

RICERCHE

“Cognition” – Let’s forget it?

Alan Costall^(a)

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Abstract For many psychologists, “cognition” is an obvious object for study. A natural kind. What I want to do in this article is problematise “cognition”. Psychologists lived happily without “cognition” until the 1960’s and even then, its entry into psychological discourse was hardly smooth. Furthermore, the new cognitive psychology retained much of the behaviourism it wrongly claimed to have displaced. There are now some radical developments going on in “cognitive science” but those involved still retain the term “cognition”. But isn’t it like modern physicists claiming that they are coming up with new theories of phlogiston? “Cognition” – forget it?

KEYWORDS: Psychology; Cognition; Behaviourism; Cognitive Behaviourism; S-R Theory; Unconscious Mind

Riassunto “Cognizione”: dobbiamo lasciarla perdere? – Per molti psicologi la “cognizione” è un oggetto di studio che rasenta l’ovvietà. Un genere naturale. Ciò che mi propongo di fare in questo articolo è problematizzare la “cognizione”. Gli psicologi hanno vissuto felicemente senza la “cognizione” fino agli Anni ’60 e anche allora la comparsa di questa nozione all’interno del lessico psicologico non è stata cosa semplice. Inoltre, la nuova psicologia cognitiva ha conservato molto di quel comportamentismo che ha affermato, sbagliando, di aver scalzato. Ci sono oggi alcuni sviluppi, anche radicali, che si affacciano nella “scienza cognitiva”, ma tutti quelli che sono coinvolti usano ancora il termine “cognizione”. Ma non è come se i fisici di oggi sostenessero di avere nuove teorie del flogisto? La “cognizione”: dobbiamo lasciarla perdere?

PAROLE CHIAVE: Cognizione; Comportamentismo; Comportamentismo cognitivo; Teoria stimolo-risposta; Mente inconscia

^(a)Department of Psychology, University of Portsmouth, King Henry Street, PO1 2DY, Portsmouth (UK)

E-mail: alan.costall@port.ac.uk (✉)



“Cognitive” belongs to the vocabulary of
examination papers¹
Gilbert Ryle

[There are] no good grounds for supposing
this additional wheel work in the mind²
William James

Cognition, see *Knowing*³
William James

“Cognitive” is a classical term that implies a natural
cleavage between psychological processes, a cleavage that
confuses everything and clarifies nothing;
let’s forget it⁴
George Kelly

I BEGAN UNIVERSITY IN 1966 at the University College of North Wales (now Bangor University) to study physics, but the course was heavy on detail and light on big ideas, in contrast to the physics I had been taught at school. In 1968, I escaped to the Psychology Department. At the time, it was tiny compared to the Physics Department: four lecturers and just twelve students in my year. The main focus was on operant psychology and the philosophy of radical behaviourism, aided and abetted by Wittgenstein and Gilbert Ryle. (Both Skinner and Ryle turned up to give seminars – I guess Wittgenstein might have also showed up if he hadn’t been dead). However, a new lecturer had arrived from the University of London, and the cognitive revolution finally reached the outer reaches of North Wales. In his course, the required reading was the newly published *Cognitive Psychology*, by Ulric Neisser (1967). I was yet again confronted with more interminable detail – this time based around “cognitive boxology”.

I have become increasingly puzzled how Neisser could have written such a boring book. He had already written a penetrating critique of the computer analogy⁵ and later became an “apostate” of the cognitive revolution.⁶ When I gave a talk at Oxford in 1988, he made a point of coming up to

me before my talk to say he liked the edited book I had put together with Arthur Still against cognitivism.⁷ He, like some of the audience, must have already known that a ridiculously nasty review of the book had appeared in the *Quarterly Journal of Experimental Psychology*.⁸ I did not know about the review until I arrived to give my talk.⁹

As I have already explained, even before his 1987 book, Neisser had already written incisive criticism about the direction the new cognitive psychology was taking both in terms of theory and research practice and was turning away from boxology. As Neisser has explained in *Cognition and reality*, he deliberately avoided any discussion of consciousness precisely because he could see that it would not be sufficient merely to treat consciousness as yet another «stage of processing in a mechanical flow of information».¹⁰ He even included a spoof of his early boxology (cf. *Figure 1*).

■ 1 Cognition” prior to “the cognitive revolution”

The textbooks have been keen to enlist “pioneers” in the history of the cognitive approach, such as Jean Piaget, Frederic Bartlett, and Edward Tolman. On the whole, I think this was a case of retrospective reconstruction rather than a case of historical lineage. One important exception from the outset was Neisser who identified closely with Bartlett.¹¹ What I want to argue in this section, is that prior to the 1960’s, the use of “cognition” within the language of psychology was both sporadic and *selective*. Ernest Hilgard pointed out that “cognition” entered into psychological language initially as part of a *package*:

For two hundred years many psychologists took for granted that the study of mind could be divided into three parts: cognition, affection, and conation. They disagreed on whether these should be considered faculties of the mind or merely a classification of aspects of mental activity, but the threefold division was

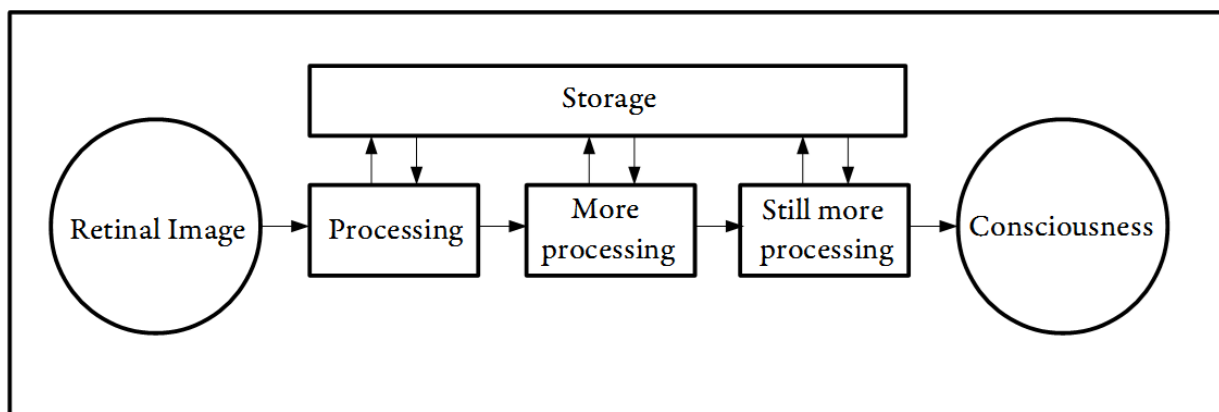


Figure 1. The internal information-processing model of perception

repeatedly revived. In the last twenty-five years, if we judge from the titles of books and journal articles, scientific psychology – whether its focus is on perception, learning and memory, development, or personality and social psychology – has become engaged with one of these aspects, now called cognitive psychology. An examination of the tripartite classification in historical perspective may show the extent to which affection and conation are now suffering neglect by contrast with cognition as their coequal. [...] the old trilogy helps to call attention to aspects that are neglected; it remains useful after all these years.¹²

As far as I can tell, at least in relation to the Anglo-American literature, “cognition” broke loose from this trilogy.

According to Gaines and Shaw (n.d.), «[Sir William] Hamilton (1859) introduced the term “cognition” into psychology».¹³ They also cite two early books with “cognition” or “cognitive” in their titles: *Elements of the psychology of cognition* (by R. Jardine) and *Psychology: The cognitive powers* (by J. McCosh).¹⁴ Jardine’s *Elements of the psychology of cognition* commences with the definition:

Cognition is a general name which we may apply to all those mental states in which there is made known in consciousness either some affection or activity of the mind itself, or some external quality or object. The Psychology of Cognition analyses knowledge into its primary elements, and seeks to ascertain the nature and laws of the processes through which all our knowledge passes in progressing from its simplest to its most elaborate condition.¹⁵

But then there was a “long” lull. There are two books that, from their titles, seem to be precursors to the “revolution”. One is Charles Spearman’s *Nature of intelligence and principles of cognition*.¹⁶ But this was misplaced in terms of an historical progression. It was about individual differences and based on psychometric testing rather than experimental psychology. The first English-language twentieth century textbook with the title, *Cognitive psychology*, however, was written by Dom Thomas Verner Moore,¹⁷ a Benedictine monk, but the approach adopted links back to the tradition of scholastic philosophy rather than, again, anticipating the forthcoming “cognitive revolution”.¹⁸

For me, a big surprise was to find Robert Leeper’s substantial chapter on “cognitive processes” in Stevens’ prestigious *Handbook of experimental psychology* published as early as 1951.¹⁹ Leeper begins his chapter by raising the issue of whether cognition should be defined in terms of particular psychological processes, or in relation to what he called an “approach”. In terms of processes, he

considered whether the scope of the definition should be restricted to thinking or even specific kinds of thinking, or else be more inclusive to cover perception and remembering. Leeper wondered whether “consciousness” should figure in the definition of cognition, but, drawing upon the early introspective research on imageless and sensationless thought, he concluded that cognition could indeed be unconscious. The definition Leeper finally settled upon sounds surprisingly modern:

[...] cognitive processes include all the means whereby the individual represents anything to himself or uses these representations as a means of guiding his behavior. It is in this broader sense that the term “cognitive processes”, after virtually disappearing from the vocabulary of psychology, has been reappearing in the writings of [some] psychologists.²⁰

Leeper’s definition of cognition in terms of representation embodies the source of our later perplexities. For his definition is ambiguous. It can be taken as either defining a field of inquiry or else setting out a theoretical, indeed metatheoretical, *approach*. Regarded as a field of inquiry, the study of cognition would be reasonably restricted to those limited but important areas of human life where people manifestly engage in representation of various kinds as a general way of guiding their activities. However, as an “approach” there is, in principle, no limit to the application of the term “cognition” well beyond the restricted realm of thinking, planning, classifying, and so on.

Already by the 1980s, psychology had almost entirely redefined itself as the science of “cognition”. As William Kessen later complained:

Friendship has become social cognition, affect is seen as a form of problem-solving, new-born perception is subsumed under a set of transforming rules, and psychoanalysis is reread as a variant of information processing. Cognition, the feeble infant of the late Fifties and early Sixties, has become an apparently insatiable giant.²¹

2 The “cognitive revolution”

In preparation for this paper, I checked on Google’s Ngram, and was struck by how abruptly references to “Cognitive Psychology” and, just a bit later, “Cognitive Science” took off from the 1960’s onwards.

I was also amazed by the terminal decline in references to both terms by 2012. But it turns out this statistical profile a fault in Ngram rather than evidence of the collapse of the “cognitive.” (Enter any other term, e.g., “chair,” and you get the same terminal profile!).

In this section, I want to make two points. The



Figure 2. References to “Cognitive Psychology” and “Cognitive Science” from 1960s onwards

reception of the term “cognitive” was not straightforward, and the “revolution” has hardly been complete.

According to Moroz,²² the first mention of “cognition” in the introductory textbooks of psychology was as recent as 1966, in McKeachie and Doyle’s *Psychology*.²³ Moroz admitted that he had no clear idea what the term was supposed to mean, and actually referred back to the Leeper chapter (referred to above) for help. He was not alone:

Querying colleagues about its meaning [cognition], I received a response direct but confusing (as that a child might receive when asking where he came from) or operationally precise but circular [...].²⁴

In his presidential address to the American Psychological Association, the influential psychologist, Donald Hebb, was also puzzled, but, in the end, decided there was an intimate connection between cognitive theorizing and stimulus-response *behaviorism*:

[...] the whole meaning of the term “cognitive” depends on [the stimulus-response idea], though cognitive psychologists seem unaware of the fact. The term is not a good one, but it does have meaning as a reference to features of behavior that do not fit the S-R formula; and no other meaning at all as far as one can discover.²⁵

In fact, even after many years, the textbooks continue to define “cognition” as what goes on between the stimulus and response. (More of this later.)

3 Traditional cognitivism

Traditional cognitivism usually comes as a package. The obvious component has been the commitment to *representational theory*: we do not experience the world but an internal mental surrogate of it. But there is also a commitment to un-

worldliness. Despite important caveats, Neisser claimed that «psychology, like economics, is a science concerned with the interdependence between certain events rather than with their physical nature».²⁶ However, the most extreme statement of this commitment I have encountered goes as follows: «a science of structure and function *divorced* from material substance».²⁷

Then there is *intellectualism*. To repeat my initial quote from Ryle, a commitment to «the language of the examination room». George Mandler gives an amusing comment on this in relation to a session he attended with Noam Chomsky:

[...] being the ultimate theorist of pure mentalism, [Chomsky] finally broke out to discuss the behavior of a baseball outfielder catching a flying ball. For Chomsky, this was a complex computational problem because the task obviously involved the “solution of several simultaneous equations”. Tell that to Joe DiMaggio!²⁸

There has also been the fundamental commitment to “*the unconscious mind*” stemming from Helmholtz’s notion of “unconscious inference”.²⁹ Once you take this route you can get away with theoretical murder.³⁰ For example, if Di Maggio didn’t realize that he was both as an athletic and mathematical genius, it was simply because he was unaware of it in the latter case. His cognitive unconscious was doing all the work.

4 The “cognitive revolution” as the overthrow of behaviourism?

As the social psychologist Solomon Asch suggested:

current cognitive psychology, despite the striking change of language it has introduced, [is] perhaps too often a guise for a newly attired behaviorism, a species of [...] cognitive behaviorism.³¹

As I see it, there are (at least) three “hang-overs”

within traditional cognitivism from behaviourism.

First, there is the continuing commitment to Stimulus-Response, or Input-Output, psychology. “Cognition” is supposed to be what goes on between. The mind is active, the body is passive and receptive. Ironically, a rare psychologist, James Gibson, who eventually rejected this scheme is (misrepresented) as its purist exponent.³²

Second, there is the retention of the hypothetical-deductive method:

The activity that dominates cognitive psychology today is not empirical exploration but something quite different: namely, the making and testing of hypothetical models. Ironically, the “hypothetico-deductive method” that was so strongly advocated by Hullian behaviorists half a century ago has become the stock-in-trade of their cognitivist successors. They argue that research should always begin with a theory; not just any theory, but a specific model of the internal processes that underlie the behavior of interest. That mental model is then tested as thoroughly as possible in carefully designed experimental paradigms. When it has been proven false (as it invariably is), a revised model is constructed so that the cycle can begin anew. The aim of the research is not to discover any secret of nature; it is to devise models that fit a certain range of laboratory data better than their competitors do.³³

In the same year, Neisser gave a specific example:

Images, models, and human nature. Why does the theory suggested here strike the reader as clever rather than insightful, as cute model making rather than serious psychology? I think it is because the thinking of Kosslyn and his collaborators is completely detached from everything we know about human nature or about perception, thinking, and the nervous system. Like much contemporary work in “information processing”, it attempts to “account for” a sharply restricted body of experimental results (usually reaction latencies) by relating it to an equally restricted class of models (usually computer programs or something similar).³⁴

The most insidious carry-over is “methodological behaviourism” – that all we can experience of another person or other animal directly is just, to use Clark Hull’s term, mere colourless movements. In short, there is a dualism of mind and behaviour. Here are three examples:

Your private experience is a theoretical construct to me. I have no direct access to your private experience. I do have direct access to your behavior. In that sense I’m a behaviorist.

In that sense, *everybody* is a behaviorist today.³⁵

Because psychologists were growing impatient with introspection, the new behaviorism caught on rapidly [...]. The modern cognitive perspective is in part a return to the cognitive roots of psychology and in part a reaction to the narrowness of behaviorism and the S-R view [...]. Like the 19th century version, the modern study of cognition is concerned with mental processes such as perceiving, remembering, reasoning, deciding, and problem solving. Unlike the 19th-century version, however, modern cognitivism is not based on introspection. Instead, it assumes (1) only by studying mental processes can we fully understand what organisms do, and (2) we can study mental processes in an objective fashion by focusing on specific behaviors (just as behaviorists do) but interpreting them in terms of underlying mental processes.³⁶

Behaviorism was an exciting adventure for experimental psychology but by the mid-1950s it had become apparent that it could not succeed. As Chomsky remarked, defining psychology as the science of behavior was like defining physics as the science of meter reading. If scientific psychology were to succeed, mentalistic concepts would have to integrate and explain the behavioral data. We were still reluctant to use such terms as “mentalism” to describe what was needed, so we talked about cognition instead.³⁷

“Behaviour” has for a very long time been a highly problematic term and that is a serious problem given it is such a key psychological term. It can refer to mindless, colourless movements, or to *meaningful* action, or even to how we “behave ourselves” in relation to social norms. As Tolman pointed out, Watson “dallied” with the first two senses.³⁸

All this stuff about behaviour as colourless movement (Hull’s term) when it comes to psychological research is, I insist, just plain rhetorical nonsense. What the behaviourists were *actually* studying were meaningful activities: rats trying to find a goal in a maze, or cats, when they could be bothered, getting out of puzzle boxes. Although, Skinner also dallied with the official term “behavior”, he finally came clean: «operant behavior is the very field of purpose and intention. By its nature it is directed towards the future».³⁹ In short, the behaviorists were hardly “behaviorists” in the reductionist and physicalist sense they are still cracked up to be.

All this should be ancient history, if not for the fact that many current psychologists have invoked this idea of “colourless movement” and made highly successful careers by coming up with incoherent theories of how we all get beyond “behaviour” (as colourless movement) to our fellow be-

ings' minds in relation to *Theory of Mind*.⁴⁰

5 Conclusion: Protecting the cognitivist core?

In 1974 I went to a seminar Imre Lakatos gave when I was a Ph.D. student at Birmingham. (He died just a few days later). His work was directed against Karl Popper's principle of falsification. His argument was that theories are not easily falsified at all. The core of a theory becomes surrounded by theoretical elaborations when problems are identified in order to protect the theoretical core – in this case what I will call “cognitivism”.

I am well aware that a lot of clever people have been elaborating the concept of “cognition” in various ways, most notably in relation to 4E cognition: embodied, embedded, enactive and extended. Curiously, other alternative approaches have been forgotten or side-lined, such as situated action, cognition in practice, ethnomethodology, and the ecological approach. They are, it seems, not part of the club.⁴¹

What I have tried to show in this chapter is that “cognition” was peripheral in psychological language until the 1960's and its entry was not completely smooth. Furthermore, some central aspects of the behaviorism that the “cognitive revolution” was supposed to have “overthrown” have been retained to the present day.

The term “cognition” has not only gone a long way since the 1960's but has also headed off in several different directions in relation to psychological theory, even within 4E. So, are we still talking about the same “thing” as the traditional cognitivists and, indeed, are the current generation of theorists talking about the same thing even among themselves? After all, as Kitchener⁴² has explained, the behaviourists ended up using a crazily diverse range of meanings for “behaviour”: so many that they could hardly keep track of them. Is it just possible that we ourselves don't really know what we are talking about when we talk about “cognition.” If so, let's forget it and find some better words.

Notes

¹ G. RYLE, *The concept of mind*, p. 258.

² W. JAMES, *The principles of psychology*, vol. I, p. 112

³ Entry to the index of William James's *Principles of psychology*.

⁴ G. KELLY, *Man's construction of his alternatives*, p. 91

⁵ Cf. U. NEISSER, *The imitation of man by machine*.

⁶ Cf. R. SHAW, *Theoretical hubris and the willingness to be radical: An open letter to James J. Gibson*, p. 246.

⁷ Cf. A. COSTALL, A. STILL (eds.), *Cognitive psychology in question*.

⁸ Cf. I. STUART-HAMILTON, Review of A. Costall, A. Still (eds.), *Cognitive psychology in question*.

⁹ Jonckheere (“Jonck”) was also visiting Oxford at the time and told me about the review and seemed un-

kindly amused. (I had earlier worked with him at UCL.)

¹⁰ U. NEISSER, *Cognition and reality: Principles and implications of cognitive psychology*, p. xiii.

¹¹ For some reason, Neisser seemed never to understood the simple logic of schema theory: when the material is strange (as with Bartlett's “*War of the Ghosts*”) recall should be difficult; but when the material is familiar and therefore assimilable to the available schemas, recall, according to the theory, should be relatively easy (see J. OST, A. COSTALL, *Misremembering Bartlett: A study in serial reproduction*; J. OST, J. UDELL, S. DEAR, J. ZINKEN, H. BLANK, A. COSTALL, *The serial reproduction of an urban myth: revisiting Bartlett's schema theory*).

¹² E.T.R. HILGARD, *The trilogy of mind: Cognition, affection, and conation*, pp. 106 and 116. Neisser makes essentially this same point in U. NEISSER, *The imitation of man by machine*.

¹³ B.R. GAINES, M.L.G. SHAW, *Personal construct psychology and cognitive revolution*.

¹⁴ Cf. R. JARDINE, *Elements of the psychology of cognition*; J. MC COSH, *Psychology: The cognitive powers*.

¹⁵ R. JARDINE, *Elements of the psychology of cognition*, pp. 1-2.

¹⁶ C. SPEARMAN, *Nature of intelligence and principles of cognition*.

¹⁷ Cf. T.V. MOORE, *Cognitive psychology*.

¹⁸ Cf. T.J. KNAPP, *The emergence of cognitive psychology in the latter of the twentieth century*.

¹⁹ Cf. R.S. LEEPER, *Cognitive processes*.

²⁰ *Ibid.*, p. 737.

²¹ W. KESSEN, *Early settlements in new cognition*, p. 168.

²² M. MOROZ, *The concept of cognition in contemporary psychology*, p. 178.

²³ W.J. MC KEACHIE, C.L. DOYLE, *Psychology*.

²⁴ A.S. BROWN, *Review of Information Processing and Cognition: The Loyola Symposium*, edited by Robert L. Solso, p. 357.

²⁵ D. HEBB, *The American revolution*, p. 737.

²⁶ U. NEISSER, *Cognitive psychology*, p. 7.

²⁷ Z.W. PHYLYSHYN, *Computation and cognition*, p. 68 - emphasis added.

²⁸ G. MANDLER, *Interesting times: An encounter with the 20th Century 1924*, p. 208. Joe Di Maggio was a famous base-ball player.

²⁹ This was the point about William James's complaint about the appeal to «this additional wheel work in the mind» (W. JAMES, *The principles of psychology*, vol. II, p. 112). For an uncritical celebration of “the cognitive unconscious”, cf. T.C. MEYERING, *Historical roots of cognitive science: The rise of a cognitive theory of perception from antiquity to the nineteenth century*.

³⁰ Cf. J. COULTER, *Rethinking cognitive theory*.

³¹ S. ASCH, *Social psychology*, Oxford University Press.

³² A. COSTALL, P. MORRIS, *The “Textbook Gibson”: The assimilation of dissidence*.

³³ U. NEISSER, *The future of cognitive science: An ecological analysis*, p. 248.

³⁴ U. NEISSER, *Commentary on “The demystification of mental imagery*, p. 561.

³⁵ G. MANDLER, *Interview with George Mandler*, p. 256.

³⁶ R.L. ATKINSON, R.C. ATKINSON, E.E. SMITH, D.J. BEM, S. NOLEN-HOEKSEMA, *Hilgard's introduction to psychology*, pp. 12-13 – emphasis added.

³⁷ G.A. MILLER, *The cognitive revolution*, p. 142.

³⁸ E.C. TOLMAN, *Purposive behavior in animals and men*, p. 6.

³⁹ B.F. SKINNER, *About behaviorism*, p. 61.

⁴⁰ Cf. I. LEUDAR, A. COSTALL (eds.), *Against theory of mind*.

⁴¹ Admittedly, Chemero draws upon ecological psychology but it is the reductionist Connecticut version (cf. A. COSTALL, *The hope of a radically embodied science*).

⁴² Cf. R.F. KITCHENER, *Behavior and behaviorism*.

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