“Animal Spirits” in John M. Keynes’s Economic Theory: Origins, Precursors, Meaning(s) and limited Relevance

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1 Introduction

The recent global financial and economic crises has led to renewed interest in the economic theories of John Maynard Keynes. He is stylised as the “Returned Master” whose insights into the working of capitalist economics have been forgotten too long, to the detriment of public welfare. This new round of re-assessing Keynes’s economics focuses on the Paradox of Thrift, the necessity to stabilise or even boost aggregate by deficit spending, the Zero Lower Bound of the nominal rate of interest (albeit mistaken as an instance of the Liquidity Trap) and the concept of “animal spirits”. The latter element was introduced by Keynes in his *General Theory of Employment, Interest and Money* of 1936 and was recently promoted into prominence by a book with this title by two Nobel-laureates (Akerlof and Shiller 2009a; 2010).

But as Skidelsky (2011) has pointed out, Keynes did not return to the concept of “animal spirits” after the publication of his *General Theory*, even not when he tried to counter some first reactions to this book and used this opportunity to clarify his understanding of uncertainty of the future and its role in his new theory.

The next section will give a very short sketch of the extremely long history of the idea of “animal spirits”. Section 3 will over the range of present-day interpretations of “animals spirits” within an economic context. Section 4 will deal with the three instances of the use of “animal spirits” in the *General Theory*, while the next two section will present some precursors of “animal spirits” and some problems of present-day interpretations in connection with Keynes’s analysis in the General theory, respectively. The penultimate section will analyse a neglected passage / section of Chapter 12, in which Keynes reduces the relevance of uncertainty and

therefore of “animal spirits” significantly, which may have been a reason for abandoning this concept. The last section sums up.

2 The history of “animal spirits”

The history of “animal spirits” goes back to ancient Greek philosophy and medicine (see Barens 2013).

At the hands of Descartes the physiological concept of three different spirits was simplified and used as a philosophical hypothesis in his theory of the interaction between body and soul (Hergenhahn / Henley 2014). He conflated the natural, vital and animal spirit of ancient Greek physiology into “esprits animaux” and argued that these extremely small particles (that he characterised as similar to a soft wind or a flame) by moving through the body would, on the one hand, carry information about the exterior world to the rational soul, while, on the other hand, the soul would govern body movements etc. by directing the “animal spirits” in particular directions.

The idea of “animal spirits” became the “hypothesis of choice” to analyse and discuss the reflex arch,[1] perceptions, the emergence of ideas, memory functions, sleep, emotions, and even the declination to write poetry, engaging great thinkers of the 17th and 18th centuries like Malebranche, Hobbes, Hume, Newton, Locke etc.

Of course there were detractors of Descartes’ basically hydraulic theory of the body-mind-interaction. Swammerdam conducted experiments that showed no change in volume of contracted vs. non-contracted muscles, thus contradicting Descartes argument that muscle contraction is caused be the massive inflow of “animal spirits” into the muscle while Galvani showed that a severed frog leg could be made to twitch by stimulation with an electric spark, showing that no flow of “animal spirits” from the brain to the animal’s extremity was necessary (or even possible).

But only after the discovery of the nerve cell and the clear recognition of the electrical nature of the nerve impulse in the first half of the 19th century the idea of “animal spirits”, seen as minute particles circulating through the body, eventually became irrevocably redundant (Ochs 2004; Campenot 2016; Clower 2012).

[1] Descartes is credited with the first consistent, even if erroneous, explanation of reflex movements; see Coren (2003, 94) for the role and significance of unconscious processes in his theory of the reflex arch. Keynes’ s remark in his lecture notes of his first year at university “unconscious mental action” (see below) may be a reference to Descartes’ account of the reflex arch.

But even after the final paradigmatic shift from “animal spirits” to “animal electricity” (Campenot 2016) the term “animal spirits” lived on as a metaphorical phrase in literature as well as scientific writings like Darwin (1872), sometimes shortened to just “spirits”, signifying mental states like joy, exuberance, cheerfulness etc. (high [animal] spirits) on the one hand and grief, dejection, depression etc. (low [animal] spirits) on the other.

The shortened phrase was used by Keynes in private correspondence (Moggridge 1992a, 105, 182) and in a radio broadcast in 1942, when he spoke of “the early days of the war, when all sources of comfort to our spirits were at a low ebb (Keynes 2010, 176).

The important difference between the physiological / philosophical and the metaphorical meaning of the term “animal spirits” lies in the fact that the first comprises the idea that minute particles are moving through the body thereby inducing certain mental states etc. while the second is used to specify mental states as such.

3 Present-day interpretations of “animal spirits”

The present discussion of “animal spirits” shows a bewildering diversity of interpretations (besides using the term without any explanation)[2] ranging from expectations (Davidson 2009), waves of optimism and pessimism (de Grauwe 2010), shifts in sentiments (Barsky and Sims 2009), irrational exuberance (Shiller 2005, but see Shiller 2015, 10, 284n14), hybris (Zandi 2008), fear and greed (Lo 2013), overconfidence (Skousen 2008), trust, fairness, stories (narratives), corrupt behaviour and money illusion (Akerlof and Shiller 2009; 2010), fear and euphoria, risk aversion, herd behaviour, dependency, home bias, competition, self-interest, optimism (in contrast to realism), code of values, bias to value next of kin and time preference (Greenspan 2013) to fundamental psychological instabilities, changes in inconstant perceptions, healthy exuberance, and even the demand for stocks by ordinary investors (in contrast to “smart money”) (Shiller 2015), with “animal spirits” influencing the economic decisions of entrepreneurs, financiers, consumers, workers etc. and even of institutions like banks (Le Heron 2008, 296; 2012, 278; Shaikh 2016, 626). Some very recent contributions link “animal spirits” to animal instincts

(Sedlacek 2011; Barnett 2015; 2016; Berlin 2015) or seem to go back to a physiological understanding of this term (Lainé 2014).

4 John Maynard Keynes on “animal spirits”

Compared to the bewildering range of meanings attributed to “animal spirits” Keynes did discuss are very narrow and limited understanding of this concept. He saw just one set of decisions, concerning real investment, of one group of economic agents, entrepreneurs, as influenced by “animal spirits”. And he introduced this concept because investment decisions must take into account future events, about which very little, if at all anything, can be known for certain.

In Chapter 12 (The State of Long-term Expectations) Keynes discusses the problem of whether the prospective yields necessary to calculate the marginal efficiency of capital can be determined given that the future can only be forecasted with more or less confidence. He poses the question whether stock market participants will be able to solve this problem and answer this question on the negative, adding that they are not even interested in any such long-term considerations. Instead of trying to “defeat the dark forces of time and ignorance which envelop our future” (Keynes 1936 [1973], 155) they base their actions on “conventions” and are interested in outwitting the crowd (*ibid*.).

Keynes then turns to the entrepreneur actually carrying out any investment project and it is here that he introduces “animal spirits”. These three instance are:

> “Even apart from the instability due to speculation, there is the instability due to the characteristic of human nature that a large proportion of our positive activities depend on spontaneous optimism rather than on a mathematical expectation, whether moral or hedonistic or economic. Most, probably, of our decisions to do something positive, the full consequences of which will be drawn out over many days to come, can only be taken as a result of animal spirits—of a spontaneous urge to action rather than inaction, and not as the outcome of a weighted average of quantitative benefits multiplied by quantitative probabilities” (Keynes 1936 [1973], 161).

[2] Vines (1976, 227), Le Heron (2012, 276), Harvey (2016, 277, 283) and Shaikh (2016, 42f, 591, 607, 635, 653, 773).

> "Thus if the animal spirits are dimmed and the spontaneous optimism falters, leaving us to depend on nothing but a mathematical expectation, enterprise will fade and die;—though fears of loss may have a basis no more reasonable than hopes of profit had before. ... individual initiative will only be adequate when reasonable calculation is supplemented and supported by animal spirits, so that the thought of ultimate loss which often overtakes pioneers, as experience undoubtedly tells us and them, is put aside as a healthy man puts aside the expectation of death" (162).

These are the only instances of Keynes making use of the term "animal spirits" in all of his published writing.[3,4,5]

Keynes's use of the term is not without ambiguities. For the present discussion only two will be dealt with. It is not clear whether Keynes's argument in section VII of Chapter 12 is meant to apply to its previous sections, and thus to the stock market, as well (just as the converse is unclear as well[6]). Keynes speaks of a "spontaneous urge" and "spontaneous optimism" leaving the reader to guess whether these remarks are meant to be a definition or a description of just one characteristic of "animal spirits". But most importantly, it is unclear whether "animal spirits" are complementary to the "cold calculation" of a weighted average of quantitative benefits multiplied by quantitative probabilities or substitutional. The passage above seems to suggest a complementary relation; but at the end of section VII Keynes hints at a substitutional relation when he speaks of "our rational selves choosing between the alternatives as best we are able, calculating where we can, but often falling back for our motive on whim or sentiment or chance" (Keynes 1936 [1973], 163).

5 Some Precursors of "animal spirits" in economics

Keynes was not the first to either use the term „animal spirits" in an economic context or to argue that entrepreneurs will not base their investment decisions on the present value of prospective profits. In what follows, some early instances of the use of

[3] The only other known instance is in Keynes's lecture notes written in his first year at the University of Cambridge; Moggridge (1992b).
[4] See the appendix for the discussion of three spurious instances of Keynes using „animal spirits".
[5] See Skidelsky (2011) for Keynes acknowledging the influence of "animal spirits" without naming them.
[6] See Kahn (1984, 151-156)

"animal spirits" within an economic context will be presented; after that some instances of the argument that entrepreneurial investment decisions do no rely on "cold calculation" will be discussed.

According to *The Oxford English Dictionary* (Simpson und Weiner 1989; Safire 2009) the term "animals spirits" was used in an economic context in William Wood's *Survey on Trade* published in 1719:

> (t)he Increase of our Foreign Trade ... whence has arisen all those Animal Spirits, those Springs of Riches which has enabled us to spend so many millions for the preservation of our Liberties.

More than hundred years later Mill (1848, 127; 1857, 157) mentions the effect of switching between occupations on "animal spirits":[7]

> "It is a matter of common experience that a change of occupation will often afford relief where complete repose would otherwise be necessary, and that a person can work many more hours without fatigue at a succession of occupations, than if confined during the whole time to one. Different occupations employ different muscles, or different energies of the mind, some of which rest and are refreshed while others work. Bodily labour itself rests from mental, and conversely. The variety itself has an invigorating effect on what, for want of a more philosophical appellation, we must term the animal spirits; so important to the efficiency of all work not mechanical, and not unimportant even to that."

This observation, together with the use of "animal spirits" is echoed in the first volume of Marx' Capital, when its author points out that

> "...constant labour of one uniform kind disturbs the intensity and flow of a man's animal spirits, which find recreation and delight in mere change of activity" (1890 [2010], 346).

As Ozawa (1992) has pointed out, in the context of his analysis of the effects of co-operation of workers on labour productivity, Marx (1890 [2010], 331) observes that

[7] Maybe Hume (1739 [1902], 352) can be mentioned here as well, speaking of a "continual search after amusement in gaming, in hunting, in business; by which we endeavour to forget ourselves, and excite our spirits from the languid state, into which they fall, when not sustain'd by some brisk and lively emotion".

> "...apart from the new power that arises from the fusion of many forces into one single force, mere social contact begets in most industries an emulation and a stimulation of the animal spirits that heighten the efficiency of each individual workman. Hence it is that a dozen persons working together will, in their collective working day of 144 hours, produce far more than twelve isolated men each working 12 hours, or than one man who works twelve days in succession."[8]

Schumpeter, when discussing the entrepreneur in his *Theory of Economic Development*, emphasises the lack of information about future events (Schumpeter 1934, 85), the absence of a "hedonistic" calculus of balancing probable results against disutility of effort (93) etc.

More to the point seems to be a passage in Wicksell's *Geldzins und Güterpreise*, published in 1898, as Wicksell anticipates both Schumpeter, by comparing the investment activity to a game of chance, and Keynes (1936, 161), by arguing that entrepreneurs often will not be guided by the moral expectation ("moralische Hoffnung") of prospective yields (Wicksell 1898, 95):

> „Aus Gründen, welche mit dem Begriffe des subjektiven Wertes zusammenhängen, müssen allerdings die Gewinnchancen des Unternehmers regelmäßig etwas grösser sein als seine Verlustchancen, da sonst seine „moralische Hoffnung" negativ sein würde. In vielen Fällen dürfte übrigens doch der Reiz des Glückspiels die Unternehmer veranlassen, sich über diese Regel hinwegzusetzen."

The corresponding passage in the English translation, published in 1936 under the title *Interest and Prices*, shows a slight change of meaning by substituting "entrepreneurs gambling spirit" for "allure of game of chance" ("Reiz des Glückspiels") (Wicksell 1936, 104).

> "But for reasons connected with the conception of subjective value, the probability that an entrepreneur will make a profit must always be somewhat greater than the probability that he will make a loss. For otherwise his "moral expectation" would be negative. In many cases, however, the entrepreneurs' gambling spirit will prevent this rule from applying to their behaviour."

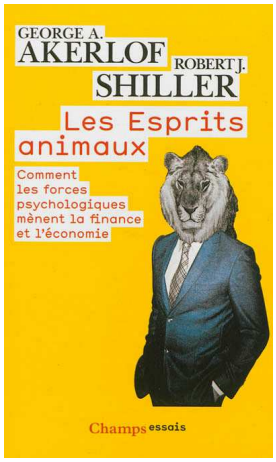
[8] In addition see Marx (1890 [2010], 334)

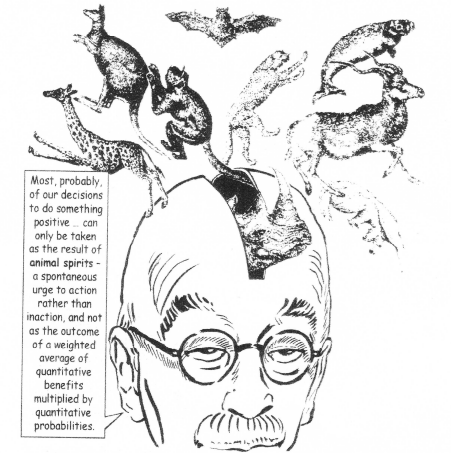
The translator of Wicksell's book was Richard Kahn, who finished his translation in August 1935. According to Moggridge (1994) Keynes read the proofs in September.

6 Some problems of present-day interpretations of "animal spirits"

Insofar as "animal spirits" are considered to be the cause of volatile behaviour and insofar as they influence consumers, such an interpretation of "animal spirits" runs the danger of jeopardising the stabilising effect of the marginal propensity to consume. With the help of assuming a positive marginal propensity to consume of less than one, Keynes was able to solve the devastating implication of his "banana parable" presented in his Treatise on Money to illustrate the Paradox of Thrift - that the long period equilibrium position would be an unstable equilibrium.[9] As he pointed out in 1937, this was "of the utmost importance in the development of my own thought, and it is, I think, absolutely fundamental to the theory of effective demand as set forth in my book" (Keynes 1937 [1973], 120).

As has been noted above, in the last few years an understanding of "animal spirits" is gaining ground that sees the adjective "animal" as indication of a zoological connotation of this concept. To give just two examples of a graphical expression of this view see the cover of the French paperback edition of Akerlof and Shiller's "Animal Spirits" and a drawing from a graphic guide to economics.





Orrell / Van Loon (2011, 118)

[9] See Barens (1989) for an analysis of Keynes's solution to this problem.

Interpreting “animal spirits” as referring to animalistic characteristics of humans or human behaviour shows a misunderstanding of the etymological history of this term: “Animal” does refer to the soul (“anima”), not to animals. And nothing in Keynes’s relevant statements hints at the possibility that he wanted to argue that such a link does exist or should be understood.

Furthermore, linking the entrepreneurial investment decision to “animal instincts” is not very illuminating and runs the risk of going against the gist of Keynes’s argument in Chapter 12. If instinct is meant to refer to complex but unlearned (!) behaviour patterns set in motion by certain impulses, a quasi-automatic impulse-reaction is substituted for just another automatism. And it was Keynes’s objective to call into doubt an automatic link between the comparison of rate of interest and marginal efficiency of capital (impulse) and the investment decision of entrepreneurs (rfeaction). Moreover to think that entrepreneurs undertake investment projects just like, say, birds are building their nest, do not seem to command too much plausibility.)

Finally, if instinct just stands for one of its meanings in everyday speech, intuition, one metaphor is replaced by just another one.

7 The limited influence of uncertainty and “animal spirits” on investment

After having discussed the problem of prospective yields of an investment project against the backdrop of the uncertainty of future events and after introducing “animal spirits” as an important determinant of entrepreneurial decisions, Keynes, in the last section of Chapter 12 (a part of the General Theory that, to the knowledge of the present author, seems to have been rather neglected), offers some arguments that reduce the relevance of “animals spirits” significantly, and maybe even drastically.

In this final section VIII of Chapter 12, Keynes refers to “certain important factors which somewhat mitigate in practice the effects of our ignorance of the future” (Keynes 1936 [1973], 163). He proposes three kinds of real investment and cites the reduced relevance of prospective yields accruing far in the future.

In the case of buildings, the “most important class of very long-term investments” (*ibid*.), risk often can be transferred from the investor to the user, or shared between both, by means of long-term contracts.

In the case of public utilities, “another important class of long-term investments, the prospective yield is practically guaranteed, by monopoly privileges and charged rates providing a stipulated margin (*ibid*.).

Finally, Keynes mentions the growing class of “investments entered upon by, or at the risk of, public authorities”. These investments are not influenced by the question whether the “mathematical expectation of the yield is at least equal to the current rate of interest” (*ibid*.).

To give an idea of the quantitative dimension of these classes of investment: in the case of Germany, these three classes amount to roughly half of total aggregate investment expenditure; a ratio that even would be significantly higher if investment in wind power plants, solar thermal power stations etc. were taken into account as well.

Even if this consideration of certain kinds of real investment already diminishes the influence of uncertainty and thus the relevance of “animal spirits”, the last argument of Keynes to be considered may call into doubt their bearing upon entrepreneurial investment decisions altogether.

> “Owing to the operation of compound interest combined with the likelihood of obsolescence with the passage of time, there are many individual investments of which the prospective yield is legitimately dominated by the returns of the comparatively near future” (*ibid*.).

Maybe what Keynes seems to driving at in this passage can be expressed as follows: there are two counteracting influences at work concerning the prospective yield of a long-term investment project. On the one hand, the uncertainty increases the farther in the future the respective yield is expected to accrue; on the other hand, at the same time, its influence on the demand price of the investment project decreases. Business Administration investment theory takes account of this possibility with the help of concepts like “Pay-Back Period” or “Pay-Off Period”.

In his correspondence with Hicks discussing the latter’s SI-LL (IS-LM) model in April 1937 (Keynes 1937 [1973], 80) while discussing the role of current income, Keynes, in keeping with his argument in the General Theory, emphasises that expected income over the investment period is the relevant variable in the case of the inducement to invest. In contrast to Chapter 12 of his *General Theory* he speaks of the determination of prospective yields without any reference to uncertainty and hints

at the possibility that entrepreneurs may be over-influenced by present income, but that not too much stress should be laid on such a “psychological influence”.

Maybe, after having allowed himself the “pleasure of a full gallop” (Kahn 1984, 150) in Chapter 12, the implications of these “mitigating factors”, together with other ambiguities of this chapter, some of which have been mentioned above, are the reason why Keynes did not return to the notion of “animal spirits” after 1936. When he used the opportunity to react to some early receptions of his *General Theory* in the year after its publication, he still emphasised the uncertainty of the future and but did not invoke the “animal spirits” of the latter part of Chapter 12; instead he referred to the notion of “convention” he had introduced in the earlier part of this chapter (Keynes 1936 [1973], 152ff), arguing that individuals fall back on a “conventional judgment” (Keynes 1937 [1973], 114)

8 Summing up

After having served as the hypothesis of choice to analyse and discuss the reflex arch, perceptions, the emergence of ideas, memory functions and emotions “animal spirits” as a physiological / philosophical notion were discarded in the first half of the 19th century a the latest due to the discovery of the nerve cell and the electrical nature of nerve impulses. While the physiological / philosophical notion of “animal spirits” saw them as extremely tiny particles moving through the body and thereby causing bodily movements and mental states, the surviving metaphorical notion of “animal spirits” was (and is used) as a description of certain mental states themselves.

Present-day interpretations show a amazing multitude of meanings and effects attributed to “animal spirits” which not always appear to be consistent with their meaning and role in Keynes’s thought.

A neglected argument of Keynes identifying quantitatively important classes of real investment largely exempt from the uncertainty of prospective yields together with his observation that prospective yields that accrue far into the future will have small effects on the discounted value of prospective yields may have been the reason why Keynes in 1937 did not take up the concept of “animal spirits” instead emphasising “conventions” and “conventional judgement”, concepts he had already discussed in his *General Theory* with reference to the stock market.

APPENDIX

Some spurious attributions to Keynes of the use of the term “animal spirits”

Three instances that might be seen as evidence of Keynes using, or at least encountering, the term “animal spirits” between 1902/03 and 1936 may be mentioned. But closer inspection of these cases will cast all three into doubt.

1.

In 1989 Thomas K. Rymes published a compilation of Keynes’s lectures of the years 1932-1935 (Rymes 1989) based on transcripts of notes of these lectures taken by some students (including Bryce, Cairncross, Champernowne, Tarshis etc.)(Rymes 1988).

On page 36 of Rymes (1989) “a change in the level of investment, arising from an increase in animal spirits” is mentioned, while on page 39 the term “animal spirits” is present a second time.

As these passages deal with Keynes’s lectures for the Easter Term 1932 these occurrences would be able to fill the long gap between the lecture notes and the final *General Theory*.

But the transcripts of notes that form the base of Rymes (1989) do not contain the term “animal spirits”.[10] Therefore one must conclude that the occurrence of the term “animal spirits” is solely due to Rymes’ own choice of wording.

2.

In the second volume of his biography of Keynes, Skidelsky (1992, 322ff) seems to document the use of the term “animal spirits” by Keynes in his testimony before the Macmillan Committee (Committee on Finance and Industry).

The relevant passage that mimics the question-answer format of the Minutes of the Macmillan Committee is as follows:

[10] I am grateful to Edward W. Fuller for verification of this assessment.

> "I am the first economist, I think, to emphasise the speculative motive in investment decisions arising from uncertainty as to the future price of securities. Given this uncertainty, investment is very much a matter of animal spirits. ... I know what I am talking about because I have been playing this game myself for the last ten years" (Skidelsky 1992, 323)

This passage could be of importance because of at least two aspects. The Macmillan Committee was active from November 1929 to February 1931; furthermore, Skidelsky speaks of Keynes explaining the plot of the Treatise on Money a few before its publication (in February 1930) Thus evidence given by Keynes could be an additional and early instance of the his use of the term "animals spirits". Furthermore, as Keynes never was an entrepreneur deciding on real investment, his reference to "playing this game myself" could indicate that he saw "animal spirits" at work not only in connection with entrepreneurial decisions concerning real investment, but on the stock, bond and commodity markets as well.

But this passage, although it bears some resemblance to Keynes' private evidence before the Macmillan Committee on February 21st 1930, can be verified neither in the minutes of this evidence in Moggridge (1981, 66-93) nor in the minutes of the Macmillan Committee (Macmillan Committee 1931). Pages 322-325 of Skidelsky (1992) contain a dialogue based on a compilation of ideas expounded in the Treatise on Money and Keynes' evidence before the Macmillan Committee and created by Skidelsky himself.[11]

3.

Barnett (2015; 2016) refers to the fact that G. F. Stout, in his *Manual of Psychology*, which Keynes did study extensively in preparation for taking the Civil Service entrance examination in August 1906, did "use" the term "animal spirits", "describing them as a link between body and soul, part of the mechanism by which the immaterial acted on the physical" (Barnett 2015, 326).[12]

[11] Robert Skidelsky, email to the author, May 19th, 210.
[12] See as well the Wikipedia entry on „Animal spirits (Keynes)" https://en.wikipedia.org/w/index.php?title=Animal_spirits_(Keynes)&printable=yes (8:39, May 4th, 2016)

This might suggest that Keynes did come across the term “animal spirits” in December 1905 (Skidelsky 1983, 167) and, as the source being a standard textbook by a renowned psychologist, was inspired to pursue such a line of thought.

But, contrary to such an interpretation, Stout rejected any such idea. This is what Stout (1899, 543) has to say about “animal spirits” (the third edition of 1924 contains exactly the same passage on page 669):

> "The last important survival of the doctrine of the material soul in scientific thought is contained in the doctrine of "animal spirits," as held, for example, by Descartes. The animal spirits consist of a fine form of matter constituting a connecting link between the body and the soul, but they are no longer regarded as themselves capable of any kind of conscious experience. They are merely part of the mechanism by which the immaterial principle acts on the body and is acted on by it. Thus the material soul for Descartes is a soul no longer; it is merely a mode of matter, and like all other matter sharply and rigidly distinguished from all conscious existence. With the advance of modern physiology, it became displaced even from this position, and was recognised as a figment."

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