whereas quantitative models are the ultimate goal, qualitatively precise theories in such sub areas would be the usual first step in theory development.

Toward a mature science

There are several fields of psychology that are moving toward mature scientific structures – examples are theories of memory, attention, concept formation, vision, audition and others. One of the consequences of the single demonstration experiments

is the tendency for highly similar phenomena and theoretical approaches to live separate lives, when consolidation would be of the best interest of the field. One such example is the apparent similarity of the concepts of working memory of briefly available information, preconsciousness which also speaks to temporarily available mental contents, and some aspects of distributed memory which would generate such states. These approaches could well be unified for the benefit of theoretical advance. Another is the problem of emotion, mentioned earlier.

Current experimental psychology cannot be characterized as typical of normal science activity in general. In contrast to the situation that concerned Bühler, today there are not three but no general theory that commands wide attention. Normal science is concerned with the testing (confirming and falsifying) general theories about a particular field. Today there are few general propositions that are applicable across the related fields of psychology that I suggested in the previous paragraph. A popular and useful distinction, for example, has been that between semantic and episodic memory, but the distinction is primarily a classificatory scheme (Tulving, 1986). Much of experimental psychology is characterized as “cognitive” but apart from stressing the importance of knowledge and information in the structure of human minds, the appellation does not provide any theoretical propositions. In fact, rather than a plethora of general theories that Bühler decried, there are few theoretical propositions that invite tests of confirmation or falsification. We have gone from three to zero.

Finally, if we can overcome the handicaps posed by these current directions, theoretical frameworks that appeal to a variety of interests and emphases are likely to emerge. Again, this is not to suggest that a single framework for all of psychological functioning is now, or ever, likely. Acceptable systems are likely to build on current advances in such subfields as memory, emotion, early development, language, and

others.⁴ Such basic systems should account for cultural variations of an underlying – truly evolutionary – human mental structure. A general system would incorporate the initial propositions and structures of psychological/neuroscientific representations and interaction, which would eventually tell us how the neurological structures represent the behavior and experiences of our experiments. As it matures such a system would make it possible to incorporate the findings of narrowly focused but valuable experiments. With maturity would then come the opportunity not only to predict experimental outcomes, but also to explore falsification – an important test of a theory.

If this survey has been somewhat pessimistic about the current state of our science, it is presented in the service of looking for advances in addition to the many we have made during the past century. Some criticism at this point seems apposite – our journals and organizations spend too much time on applauding our field, and too little on examining its shortcomings. Examinations like Bühler's are needed in order to encourage further progress.

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⁴ In psychophysics, audition and vision are already far advanced in developing appropriate theories.

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