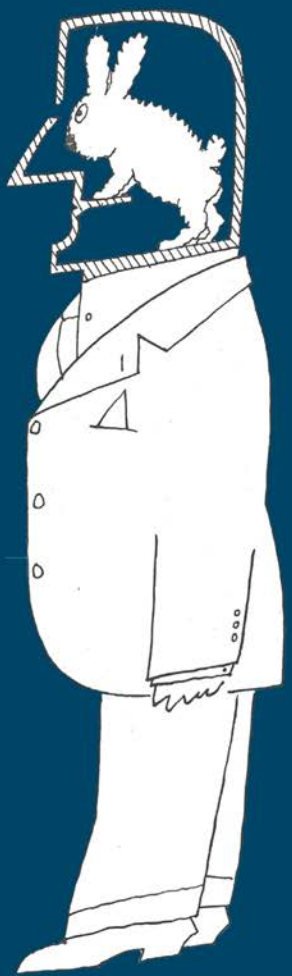
Manfred Velden

# Psychology – a Study of a Masquerade



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# Preface

The term *psychology,* as meant in the title of this book, refers to that part of psychology which claims to proceed along natural scientific lines and which alleges to produce "fundamentals" which can be successfully applied, quite like the fundamentals an engineer has learned in the school of engineering. Much of what is taught about psychology at university is of that kind. It must be stressed that the term does not refer to the actual work done by psychologists in diverse fields of application, most of which is rightfully respected by a wide public. The relationship between those alleged fundamentals and what is actually happening in applied fields is treated in the chapter "Applied vs "fundamental" psychology".

The book wants to evidence that psychology's attempt to emulate the natural sciences by using natural scientific methods and procedures and thus trying to *be* a natural science is actually an ill-fated one. In this attempt, psychology has made ample use of one of the most powerful instruments of the natural sciences, mathematics. As will be seen, psychology has made a rather specific kind of use of mathematics. In order to characterize this kind of use, actually a rather garbled one, it has been inevitable to go into some concrete applications of mathematics. Rather than to describe them in detail it would have sufficed for some of them to just point to the fact that the application does not make sense in the context, for example if the preconditions for the application are not satisfied. But I still do present the mathematics in order to demonstrate the amazing psychological effect arising from the use of mathematics all by itself, i. e. regardless of the adequacy of its use in the given context. The mere presence of mathematics in a line of reasoning makes that reasoning appear more convincing, more scientific, more exact by mere association. For that effect to be felt the reader need not *understand* the mathematics. It is enough to just look at it to be impressed. This may sound paradoxical, but it is exactly what happens. Much of psychology's success in presenting itself as a real science is based on that effect.

There are two other instances, however, where it is essential to understand the mathematics, because that understanding alone allows us to see why its appli-


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cation makes no sense or is even misleading in the particular context. These instances are the "null hypothesis test", usually termed the "significance test" universally applied in psychology, and the heritability coefficient, which in psychology supposedly tells us to what degree mental traits are genetically determined. For both the significance test and the heritability coefficient, all that is necessary *mathematically* to understand is the statistical concept of variance, which for its part just requires knowledge of elementary mathematics. If there is anything demanding in trying to understand what's wrong with the significance test and the heritability coefficient in psychology, it is not the mathematics, but the grasp of the *context* in which they are applied. That context, on the basis of which alone the adequacy of applying mathematics in science can be judged, will be supplied in detail.


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# Introduction

Seeing the title of this book, few readers will recall the imposing six-volume *Psychology: A Study of a Science*, edited by Sigmund Koch and published between 1959 and 1963. With this series, to which about every influential psychologist of the time contributed, Koch intended to document the scientific state of psychology. But while doing the editing he already developed grave doubts about that state, indeed, even about whether psychology was a science in the first place. Thus he had originally planned to write a 7th volume of *Psychology: A Study of a Science,* in which he would comment on the status of psychology as a science. In the process of editing the earlier volumes his attitude as to that status changed fundamentally. As he put it: "… between 1942 … and the early 1950s, the scales fell gradually from my eyes" (Koch, 1999, p. 7). Koch did not finish that 7th volume, but a collection of essays, written from the 1960s to the 1990s, was published posthumously[1] in 1999. It may be seen as equivalent to volume 7, a "surrogate volume 7" as he put it, containing a "critique of the modern psychological enterprise" (Koch, 1999, p. 1). With the scales fallen from his eyes, Koch had come to a view of psychology as a science that differed totally from the one held by most of his contemporaries and even by himself for a long time. In his critique he did not only flatly deny psychology the status of a systematic science, but also deemed the results produced by psychology to be rather worthless, both theoretically and practically. Of psychology as a science he wrote: "If psychology is a science, it is a "science" of a strange kind" (p. 128). Koch saw psychology as a "discipline of deceit", "as the institutionalization of a delusion" (p. 6), an "imitation science" that effected "… a progressive obfuscation of what man already knows about his own condition" (p. 304) and which has been "flagrantly and vulgarly oversold" (p. 307). Clearly Koch could well have given the title *Psychology: A Study of a Masquerade* to his surrogate volume 7.

We must therefore face the irritating fact that one of the most distinguished

1 Koch died in 1996.


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psychologists of his time[2], after decades of active research in his field, started thinking radically about it and came to the conclusion that the bulk of its results was useless. And we must accept the equally irritating fact (once you think about it) that the large majority of psychological scientists today do not know about that fact in the first place.

How can that be? Was Koch eventually proven wrong and thus rightfully forgotten? Quite to the contrary! Koch's critique is as valid today as it ever was. Since the time the scales fell from Koch's eyes, psychology has even intensified its masquerade, partly with old masks, like complicated mathematics and statistics, partly with new ones like brain scans, evolution theory or molecular genetics, impressing a wide public with all that sophisticated methodology and expensive machinery and making believe that the science behind it all is as solid as the tools used seem to suggest.

The question must be asked how such an absurd situation, a large branch of science going awry for about a century and hardly anyone caring or even noticing, could have come about. How can it happen that in *science*, where a rational and critical mindset is supposed to rule, a whole field just *postures* as a science? The scheme is so unbelievable that most readers will tend to doubt the sanity of the (very few) radical critics rather than the scientific status of the field. If the anomaly of a fact borders on the absurd, we simply tend to deny it. In order for that anomaly to still become acknowledged, a good case needs to be made for it, a *really* good one. But if Sigmund Koch with his comprehensive education, profound knowledge and brilliance of mind could not convince his colleagues, let alone a broader public, how dare I try the same again? I don't know. I just feel very strongly that the nonsense produced by psychology as an alleged systematic science must not be allowed to stand. And, as Koch has pointed out, it is not just the scientific nonsense as such that we are dealing with, but also, and more importantly, the loss of human context in psychology. Man's psychological functions viewed as subject to strict laws, the knowledge of which would allow the prediction and control of behavior (goal of psychology according to John Watson's behaviorist program), denies psychology the only sensible approach, namely that of seeking to understand those functions in a *meaningful* psychological context, as is done in the humanities.[3] After 100 years the prevailing approach has not produced one single such strict law (or anything deserving the

2 He not only led that monumental enterprise *Psychology: A Study of a Science*, was coeditor of *A Century of Psychology as Science* (1992), but also served as president of three divisions of the American Psychological Association and was director of the Ford Foundation Program in the Humanities and the Arts (1964–1967).

3 Deviations from that approach within the humanities, prompted by biological explanations of behavior in psychology and the preposterous nonsense resulting from it, I have dealt with elsewhere. (Velden, 2012).


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term "law" in the first place) but has left us with a heap of results with expiration dates of just a few years after publication. What it feels like to study this kind of science, Koch (1999) describes as follows:

> "Our students are asked to read and memorize a literature consisting of an endless set of advertisements for the emptiest concepts, the most inflated theories, the most trivial "findings", and the most fetishistic yet heuristically self-defeating methods in scholarly history – and all of it conveyed in the dreariest and most turgid prose that ever met the printed page." (p. 136).

A science institutionalized and respected worldwide being criticized in this devastating fashion by one of its best and most renowned scholars constitutes an absurdity, the causes for which must run deep. In order to see what these causes are, the fundamental problems of psychology as a science must be addressed. These problems have been known for centuries[4] (if not for more than 2000 years), but they in no way have been solved. The most fundamental of them addresses the question of what psychology is all about.

4 They, for example, prompted Galileo Galilei (1564–1642), seen by many as the founder of modern natural science, to exclude psychological processes from the natural world he was investigating, not because he found them somehow supernatural, but due to their subjective nature (Watson, 1979).


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## Psychology – a field of its own

Psychology is about the soul (psyche), of course, and, in contrast to us today, ancient Greek Mythology knew exactly what that is and created one of its typical, colourful stories about it. Psyche was a woman so beautiful that the god of love, Eros, fell in love with her. After dramatic interludes the story ended happily with Psyche being (re)united with Eros forever and made immortal. Seen from a scientific standpoint the story is not such a happy one because the impersonation of the soul is a form of reification, the transformation of something conceptual, abstract, into something concrete. In science it must be seen as a misleading and logically untenable step which has plagued psychology ever since. But apart from its mythology, Greek antiquity came quite close to today's psychology in the sense that Aristotle wrote about *mental functions* like perception, memory, or learning, subjects still studied in modern psychology. To see the "soul" as composed of diverse mental functions is the most influential idea in the history of psychology. It has undoubtedly contributed to scientific progress but, as we shall see, has a serious downside to it, too.

Mental processes like perception, learning, or thinking are familiar things to us, the terms denoting them being in daily use and known to everyone, such that at first glance there appears to be no problem in making them the objects of study in a science called psychology.

But unlike in daily language, where those terms have an obvious communicative usefulness, they suffer from grave definitional problems as objects of scientific study. There are properties or aspects to them that make psychology quite an exceptional science, "a "science" of a strange kind", as Koch put it (Koch, 1999, p. 128), and by which he meant that it is not really a science in the first place.

The first fundamental problem researchers trying to make a science out of the study of the soul were confronted with was the fact that their subject of study, mental functions, cannot be observed objectively but only subjectively, i. e. by self-observation (introspection). You cannot see what someone else is thinking, just, with some luck, "observe" what you are thinking yourself, and this pro-


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cedure is a rather unreliable one, particularly because there is no standard form in which thoughts exist. They will often come about in a verbalized form but in no way need to. The form in which ideas exist before they are transformed into language we do not know, such that, if we experience our own thinking in the form of language, that does not mean that the words are identical to the actual thinking that occurred before verbalization set in. If ideas are *not* transformed into language they may be difficult to recall as there is an infinite variety of possible forms they may have had. With the visual sense generally dominant, the form may often be a visual one, yet need not be. Mathematical problems, for example, may be solved by some kind of visual (geometrical) representation, but also in a rather non-visual, abstract form.[5] In principle all kinds of mental modes may be involved in our form of thinking, possibly including even a purely abstract one.

In order for the study of mental events to become a science, i. e. for establishing general rules or laws about them, the contents of introspection must be communicated, commonly by the use of language, which implies a second source of uncertainty as the verbalisation (or other form of communication) need not be an exact representation of what has been subjectively experienced. As everyone knows, the communication may furthermore be biased, in the extreme case by the subject lying about his experiences. But even if the communication is one to the best of the subject's knowledge, it may still be biased, namely by unconscious processes, making "response bias" one of the most intriguing problems of psychological measurement.

As if these problems were not enough, there is a further fundamental one that exacerbates the uncertainties in the study of mental processes. As pointed out by William James but consistently ignored in psychological research, the mental functions studied by psychology cannot be classified in the orderly fashion suggested by books about general psychology, where we find functions like perception, thinking, feeling, learning etc. In the actual process of conscious experience such functions are however mere aspects of that experience which, on top, interact with each other in most complicated ways. During any period of time you live through, you perceive things, recall other things on account of the occasion, think about them, have feelings or sensations emanating from what you perceive, recall or think about, and have many things more happen in your mind. On a purely descriptive level when approaching mental functions we must start with the fact of this extremely complicated interaction of the most diverse mental functions, a fact James called the "stream of consciousness" or "stream of

5 Mathematicians use different forms when thinking about identical mathematical problems, which at times makes it difficult to communicate their ideas to each other (see, for example, Penrose, 1989, pp. 548).


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thought" (James 1890, chapter IX). In order to still study *single* functions, psychological researchers have tried to create situations in which only discrete mental functions are represented in consciousness, as, for example, in psychophysics, where the occurrence of simple, unidimensional mental processes, like the sensation of loudness of a tone, appeared plausible. As I will show below in the context of so-called difference thresholds, even this idea turned out to be an illusion (see p. 39).

To make things *still* worse, the mental functions orderly listed in general psychology textbooks are by no means clearly defined, which they would have to be in order to be seen as *the* constituents of conscious experience. What, for example, is "thinking", a mental function studied extensively in general psychology? It may contain imaging, recalling, sensing, or even feeling, abstract cognition (whatever *that* may be), judging, and many things more. And these mental subfunctions may be limitlessly subdivided further.[6] Thus the fundamental precondition for establishing a field of study, namely defining the objects of study, is not and cannot really be satisfied in psychology.

Can the conditions for studying mental functions and, if that study is to be a science, for extracting rules or laws about them, still be worse than described so far?

They are a *lot* worse!

Not only since Freud *unconscious* mental processes have been (and had to be) assumed. Even the hard nosed physicist and physiologist von Helmholtz (1821–1894) recurred to them when explaining perceptual phenomena (the so-called constancies) by "unconscious inference".[7] Even if we do not, like Freud, attribute overwhelming importance to unconscious mental processes, there can be no doubt that they may at times massively influence the conscious ones. The effects reach from rather simple mental processes like those occurring with optical illusions, for example, to highly complex ones like, for example, deciding about one's political affiliation. So if our stream of consciousness, which is only partly accessible anyway, is additionally mixed up with those unconscious mental processes that are, by definition, inaccessible, our capacity for making sense of our mental world, the actual task of psychology, must be severely restricted.

As if all these fundamental problems confronting us when we try to understand mental processes and, as is characteristic of a science, to extract rules about how they proceed, were not enough, there is yet a further one we must acknowledge. Mental processes, even seemingly elementary ones, are in no way uniform. They vastly differ between persons, groups, and times. Not two people

6 As it turned out there is not anything like a mental "element" which would constitute the limit of the subdividing process.

7 Modern perceptual science still postulates such processes (see below, p. 89).


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in the world memorize phone numbers in the same way, Italian and American women differ as to such seemingly simple things as the experience of pain, and minorities are perceived differently in today's societies as compared to the ones of fifty years ago.

After all this I think it need not be stressed that a science trying to establish rules about mental functions must be one of a kind. Or, more concretely, it must be asked whether this whole project makes any sense, whether, in other words, psychology can be a science at all in the first place, or whether it would be more appropriate to speak of "psychological studies", as Koch proposes. Obviously aspects of mental life can be meaningfully studied without such studies eventually being integrated into a systematic and coherent body of knowledge called a science. Psychology is not a science in that sense and it need not be one.

Pondering the many problems facing the endeavor to establish a coherent science of the human mind – problems so fundamental that each of them calls into question the very viability of the whole enterprise – it is hard to tell whether the decision to go ahead with it has been a bold or a stupid one. As it often happens when something impossible is tried, it may look bold at the time and stupid in hindsight. In the case of psychology as a science, the verdict depends on *who* is looking back, however. While Koch judged it as being, if not stupid, so at least nonsensical, the vast majority of researchers in the field have seen this by now 150 year-old decision as consistent if not even as logical. History shows that a decision may have been objectively nonsensical, but consistent when the scientific mindset at the time it was made is considered. More often than not in the history of science, the existing mindset rather than objective considerations determined the course of events, not rarely with a retarding effect. As everybody knows, for example, in astronomy the mental disposition underlying the notion that man and the celestial body he inhabits must be at the center of the world severely delayed progress. As hardly anyone knows, the mental disposition leading to the idea that science can solve *any* problem, even the above mentioned fundamental ones in the study of the mind, has delayed rather than furthered our knowledge about the human mind. There actually *are* unsolvable problems! Not acknowledging the fact and trying to solve them is not just a waste of time, it will also produce a lot of nonsense which, if propagated by influential people, may pollute the scientific environment for decades, even centuries.


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## The origin of psychology as a science of its own

The mental disposition behind the idea that science can solve any problem was prevalent in the 19th century, and for good reasons. The accomplishments of the so-called classical natural sciences, physics, chemistry, and biology, were spectacularly successful in application (think of electricity, the synthesis of new organic molecules, or the detection of microbes) and obviously they were, because they were based on solid theoretical frameworks, such as the law of gravitation in physics (Newton), the periodic table of elements in chemistry (Mendeleyev), or the theory of evolution in biology (Darwin and Wallace), making them the coherent sciences that they are. These sciences were characterized by common methodological principles, above all by objective observation, experimentation, and the use of logic in interpreting results, the latter often implying the use of mathematics. In physics the latter is so obvious that it may invoke the (false) impression "that its apparent preoccupation with numbers and mathematical formulae, actually the most superficial property of physics, is the core that makes it a science" (Weizenbaum, 1976, p. 159). If those methodological principles, so effective in the natural sciences, could be applied to mental phenomena, so the reasoning may have gone, success of a psychological science would be all but inevitable. With the mathematical description of laws of nature proving particularly successful in physics, it was physics (the study of matter and energy), of all sciences, that became the model for psychology as a science.

The project of psychology modelled after physics appeared well under way in sensory physiology (physiology of the sensory systems) in the middle of the 19th century. There a specific subfield, soon known as psychophysics, had developed that dealt with the capacity of sensory systems. The decisive indices for that capacity were so-called sensory thresholds, absolute and difference thresholds, the first defined in terms of the minimal physical energy required to elicit a conscious perception of a stimulus, the second in terms of the minimal *difference* in energy between two stimuli needed to elicit a conscious perception of the two stimuli being different. The ultimate goal of psychophysics was to


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