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Back to basics

Robinson's is a delightful and welcome article. It spells out the present sorry state of psychology in an eloquent, erudite, humorous, malicious, but also precise manner. Any person with a little knowledge and sense would find it difficult to disagree. In fact, all the best scholars of the science agree that contemporary psychology is in dire straits. "An intellectual zoo", says George Miller.[1] "Ambiguous at best and chaotic at worst", says Amadeo Giorgio.[2] "A state of flux", says Rom Harré.[3] "A jumbled 'hidden-figure' puzzle that contains no figure", says Sigmund Koch.[4] "A winter of discontent", says Jerome Bruner.[5] They are not wrong. Robinson is not wrong. That makes it hard to target his article. Let me try.

The conundrum

There is a conundrum in psychology. The science is quite unimpressive as sciences go; "a diet of the trite, the irrelevant, the perfunctory, the formulaic", says Robinson (p 7). So moribund it appears to be that famed neuro-psychologist Michael Gazzaniga has already signed the death certificate. "Psychology itself is dead," he writes. He smugly continues: "The odd thing is that everyone but its practitioners knows about the death of psychology."[6]

It is not that odd, though; as a field, psychology is burgeoning, as numbers go, an unprecedented success. So, on the one hand, psychology is tottering; on the other, it is surging ahead, as Robinson relates (p23). The conundrum is solved by Robinson's distinction between vocation and profession, and his claim that the latter is overrunning the former. The present state of psychology "is the transformation of a life of the mind into what is finally a career", says Robinson (p 13).

In the competition for professional careers, neck-to-neck struggle is inevitable, and as competitors form alliances, bands of brothers, the idols of the tribe are given free rein. As uncompromisingly told by Robinson, everyone will be swept into one or another trench of the mainstream, and the dictates of normal science - "business as usual (p 7) - will lead the way to the honour roll. Careers, more than the quest for knowledge, comes to fuel 'paradigmatic' struggles, school wars, in short, what since 1927 has been termed The Crisis of Psychology. It bothers very few, rather it seems to be cherished. "Fragmentation...make[s] it easier for psychologists to play the power games they so love," observes David Cohen.[7] And for this reason contemporary psychology appears "fragmented, complacent, self-congratulatory and intellectually arid", as Robinson says (p 7).

Quite so, but can we malcontents earnestly say that *our* despair is less "fragmented, complacent, self-congratulatory and intellectually arid"? I think not. One needs to be a very poor psychologist, indeed, not to know the many pleasures of discontent, so can we honestly deny that the venting of indignation, concern, disillusion, irony, resignation, bitterness, melancholy, is not also a sort of free joyriding? I think not. The first thing to target is therefore the *attitude* of distress itself. If psychology needs a bit of tidying up, and it does, we should start at home. Robinson's "plea for impatience (p 6)" is very much called for. But it also needs to be heeded. Take on the task yourself; don't wait for somebody else to do it for you. It is really not that hard.

Michael Scriven's appreciation of the situation is a good place to begin. He says "the reason why psychology is in the present state is that, by its very nature, it will never be in a very different state and, indeed, has probably never in the past, even in its pre-scientific past, been in a very different state."[8] If so, it means that among the sciences psychology is *different.* Other sciences progress in a cumulative way and circle around a common generic framework of theoretical concepts; not so psychology.[9] The triumph of profession over vocation alone cannot account for the fragmented state. Accelerating careerism would certainly exacerbate this condition, but careerism is not a new thing in science. Did not Francis Bacon say of his fellow scholars that "the great majority have no

[1] Miller, G.A. (1992): The Constitutive Problem of Psychology, in Koch, S. & D.E.Leary (eds.): *A Century of Psychology as Science*, Washington: APA, p. 40.
[2] Giorgio A. (1992): Toward the Articulation of Psychology as a Coherent Discipline, in Koch & Leary, op.cit., p.46.
[3] Smith, J.A,, R. Harré and L. van Langenhove (eds.) (1995): *Rethinking Psychology*, London:Sage Publications, p.1.
[4] Koch & Leary, op.cit., p. 2.
[5] Bruner, J.S.: Psychology and the Image of Man' (Herbert Spencer Lecture, Oxford, 1976). *Times Literary Supplement*, 17 December 1976.
[6] Michael S. Gazzaniga (1998): *The Mind's past*, Berkeley, Los Angeles and London:University of California Press, p. xi-xii.
[7] Cohen, D. (1995): *Psychologists on Psychology*, London:Routledge, p. 237.
[8] Scriven, M (1964): View of Human Nature, in T.W. Wann: *Behaviorism and Phenomenology*, Chicago & London: University of California Press, p. 166
[9] As Thomas Kuhn notes (*The Structure of Scientific Revolutions*, 1962, Chicago:Chicago University Press, preface, p. viii.): "The practices of astronomy, physics, chemistry or biology normally fails to evoke the controversies over fundamentals that today often seem endemic among ...psychologists."

feeling, but are merely hireling and professorial."[10] So what is it that makes psychology different among the sciences?

Domain and field

In answering that question, a distinction between a scientific field and a scientific domain will be helpful. The *domain* is what a science is about. The *field* is what it does about it.[11] The geologists, armed with all the paraphernalia of their craft from theories to hammers, belong to the field; the rocks belong to the domain. Without the distinction between domain and field - rock and geologist - any notion of science would be senseless. And if domain and field falls out, it spells deep trouble for any science. The correspondence between domain and field is called validity; bereft of such correspondence, the science becomes invalid.

This seems to have happened in psychology. What Robinson calls "the triumph of profession over vocation (p 13)" is parallelled by the triumph of field over domain. The more the field has expanded, the more the domain has fallen from sight. Today, more than a few doubt that there even is such a domain. And without something to be the science of, psychology cannot be a science, but - at best - a peculiar language game.

Quite true, but at least in one respect, the field of psychology has been a *real* success. As a theoretical discipline it may be feeble, but as an applied field it does have a grip on things. In fact, ever since William James enticed Hugo Münsterberg to leave experimental research in Germany to take the chair at Harvard, applied psychology and its gainful uses has been the driving force behind the fast expansion of psychology, as Robinson narrates (p 11). Psychology shares this feature with most other major sciences. They have all grown from and been sustained by the challenges of everyday practice.

Without a grip on the domain and knowing what it is about, an applied field can work no better than a research field. Since the applied field of psychology does work, and the theoretical field fails credibly to deliver, we must ask from where applied psychology gets its grip on the domain? The answer is simple and the key to what makes psychology special. The intimate understanding of the domain comes from our own being; we are *ourselves* the psychological domain and - tacitly mostly - know it in every possible way. We sense it, we feel it, we talk it, and we think it. And we instantaneously perceive it in others. It is the - almost undetectable - backdrop of our very existence. No other science has a comparable access to its subject matter. Applied psychology is successful simply because it is - in a non-pejorative sense - parasitic on the common sense psychology we all share.[12]

Theoretical psychology is as parasitic on tacit common sense psychology as is applied psychology; the logic of common sense psychology is not something you can sign out of. In theoretical psychology, however, the returns are more questionable. Research psychologists do not belong to a particularly lax and stupid breed, and it is *unthinkable* that they could or would tolerate the present confused, chaotic and fragmented framework had they not a secret backup system to support and guide them. The strange fact that we have a science, which does not, in this situation, pull out all the stops to piece the complex but mangled jig-saw puzzle of psychology together, is explained by the fact that the scientists already know the outline from the cover of the box. They feel no need. Their truly intimate knowledge of the domain frees them from doing the proper domain work, which other sciences must pursue, and leaves them free to juggle their favourite piece instead.[13] Only, there are no free gifts in science. The price to be paid is conceptual chaos and confusion. A Danish poet, who has made witticism his trade, muses: "Psychologists, in the sweat of their brows/ study what everyone knows."[14] Well, they should; only they don't. Even worse, from some misguided conception of scientific methodology a considerable effort is made to discredit common sense psychology. You will easily find volumes debunking common sense and folk psychology. Certainly, one task of science is to do away with popular, but wrong beliefs; but it cannot do away with common sense psychology *as such*. This is pulling up the ladder by which you arrived.[15] Akin to denial, the discrediting obviously convolutes matters to such an extent that it can hardly be unravelled.

In the face of the ruling orthodoxies, one needs to be as intellectually arrogant as Jerry Fodor to set things straight and identify common sense psychology as the true basis for a scientific psychology. Calling it a 'theory', for some tribal reason, no doubt, he endorses common sense psychology with

[10] The philosophical works of Francis Bacon (ed. J.M. Robertson), p. 280, quoted from Ayer, A.J. & J. O'Grady (eds.)(1994): *A Dictionary of Philosophical Quotations*, Oxford:Blackwell, p.33.

[11] I have picked up the distinction from a lecture in Copenhagen by Thomas A. Sebeok, who said he had picked it up from Mihaly Csikzentmihalyi. Possibly it has been simplified in the process, but I like my version. Sebeok's lecture was later published as 'The Estonian connection', *Sign Systems Studies* 26, 1998, 20-41.

[12] In this text, common sense psychology literally means the sense-making common to all humans. After it was undercut by the particle ontology of the new physics, common sense became a contested philosophical issue, revitalizing the discipline called epistemology. One should steer clear of that. The question of epistemology: *How can we know?*, is not the question of a scientific psychology, which asks: *How can we know, what in fact we know?* Please appreciate the huge divide. Psychology should follow the lead of Thomas Reid rather than David Hume. On Reid see for instance D.N. Robinson (1989): Thomas Reid and the Aberdeen years: Common sense at the Wise Cluh, *Journal of the History of the Behavioral Sciences*, *25*, 154-62.

[13] Ridiculously, this has even been raised to an enforced norm. In a recent evaluation of our department, it was literally (and threateningly) recommended that we organize into, what Robinson calls " teams of professionals, each capable of placing one piece of the puzzle [but one piece only, mind you!] into its proper place. (p 10)"

[14] Piet Hein, quoted after memory, my own translation.

[15] For a lucid and philosophically inspired Danish demonstration of how we are inherently bound by a worldly logic, and how psychology can make a jackass of itself, when it does not realize it, see Praetorius, N. (2000): *Principles of Cognition, Language and Action. Essays on the Foundations of a Science of Psychology*. Dordrecht/Boston/London: Kluwer Academic Publishers.

these words: "[H]ere is this delicate and elaborate - and largely inexplicit - psychological theory that we seem, in several respects, to get for free. It is presumably prehistoric in origin; it is culturally universal; and it is assimilated practically instantaneously and without explicit instruction by every normal child. And, by all reasonable empirical criteria, this theory that we seem to get for free appears to be *true*: its predictive adequacy is not susceptible to serious doubt, and it has repeatedly proven superior to such rival theories as have sought to replace it (...)." Fodor concludes: "So impressive are the successes of grandmother psychology that the rational strategy for en empirical approach to the mind is surely to co-opt its apparatus for service as explicit science."[16] Fodor's conclusion is correct; and this is the key to a scientific psychology with a proper recognition of and grip on its domain. Psychologists *must* study by the sweat of their brows, what everyone knows. Psychology *must* - without oversight or error - translate common sense psychology into a proper scientific conceptual framework.

Robinson gets this half right, but *only* half right; and this slight imperfection will be my second target. Robinson's concluding plea for a civic, moral, aesthetic, and transcendental phenomenological psychology is, obviously, a recognition of the need for theoretical psychology to regain its contact with the issues and concerns of ordinary living and thus common sense psychology. But how can he possibly think that debunking theory, as he seems to be doing (p 6), in favour of Wittgensteinian homilies, as he suggests (p 6), will accomplish this? There is a fly to let out of the fly bottle, surely; but the metaphor still needs to be translated into the language of scientific endeavour. Does he shy the work, the sweat of the brow part? Knowing Robinson's record, I think not. I take the somewhat flippant and, for a teacher, irresponsible stand to be a symptom of the trauma that mainstream regimentation can - eventually will - inflict upon a sensitive scholar.

Aristotle resurrected

This is regrettable, since Robinson is in a better position than most to take the next logical step in the restoration of a "psychological psychology"(p 6). Being a scholar of great knowledge in the history of psychology,[17] Robinson will certainly see that the next step is to pick up the thread from Aristotle, whose psychology is the subject of one of Robinson's own books,[18] and who literally walks the pages of Robinson's present article. It is true that Hilary Putnam and the functionalists may have hijacked Aristotle; and it is true that functionalism, its merits untold, does not answer the real questions of psychology, as Robinson points out (p 21).[19] But this is a mere trifle and should deter nobody from recognizing Aristotle as the key to a modern psychology.

Aristotle has, in fact, always been the key to psychology. “The first truly complete systematic psychology comes from Aristotle,” wrote Oswald Külpe.[20] George Kantor continues: "Aristotle’s *De Anima*, as the nucleus of Greek systematic psychology, is an outstanding achievement and product. Here is a well-developed and neatly integrated series of psychological descriptions and also, what is much more remarkable, a model that has endured to our own day... Despite all the transformations and misinterpretations to which the *De Anima* became subject, the science of psychology has always been a study of Aristotelian *psyche*..." In short, "in some sense, at least, all psychologists are Aristotelians."[21]

It is not as surprising as it seems. Aristotle's is the first - and possibly only - systematic theoretical psychology based on the framework of common sense psychology. Its hallmark “is a robust common sense”, says Guthrie.[22] Since all psychology is parasitic on common sense, it is bound to line up with Aristotle one way or another, but secretly, of course, due to historical circumstances. From the 17th century, Aristotle became the anathema of science. It was inevitable, and necessary, as Galileo and the physicists with much ado freed their science from the Aristotelian framework, which is bio-psychological through and through, and falling stones and orbiting planets are not. Following the lead of the triumphant physical sciences, and cutting itself off from the umbilical cord of common sense psychology, the path of psychology henceforth became torturous, as it confronted the hopeless choice of being 'science' *or* being 'psychology'. It still is, as Robinson complains. But it can be remedied. By now the natural sciences are quite secured, and they should not mind if psychology starts looking after itself. On the contrary, they have treasures of insight on offer, which psychology can gainfully - not copy - but work into its *own* scientific (that is, Aristotelian) framework. "[I]t is not at all an exaggeration to say that, despite all the data amassed by psychologists down

[16] Fodor, J. (1992): *A Theory of Content and Other Essays*, Cambridge, Mass. & London: MIT Press, p.174.
[17] Robinson, D. N.(1976): *An Intellectual History of Psychology*, Madison, Wisconsin:Wisconsin University Press.
[18] Robinson, D.N. (1989): *Aristotle's Psychology*, New York:Columbia University Press.

[19] Having a distinction between “these two causes, the *for-the-sake-of-which* and the *of-necessity* (Parts of Animals, 642a)”, Aristotle cannot be made out as a mere functionalist. If you will allow the distinction, functionalism addresses the logistics of the psychological being (the *for-the-sake-of-which*), it does not address the logic (the *of-necessity*). Psycho-*logical* key features such as those traditionally referred to as 'intentionality', 'teleology' and 'transcendentality' cannot be reduced to function, but functional descriptions can demonstrate how they are implemented by physical systems and shaped by evolutionary selection. Functionalism is not wrong, only of limited scope. There is much it doesn't identify, only tacitly assumes. It shares this limitation with Darwinism, which sired it. They are as parasitic on the self-evidence of common sense, as is psychology. But science should be wary of taking the self-evident for granted, could scientists only spot it.
[20] Cf. H. Misiak & V.S. Sexton (1966): *History of Psychology: an overview*, New York:Grune & Stratton, p. 6.
[21] Kantor, J.R. (1963): *The Scientific Evolution of Psychology*, vol. 1, Chicago:The Principia Press, p. 149-150.
[22] W.K.C. Guthrie, *The Greek Philosophers*, 1950, p. 125. Quoted from L.S. Hearnshaw (1987): *The Shaping of Modern Psychology*, London and New York:Routledge p. 23.

the centuries, we have not yet fully caught up with Aristotle", says Kantor.[23] Well, it is time to do just that.

Talk about regression, some would say; is Aristotle not Iron Age? Yes, but it is first and foremost regression as in object permanence: toward the real thing. If you talk basic psychology, there is something that is permanent and has certainly not changed since the Iron Age. It is the fundamental logic of common sense psychology, human nature, if you like. For obvious reasons, scientific break throughs and original discoveries in common sense psychology can hardly be made. Common sense psychology is literally the original itself; there is nothing new under the sun here. It is a little harsh, but not entirely wrong, when David Krech allegedly said, "what is new in psychology is not good and what is good is not new."[24] It is the same understanding, which is reflected in Robinson's "wariness toward 'originality' in psychology (p 6)." What is necessary now is to realign theoretical psychology with common sense psychology, and this does not square with break throughs and original discoveries. The serious scholar of psychology must at this stage forego such perks.

This does not mean that we can simply scratch the psychological work of a couple of millennia merely to pick up the volume of *De Anima.* That would be ridiculous. It is the general understanding and basic framework of the Aristotelian psychology that has been left untouched by time, his way of fleshing it out, has not. Many of his particulars are of obvious Iron Age vintage; not sharing the same cultural horizon, some are outright incomprehensible to us. As Robinson - with Thomas Reid - reminds us, "theories are the creatures of men (p 6)." Theories are tools, charts, navigational aids, pointing devices. What you cannot follow is of no practical use, and thus unimportant. The important thing is what you can follow, what the theories make *you* see. What the author precisely had in mind needs not concern you; it can be left for historians and biographers to retrieve, if at all possible. Who really cares, for instance, if Franz Brentano has misunderstood Aristotle about intentionality; the important thing is what the reading of Aristotle made *him* see, and made him point out, for *us* to see. Anyway, you *can* only read from your own horizon, but since all horizons share a common sense, you can rely on this commonality when you attempt to make sense of statements from foreign horizons. What is more, you *should* rely on it; David Davidson calls it the Charity Principle.

The Aristotelian psychology is the true foundation of psychology, but to be of use to us, it must be updated to fit the modern scientific horizon, not least the notions of dynamical change and evolution introduced by Galilei and Darwin. To update it would be to use it as framework and corporate into it all the many pieces carved by psychology, past and present. No piece should be left out or discarded; there will be room for every one, if you only know where to place it. The problem of psychology is not lack of knowledge, but rather its displacement.[25] In fact, this is the prescription Aristotle himself used, when he embarked upon his study. He said: "Let us remember that we should not disregard the experience of ages; in the multitude of years these things if they were good, would certainly not have been unknown; for almost everything has been found out, although sometimes they are not put together; in other cases men do not use the knowledge which they have."[26] The notion of an elephant was all the wise, but blind men of the Indian fable were in need of in order to be straightened out of their confusion. In psychology Aristotle provides such a notion. Rather than mock and reject the blind, one should look for ways to reinstate this notion. I think Robinson, in the article, is too dismissive of our struggling comrades in the science. Even the casualties warrant respect, as he would surely be the first to agree.

Two Aristotelian key notions are imperative in any scientific psychology. The first is the 'entelechy' notion of moving 'purposively' from what is potential to what is actual. It is the key to the realm of psychology, and enlists such strange, but indispensable features as 'transcendence', 'phenomenology', 'intentionality', and 'teleology', which are not found elsewhere in physical nature.[27] The second is the staunch commitment to naturalism. Kantor: "What makes Aristotle's psychology so remarkable is that it is a fairly comprehensive psychological corpus thoroughly grounded on naturalistic foundations."[28]

In the last century, the learned opinion has been that the two Aristotelian keys are mutually exclusive. Naturalism is only compatible with the logistics of psychology, not with the logic, if one admits of such a distinction.[29] Robinson, apparently, is of the same mind. While he has a good eye for the truly psychological (*i.e.,* in his different suggestions to where "a psychological psychology" should begin, and in his beauty of a distinction between *pistis* and *doxa* (p 22)), he seems to denounce any naturalistic psychology. Aristotle held the belief that "we must avoid a childish distaste for examining the less valued animals. For in all natural things there is something wonderful"[30] But Robinson says, "let the birds fly south and the rats find their way back to barns and marshes. Whatever the study of non-human animals might yield at the level of fact, it is doubtful in the extreme that it

[23] Kantor, op. cit.

[24] Quoted from Jan Smedslund: Psychologic: Common Sense and the Pseudoempirical, in Smith, J.A,, R. Harré and L. van Langenhove (eds.) (1995): *Rethinking Psychology*, London:Sage Publications, s. 196

[25] Nehemia Jordan (*Themes in Speculative Psychology*, London:Tavistock, 1968, p. 2): "It is not that facts are lacking; if anything we are overwhelmed with facts, we have far too many facts at our disposal. What seems to be needed are new ways of processing the facts, new ways of *thinking* about the facts, perhaps in conjunction with a revival of some of the older, neglected ways of thinking about psychological facts as well."

[26] Aristotle, Politics, quoted from W.D. Ross (1955): *Aristotle Selections*, New York:Charles Scribner' Sons, p. 298.

[27] Even if it is hard to tell, what he really meant, (the phantom of the non-ownership theory of mind is lurking), we are reminded of Wittgenstein's comment: "Not to explain but to *accept* the psychological phenomena - that is what is so difficult." Quoted from Hacking, Wittgenstein the psychologist, *New York Review of Books*, April 1. 1982, p. 43.

[28] Kantor, op. cit.

[29] See note 20.

[30] Aristotle, *Parts of animals*, book 5, 645a, quoted from Ackrill, J.L. (ed,) (1987):*A New Aristotle Reader*, Oxford:Clarendon Press, p. 227.

will contribute significantly to an understanding of the civic, aesthetic, moral and transcendental dimensions of human life (p 24)." I strenuously disagree, and this is my third and last target. Again it is pulling up the ladder by which we arrived, and an absolute non-starter for a science of psychology. I certainly agree that the contemporary functionalistic mainstream currents of biological psychology are wanting in a principled way, but that is why a return to the basic understanding of Aristotle is necessary. The psycho-*logic* is an extension of life, not merely a mechanism of evolution, and it cannot be intellectually understood without a study of life in all its forms. In fact, looking for the constitutive levels of the *domain* of psychology, based on an updating of Aristotle, has been the motivating idea of my own work. Let me - to illustrate my argument - hint at the solution that I am pursuing.

In search of a new, rather old psychology

The bio-psychological taxonomy of Aristotle leaves you with five stages, and, consequently, given evolution, four transitions to explain: non-life, life, animal life, higher animal (mammalian) life and human life. The difference and transition between non-life and life is fundamental for an understanding, but also readily delivered by thermodynamics. Psychology in the modern understanding starts with animal life; contrary to Aristotle, we do not want to include plants in psychology; if we do, the defining distinction of the psycho-*logic* will escape us. Hence there are three progressively tightening rings for psychology to explain: *Animal life*; including, in a special way, *mammalian life*; including, in a special way, *human life*.

If somehow left hanging in mid-air, the latter two are well explored. Human life hinges on a special way of species reproduction called society and culture. As a hallmark it has language and a host of other sign- and memory systems. Mammalian life also hinges on a special way of species reproduction, giving rise to elaborate social forms, but the hallmark is the development of the mind, which was well-likened to an 'inner scene' by the British empiricists. In general, psychology is not about the brain, it is about living relations as they unfold in the world. It is the other way around, psychology is the key to the brain, which is merely a function or a logistical device. The 'inner scene', however, is a function of great psychological importance to mammals and very much about the brain. Here the brain sciences have much to teach psychology, even if this outside help reinforces the post-Aristotelian misconception that the psychological domain is *inside* the head, and also quite unnecessarily reinvigorates well-known, but boring paradigmatic struggles. This is not something psychology needs. We should shun narcissism, and start looking for the common ground.

Animal life is the least understood, except, of course, implicitly by common sense. This is bad since it is constitutive of the higher forms, and since the secret of psychology is buried here. To their credit, the behaviorists, and most famously Skinner, understood that animal life should be understood in non-mental and externalist terms. Unfortunately they were, to use the philosopher's phrase, in the grip of a picture; reined in by functionalism they could not go beyond the logistics (*cum* behavior) to reach the core of psychology. To do that requires the key notion of Aristotle: to move under your own power from potentiality to actuality.[31]

The prototype is the *locomotion* that animals, in lieu of photosynthesis, *must* achieve to reach food and thus live. Locomotion is the existential condition of animals. It can be divided into four logical stages as the animal moves from a *locus* where there is no food to a *locus* where food is found, thus creating a temporal arch "with a beginning, a middle and an end"[32], just like Aristotle defined a 'narrative' structure. In reverse order the logical stages are: last *consummation*; before that physical *handling*; and before that *tracking* on the basis of informational stimuli. These stages, describable in terms of function, are reasonably well understood.[33] The entire stimulus-response psychology from classical conditioning to semiotics is about tracking and handling. It is the first stage that is a blank, and here rests the crux of the matter.

The initial stage is *search*; that is, setting out *prior* to any information or physical contact towards a biologically defined and objectively given end-goal.[34] Does this make search uncaused? No, it is caused by the ongoing bio-chemistry and bio-mechanics of cilia, flagella, or muscle fibres, as the case may be. It is, however, uncaused or uninitiated by events in the environment. Search is not to be understood as a response to stimuli.[35] Rather one should consider not rest, but locomotion the natural state of the organism. As in the case of Newtonian motion, what needs a

[31] Of course, Skinner's notion of the *operant*, at least tacitly, assumes the Aristotelian notion.

[32] Aristotle: *Poetics*, chapt. 7, in J.L. Ackrill (ed.)(1987): *A new Aristotle reader*, Oxford:Clarendon Press, p. 546.

[33] Application of the four-stage scheme of locomotion will, however, bring new depth to the understanding. As shown by the work of my colleagues Ole Elstrup Rasmussen and Jorgen A. Jensen, it can greatly advance problem solving and competence research (Jensen, J.A. & O.E.Rasmussen (2002): Types of problem solving activity in a complex environment. Steps towards modeling by a cusp-catastrophe. *International scientific journal of methods of complexity – An interdisciplinary journal for research of complexity*. [Internet-journal.]

[34] The end-goal is objectively given in two respects. First it follows from the very nature of the animal mode of a living being. All living beings expend stored energy to acquire new energy; it is the ultimate definition of life; animals do it by moving in search of food. "[F]ood is a necessary thing...in that it is impossible to be without it." (Aristotle:*Parts of Animals*, 642a). Secondly, the end-goal is objectively given by the coordinates of the location of the food-object that the animal – eventually – will reach. Given that the animal has enough energy to spend, and does not encounter critical adversity, even random movement on a surface will, according to Polya's Theorem, guarantee 100 percent success. In fact, all the 'inventions' in evolution – the elaborate forms of subjectivity included – are about shortening the path, reducing the cost, and handling adversity. Evolving memory systems, notably the mind, of course, shorten the path considerably by having stored up information about the already met features of the environment.

[35] This does not mean that stimuli cannot instigate searching behavior, as the orienting reflex is a good example of.

cause and an explanation are the changes and stops of locomotion. If not called upon to do anything else, animals spend their energy moving. And since this leads even the simplest animals to food as their existential necessity, it is primordial search.

It is search – for food first, then any other goal - that projects the arch into the future and thus creates a logical and very special space. I have called it the *interspace* to distinguish it from the *interface*, the bodily surface boundary across which sensory information reaches us from the surroundings. The interface is about *here-and-now contact* and describable in classical causal terms; the interspace is defined by *the absence of here-and-now-contact*, rather it is about the potential future contact, and this requires a different vocabulary. The distinction between interspace and interface parallels a distinction between ecology and environment, if the latter concepts are properly defined, which they are often not; they are not synonyms.[36]

As irrefutably struck home by David Hume, interface communication cannot possibly deliver a world. From the 'inside' you can never adduce the 'outside', and will soon find yourself drowning in a sea of skepticism. The world, in which we *undeniably* find ourselves, must be otherwise delivered; sensation alone will not do it. It is my contention that it is delivered by the temporally unfolding interspace. As defined by biology and ecology, the logic of animal locomotion, initiated by search, turns what is merely a dynamic physical *Ding-an-sich* matrix into a world with temporal dimensions projecting into the future, a *Lebenswelt*, or Being-in-the-World. It is an objectively given world, but it is not a world of certainty. Whether the animal will arrive successfully cannot be foretold in advance. Thus it is a space of unfolding crisis, an eternal mix of danger and possibility. It is a world of faith and hope, *pistis*, if you like; only thereafter it becomes a world of *doxa*.[37] In a sense, the interspace, spanning the temporal traverse between the searching animal and its goal, is the famous *tabula rasa* upon which sensation is writing; but there can be no meaningful writing at all without first having this tablet.

The strange concepts of psychology find their natural place in the world of interspace. That the Aristotelian notions of Entelechia and Teleology address this space is obvious; but one can also argue that Brentano's Intentionality, and, as a corollary, Phenomenology,[38] originate here. In 1874 Brentano pointed to the defining mark of the psycho-logical: "[T]he discriminating peculiarity of all psychical phenomena is their *intentional inexistence*, their relation to something as an object."[39] Search is the archetype to fulfill this condition; here an animal objectively relates to an object with which it has no contact, neither directly physically, nor indirectly informationally. It is my contention that search brings the domain – and basic conceptual vocabulary – of psychology to life.[40] This would explain the difficulty of the functionalists. It is the skills of tracking and handling that the animals are honing during evolution; and it is these skills that are addressable by functionalism. Only, tracking and handling are after the fact, domain-wise. Hence the domain falls outside intellectual identification and must remain as implicitly given as Kant's transcendental a priori categories – also explainable, by the way, from the logic of the interspace. But it need not be so. William James, quite a functionalist, could handle both sides, when he defined psychology thus: "The pursuance of future ends and the choice of means for their attainment are thus the mark and criterion of the presence of mentality in a phenomenon."[41]

James is referring to mentality, (as was Brentano), and thus the stage of mind. It is very important, however, not to identify the psycho-logical with the mind. The psycho-logical is *basically* a derivative of biological[42] and ecological relationships, and is *prior to any mentality*; all animals from humans to protozoa search. I am convinced that the roots of

[36] Observe, for instance, in J.J. Gibson's works on 'ecological psychology', how leisurely the adjective 'ecological' in the headings is changed into the adjective 'environmental' in the text, as if they were synonyms, which they are not. It would have been more correct to name Gibson's psychology 'environmental', since it is all about information reaching us from the surrounding field. What distinguishes – and improves – Gibson's view from the view of his opponents, is not the environmental paradigm, which nearly all psychologies share, it is his insight that information under natural conditions arrives in structured wholes rather than piecemeal.

[37] Admittedly, I may not have fully understood the distinction between *doxa* and *pistis* from Robinson's few remarks, and may too hastily have associated it with a distinction, which is of paramount importance for a future psychology. In the terminology of my colleague, Jens Mammen, who discovered and developed it for psychology, it is the distinction between *sense-categories* and *choice-categories* (see this volume). Very interestingly, and for all sorts of reasons, the distinction has a model in theoretical mathematics, where there are two principal kinds of set-producing selection. One is rule-bound and informed (logistical, if you like); the other is not (Zermelo's Axiom of Choice). Mammen has shown that they match, respectively, sensory tracking, which is bound by sensory input according to the logistics of categorial rules, and handling, which is not, rather it is open-ended. Mammen's work has dealt mainly with handling and human particulars. Search, far more open-ended than object-controlled handling, also falls to Zermelo's side, of course. Being the operational carrier of the concept of faith, it is my contention that search, and its ecological context, create the psychological space and thus the psychological domain. On Mammen's work see J. Mammen (1993): The elements of psychology, in Engelsted, N., M.Hedegaard, B. Karpatschof & A. Mortensen (eds.): *The Societal Subject*, Århus:Aarhus University Press, p. 29-44.

[38] Phenomenology requires the introduction of consciousness - by way of Thomas Nagel's 'What it is like to be...' and also by a venture into the strange land of nano-science. It is beyond the scope of the present commentary.

[39] Brentano, F. (1874): *Psychologie vom empirischen Standpunkte*, translation from R.J. Herrnstein & E.G. Boring (eds.)(1965): *A Source Book in the History of Psychology*, Cambridge, Mass.:Harvard University Press, p. 605.

[40] For an early attempt to develop this, see Engelsted, N.(1989): What is the psyche and how did it get into the world? in Engelsted, N., L.Hem & J. Mammen (eds.): *Essays in General Psychology, Seven Danish Contributions*, Århus:Aarhus University Press, p. 13-48.

[41] James, W. (1890): *Principles of Psychology*, vol. 1, p. 8, reprinted in Dover edition 1950.

[42] Please do not, as has become conventional in psychology, confuse biology with physiology.

the transcendental and the aesthetic psychology that Robinson is calling for is to be found here. When mind develops with the mammals, however, the psycho-logical takes on forms specific for the special workings of the mind; and this will add new dimensions to an aesthetic and a transcendental psychology, as, for instance, the phenomenological dream attests. A similar development of qualitative new forms of the psycho-logic takes place with the special stage of the human being. Unfortunately these forms are not well understood. Some fundamental analysis of life in society seems to be amiss; somehow the Adam Smith of *The Wealth of Nations* has stolen the stage from the Adam Smith of a *Theory of Moral Sentiments*. To call the missing piece a "moral science (p 21)", as Robinson does, may be quite appropriate.[43] All the transformations of the psychological domain in evolution are very important, of course. Nevertheless, the domain basically remains what it was from its first inception. As life remains life through evolution, so does the psycho-logic remain the psycho-logic. It is time to identify and acknowledge it, not merely know it. Robinson is certainly right, when he says that "it might be time to invent a psychology prepared to take both itself and human nature seriously (p 16)." From the vantage point of Danish theoretical psychology, we can easily appreciate his call. What is more, we think it can be done. [44]

[43] Even if warned by Stephen Toulmin at a conference that this kind of work is not what the world needs, and possibly career damaging, for an example of the kind of analysis I think is missing, I refer to Engelsted, N. (1992): A missing link in AT?, *Multidisciplinary Newsletter for Activity Theory,* no. 11/12, p. 49-54.

[44] The commentary is leaning on a book, *In Search of A General Psychology,* which I am presently writing. I thank the author for permission. I also wish to express my gratitude to Keith Duncan for valuable advice on the commentary.