

The Autonomy of Applied Psychology (1990)

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Abstract: The claim that progress in applied psychology depended on previous advances in basic psychological research became part of the discipline's scientific rhetoric in the early years of the twentieth century. In reality, however, one finds very few instances where this was indeed the case. Far more commonly, psychologists engaged in finding solutions to practical problems, for example in advertising, the reliability of testimony, or personnel selection, developed their own approaches and methods that owed little or nothing to the basic research of the time. In due course, the major direction of influence was actually the reverse of that claimed by the standard rhetoric: basic research adopted many methodological innovations pioneered by "applied" psychology, including techniques for the analysis of individual differences and control group methodology. Applied psychology merited its name more by its use of concepts, such as association, that antedated the emergence of scientific psychology than by its reliance on an existing basic science.

We are all familiar with what has sometimes been called the two-step model of the relation between science and society (Bakan, 1980). According to this model the practice of science occurs in two phases. In the first phase, that of "pure" or "basic" science, scientists are concerned with the discovery of general laws of nature that have universal validity. Then, in the second phase of so-called "applied" science the task becomes one of applying the previously established insights of basic science to particular practical problems in the world outside the laboratory.

This vision of science became extremely popular during the second half of the nineteenth century and was successfully exploited by research oriented scientists to mobilize support from social institutions whose priorities were dictated by strictly utilitarian rather than intellectual considerations (Kevles, 1977; Weingart, 1976). The prize exemplars for the two-step model were provided by the chemical and electrical industries, but it was quickly generalized as a general norm of scientific progress. What the model insisted on was the necessary priority of basic research. The application of science to industry was supposed to depend on the prior discovery of universal laws of nature under controlled laboratory conditions. Thus, investment in basic research was presented rather like investment in capital goods - it could be expected to pay handsome dividends in due course. By the beginning of the twentieth century it had become part of the generally accepted image of scientific research that it had two levels, a basic level, and an applied level which used the products of the basic level in practical contexts.

At this point it began to become apparent to a few psychologists in the Old World, and rather more in the New World, that something more than the use of laboratory methods would be needed to ensure psychology's acceptance as a fully-fledged science. In the long run laboratory work might not be more effective than pure speculation in mobilizing social support, unless the results of such work could be shown to have practical applications. Successful scientific disciplines had their basic and their applied sectors. So far, scientific psychology only had a laboratory sector whose products lacked any apparent practical utility. The example of the more

established sciences suggested that a layer of "applied" research would have to be added if modern psychology were to prosper and to be able to draw on a broader level of social support.

The use of the two-step model of science was widespread among psychologists from the early years of the twentieth century onwards. Already in 1904 we find J. McKeen Cattell stating in a public lecture:

I see no reason why the application of systematized knowledge to the control of human nature may not in the course of the present century accomplish results commensurate with the nineteenth-century applications of physical science to the material world (Cattell, 1947; p.207).

A rhetorical reference to the relationship between pure and applied studies in the natural sciences became virtually obligatory whenever some new venture in applied psychology had to be justified. Thus, when the *Journal of Educational Psychology* - the first major American journal in the applied field – was launched in 1910, E. L. Thorndike states in his lead article:

Just as the science and art of agriculture depend upon chemistry and botany, so the art of education depends upon physiology and psychology (p.6).

Such analogies were not limited to the New World. When the Journal, *Industrielle Psychotechnik* was launched in Germany in 1924, the first paragraph of the introductory editorial announces:

It is the task of psychotechnics to make the methods and results of psychology serve the demands of practical life, just as in a similar way broad practical areas of application of the theory of electricity were opened up by electrotechnics (Moede, 1924).

Hugo Münsterberg, a major pioneer of applied psychology, was a particularly eloquent advocate of the two-step model for the relationship between pure and applied science:

The history of mankind shows that the greatest technical triumphs were always won through the work of scientists who did not think of the practical achievements but exclusively of theoretical truth. The work of the engineer has always followed where the physical truth seeker has blazed the path.

It cannot be otherwise with applied psychology (Münsterberg, 1914, p.342-3).

During the early years of the twentieth century the volume of applied psychological research gradually grew to the point where it justified the founding of special publication outlets, the *Zeitschrift für angewandte Psychologie* in Germany, and the *Journal of Applied Psychology* in the U.S.A. being the major examples. A major sub-field of applied psychology, educational psychology, had its own journals, the *Journal of Educational Psychology* in America, and various publications in Germany (*Die experimentelle Pädagogik, Pädagogisch-Psychologische Arbeiten, Zeitschrift für pädagogische Psychologie*). Thus, by the end of World War I, psychological research in its main centres, Germany and the U.S.A., was clearly characterized by

a two-tier structure of research, traditional laboratory research on the one hand, and the new applied research on the other. Each of these types of research had its own distinct publication outlets which differed in their editorial policies.

Now the question arises in what sense the research published in the "applied" journals really constituted an application of the results of "basic" psychological research. A more general way of putting this question is to ask what exactly was being applied in "applied" psychology. The notion of "application" implies two constituents: Something, call it X, is brought to bear on something else, call it Y. There is no mystery about Y. These were practical, real-life problems on which psychologists felt they could throw some light: the reliability of testimony in courts of law, the effectiveness of advertising, fatigue among school children, the comparison of instructional methods, and above all, the selection of individuals in terms of a variety of institutional requirements in educational, industrial and military contexts.

But what exactly was it that was being applied "to" these practical problems? According to the popular two-tier model of science what "should" have been applied were scientific laws previously established in the basic research laboratories. However, in a systematic review of the relevant journal literature (Danziger, 1990) I have been able to find virtually no cases where this in fact happened.

On the contrary, traditional laboratory work and psychological investigations prompted by practical problems usually took entirely different directions. Take the psychology of memory, for example. Laboratory work in the tradition of Ebbinghaus and G. E. Müller had been in existence for almost two decades when "the psychology of testimony" became a major topic for early applied psychology (Stern, 1904). Was this new line of work an "application" of the methodology and generalizations developed as a result of work with nonsense syllables? Not at all. Those interested in the so-called "applied" problems of memory under real life conditions had to develop their own very different methodology, using meaningful material, and they had to answer theoretical questions for which the generalizations based on classical laboratory work were essentially irrelevant.

Or take another example, the psychology of advertising, which had begun to develop in America by about 1910. Empirical studies in this area involved the psychology of judgment (Strong, 1911). Subjects had to make comparative judgments about the merits of advertising material. Now, a psychology of judgment, based largely on laboratory studies in experimental aesthetics, had been in existence for some time before this. But you will not find those who studied judgment in an advertising context gratefully applying the achievements of the "pure" psychology of judgment. Aesthetic issues were irrelevant in obtaining answers to questions of practical effectiveness. Moreover, the information of interest to the advertising psychologists and those who commissioned their work had (for economic reasons) to be based on the overt responses of large numbers of naïve subjects, not on the intensive analysis of mental processes of judgment in a few sophisticated individuals. So the psychology of advertising developed into a relatively autonomous field that owed little or nothing to earlier laboratory science.

Another example that illustrates the same point involves the psychology of individual differences. Before the emergence of an applied psychology that served the social task of

selecting individuals in institutional contexts there had existed a so-called individual psychology (Binet and Henri, 1895). This psychology was based on the intensive comparative study of certain individuals in an attempt to arrive at a complex qualitative characterization of individual style. Binet's study of his two daughters is a good example of this approach. But the development of mass psychological testing in educational, military and industrial settings actually owed very little to this earlier work which had been conducted without any practical ends in view. Not only did the new applied psychology of selection have to develop its own statistical methodology, but it even had to develop new definitions for fundamental psychological concepts like intelligence, aptitude and personality.

Typically, when psychologists turned their attention to practical, real-life, problems during the first four decades of the twentieth century they developed methods of investigation and modes of conceptualization that were developed *sui generis* and that diverged sharply from the then existing laboratory practice of experimental science. This was nowhere more apparent than in the vast new field of mental testing, but it was also the case in other areas. Where genuine attempts were made to apply some of the methods and concepts of laboratory psychology to practical problems, disillusionment often followed. Sometimes this disillusionment set in quite soon, as in the field of experimental psychopathology, where brass instruments were quickly abandoned for paper and pencil methods (Poppstone and McPherson, 1984). Sometimes the disillusionment with methods taken over *holus bolus* from traditional experimental psychology took a little longer to develop, as in the field of experimental educational psychology, or experimental pedagogics, but develop it did (Travers, 1983). By and large, the areas where applied work successfully based itself on previously existing pure research (e.g. work on sensory acuity or sensorimotor coordination) constituted only a small part of the entire spectrum of psychological work in practical contexts. One could try to rescue the two-step model of "pure" and "applied" research by arbitrarily limiting the label "applied psychology" to these atypical areas, but this would leave most psychological research carried out in practical contexts outside the field of applied psychology.

What we find in such research during the first four decades of the twentieth century is some persistence of old psychological notions, like associative memory, that antedated the coming of experimental psychology and owed nothing to it. What we do *not* find is the application of specific empirical or theoretical generalizations based on pure research to practical problems outside the laboratory.

Most of the time the relation of "applied" psychology to its "pure" counterpart did not in the least correspond to the two-step model that had been popularized by examples from the physical sciences. The actual relation of "basic" and "applied" psychology was not grounded in the generalization of natural laws from the laboratory to practical real life problems. It would have been far closer to the truth to speak of "practical" rather than "applied" psychology. But that would have meant dispensing with the very considerable rhetorical effect conveyed by the term "applied psychology." For such a term implied (largely without foundation) that psychology conformed to the two-step model of basic science and its applications that had been so successfully deployed by representatives of the established and relatively well funded physical sciences (Potter & Mulkay, 1982). The term "applied psychology" must be regarded as part of

the rather extensive armamentarium of rhetorical devices (Leary, 1987) that the new discipline of psychology employed to legitimize its claim to scientific status.

But in the long run talk of "applied psychology" had the effect of hiding much more than the existence of two parallel and factually independent disciplines of psychology, one devoted to the pursuit of abstract truth under laboratory conditions, the other devoted to the solution of practical problems. If one follows the relationship between these two disciplines into the period between the two World Wars one finds that it is often the *reverse* of that implied by the traditional two-tier model. Increasingly, one finds that quite fundamental methodological innovations that originated in the area of so-called applied psychology are imported into the research practice of laboratory psychologists.

A notable example is the use of control groups which was completely unknown in experimental psychology prior to the nineteen twenties, and which only became common in laboratory practice during the next two decades (Boring, 1954). However, the use of control groups in psychological research originated in the practical context of research in schools during the early years of this century. Parallel grades of school children began to be used at the time to compare the effects of different conditions of instruction on such variables as mental fatigue and memory transfer (Winch, 1908; 1911). Only after the use of control groups had become accepted in the "applied" field of educational psychology did their advantages begin to be appreciated in the context of "pure" laboratory research (Danziger, 1990).

Another example of a fundamental methodological innovation that was pioneered in practical contexts was the use of individual differences in performance measures for the investigation of intelligence and personality. The methods employed in theoretically motivated research on cognitive processes were clearly irrelevant for the solution of practical problems. They were the introspective methods pioneered by the Würzburg School in the early years of this century, or methods based on similar approaches to the study of cognition (Humphrey, 1950). Such methods were of no help in dealing with practical problems of selection in educational, military or economic institutions. Therefore, psychologists working for such institutions had to develop their own methodology, i.e. the methodology of mental testing. Although this technology had been initially developed for use in practical contexts, it soon gave rise to a considerable theoretical literature based on the factor analysis of the intercorrelations among scores on tests of intellectual functioning. In fact, the entire field of psychological theory devoted to the structure of intelligence owed its existence to methodological developments originating in "applied" psychology.

A similar state of affairs prevailed in the field of personality research. At the end of World War I theoretically motivated personality research was virtually non-existent. This entire area of "pure" research only emerged gradually during the nineteen twenties and thirties as a result of the increasing availability of techniques of investigation that had been initially developed for the solution of practical tasks. More specifically, these were the techniques of projective testing, developed in the context of clinical diagnosis, and personality ratings, initially developed for purposes of personnel selection in both civilian and military contexts (Parker, 1986).

Expressive methods had a similar practical background (Geuter, 1984). The entire area of "personality" as a recognized field of psychological investigation owes its existence to the need to provide a theoretical foundation for work that had flourished as a result of widespread attempts to give practical answers to practical problems (Cohen, 1983).

What conclusions can be drawn from this brief review of early historical trends? Undoubtedly, one can detect lines of influence between "basic" and "applied" psychology in both directions. However, these influences were not symmetrical. Generally, the influences emanating from the established "basic" psychology were relatively specific in character and of limited application. They included such things as specific techniques of measurement and the utilization of specific findings in limited areas like sensory discrimination. By contrast, the influences in the reverse direction often involved a fundamental methodological re-orientation that resulted in widespread changes in "basic" psychology. In other words, the relationship between "applied" and "basic" psychology came close to being the reverse of that suggested by the two-step model borrowed from late nineteenth century natural science.

Having arrived at this conclusion, it must be emphasized that it is not applicable to the whole of psychology at all times and in all countries. First of all, there were always large areas of both "basic" and "applied" psychology where there was no detectable influence in either direction. To a significant degree, both divisions of psychology remained autonomous. Secondly, the susceptibility of "basic" psychology to methodological innovations originating in "applied" psychology was more marked in the USA than in most of Europe (Danziger, 1987). Conversely, the autonomy of the two divisions was, on the whole, greater in Europe. Thirdly, it must be emphasized that the present review, and therefore all the above generalizations, are limited to the early period in the development of "applied" psychology, the period before World War II. After World War II the pattern changes. Differences between North America and Europe gradually become less marked, and "basic" psychology has more to offer to "applied" psychology. However, it must be remembered that the "basic" psychology of this later period is very different from the "basic" psychology that the pioneers of "applied" psychology had available to them. Large areas of "basic" research during the post-World War II period already bear the imprint of influences that originated in the "applied" research of the first half of the century.

NOTE

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