

## CHAPTER SEVENTY

## SCIENCE AND THE OCCULT



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## INTRODUCTION

Writing about ‘science and the occult’ is made difficult by the significant ambiguity both these terms represent. ‘Science’ may variably be defined in a *sociological* sense as a set of institutions, in a *substantial* sense as a certain body of facts, hypotheses, theories, and models, in an *epistemological* sense as a certain set of methods for building secure knowledge, or, indeed, in any combination of these three. Similarly, ‘the occult’, has been described variously as a certain set of doctrines, worldviews, or phenomena, as a certain ‘mentality’, way of thinking, or mental habit, or as a socially defined ‘deviant’ subculture. To discuss science and the occult it is therefore paramount to reflect on definitions and meanings of terms: results will vary depending on what one takes each to mean. For example, physical phenomena that have at some point in history been labeled ‘occult’, such as magnetism or gravity, have been important subjects for scientific inquiry and theorizing, but ‘occult thought’ defined as a cognitive habit of analogical thinking and associative linking has more typically been the enemy of ‘scientific method’ considered in a philosophical sense. On the social level things get even more complicated: on the one hand ‘the occult’ has been construed as ‘rejected knowledge’, the wastebasket of modern science and philosophy, and scientific professionals have relied on this notion for constructing their identity vis-à-vis ‘pseudoscientific’ and ‘occult’ Others; on the other, the ‘occult worlds’ of theosophical societies, esoteric orders, spiritualist séances and parapsychological experiments have been well visited and inhabited by people with at least one foot inside of the scientific establishment.

We shall chart some of these complexities in the present chapter. We must, however, start from the crucial recognition that historically, the very meanings of ‘the occult’ and ‘science’ are closely tied together: they are a troubled and often polemical pair that have evolved in tandem and thus share a common genealogy. Tracing the broad lines of this genealogy takes us through three stages: the pre-Enlightenment context of ‘occult science’ in natural philosophy; the explanation of occult qualities in terms of mechanistic philosophy during the so-called scientific revolution; and the post-Enlightenment context of rejected (pseudo)scientific knowledge and the subsequent creation of ‘occultism’ as a largely oppositional self-designation.

## A GENEALOGY OF SCIENCE-AND-THE-OCCULT

## 'Occult qualities' in Pre-Enlightenment Natural Philosophy

The term 'occult' (from Latin *occultus*; 'hidden') has a long history in Western natural philosophy (for an overview, see Hanegraaff, 2005). In the medieval scholastic interpretation of Aristotle, the term 'occult qualities' (*qualitates occultae*) was used to describe the hidden qualities of material things, related to their 'form' rather than their 'substance', which could not be perceived directly but which nevertheless accounted for certain physical, observable *effects*. Thus, all physical properties that did not have a clearly discernable cause from the outside could be labeled occult: the property of attracting or repelling other objects was one such occult quality, but the curative or poisonous effects of herbs, mineral tonics, and 'magical' amulets were also included in the same natural-philosophical category. This was in fact the main meaning of the word 'occult' throughout the middle ages, and we find it used in this form among scholastic philosophers such as Thomas Aquinas.

Occult qualities remained an influential concept in renaissance natural philosophy. In extension, it became central for major representatives of Western esoteric thought. Occult qualities were at the foundations of 'natural magic' (*magia naturalis*), and central to the so-called 'occult sciences', particularly alchemy. Thus, Cornelius Agrippa's influential *De occulta philosophia* (1533) described a system of three worlds with three adjoining forms of magic: the terrestrial or sub-lunar world; the astral or supra-lunar world; and the spiritual and divine world beyond the fixed stars. Natural magic belonged to the lower sub-lunar world, and it worked by the skilled use of knowledge about the occult properties of things: metals, herbs, colours, and the occult correspondences between these and the entities of higher worlds, such as the planets.

## The Mechanization of Occult Qualities during the Scientific Revolution

Occult properties were by no means separated from the legitimate science (or natural philosophy) of the early modern period; there was a continuum between natural *magic* and natural *philosophy*. This started to change during the scientific revolution, but not, as has often been contended, by an outright *rejection* of 'occult properties' (cf. Hanegraaff, 2012: 177–91). It is more correct to say that the emerging mathematical and mechanical paradigm in natural philosophy, associated with names such as Galileo, Descartes and Newton, found in mathematics a way to make the unobservable causes of 'occult qualities' subject to precise measurement, explanation and prediction – a possibility that had effectively been denied by scholastic philosophy. An example of these changing tides is found in Descartes' *Principia philosophiae* (1644): here we find a number of diagrams thought to explain the hidden mechanisms that govern previously 'occult' effects such as magnetism, now made explicable by an atomic theory of matter and the principles of mechanical motion.

An effect of the rise of the so-called mechanical philosophy, which by the eighteenth century had come to include mathematics, astronomy, physics and chemistry (with attempts to subsume biology, mental, moral and political philosophy as well, in the works of e.g. La Mettrie and Hobbes) was that research paradigms that had rested

– Egil Asprem –

on the notion of occult qualities became increasingly marginalized. One example of this process was the separation of chemistry from alchemy by the end of the seventeenth century. This happened in the wake of Robert Boyle's work, sometimes labeled the 'father of chemistry', who is perhaps better described as a laboratory alchemist who embraced the mechanical philosophy and achieved explanatory success thereby (cf. Principe, 1998). What followed during the eighteenth-century Enlightenment was a grand-scale rejection of entire fields of superseded knowledge in natural philosophy, most notably of alchemy and astrology. This is the context in which notions of 'occult sciences' first started to take shape: alchemy, astrology and (natural) magic were all thought to share a foundation in occult qualities and correspondences, which had no place in Enlightenment epistemology.

### The Post-Enlightenment 'Occult': Occult Forces and Rejected Knowledge

It is thus from the Enlightenment period onwards that we can truly speak of a notion of strict *separation* between science and the occult – a primarily polemical dichotomy created by the process of differentiation between modern science and other domains of thought, including philosophy and theology. This process continued in the nineteenth century, with the professionalization of the natural sciences, and the sociological differentiation of 'scientists' as a separate social class, the term 'scientist' having been coined by philosopher William Whewell as late as 1840.

In light of these very significant intellectual and social developments, notions of 'the occult' and of science were rapidly changing, and would come to take on quite different meanings. Two new developments must be mentioned here. First, the ascendancy of the mechanistic philosophy led to a proliferation of pseudo-mechanical occult *forces*, typically formulated by people standing on the boundaries of the emerging modern sciences. Second, the Enlightenment project led to a view of the occult as pseudo-scientific and pseudo-religious 'rejected knowledge'; that is, as an undercurrent of ideas that were not 'scientific' because unacceptable from the standpoint of Enlightenment epistemology, and not 'religious' because unacceptable from the standpoint of established church doctrine (cf. Hanegraaff, 2012).

The notion of occult *forces* appears to have been invented during the Enlightenment under the influence of the mechanical philosophy. Occult forces were distinct from occult qualities in that they were conceived of in terms of pseudo-mechanistic 'laws', invisible 'fluids', or 'fields', modeled on the concepts proposed in the new physics. Indeed, where the prototypical examples of occult qualities were found in the Aristotelian doctrine of forms, the prototypical occult (i.e. hidden) force was found in Newtonian gravity. The notion of material bodies pulling each other from a distance, without any observable intermediary substance, triggered the imaginations of thinkers in other fields, and seemed to lend some legitimacy to postulating similar universal 'laws' and invisible 'forces' in other domains. In fact, a vast number of such forces, often connected to the notion of a subtle, invisible 'ether', were proposed by natural philosophers of the Enlightenment period (Asprem, 2011, 134–35). Most of these theories never made it to the status of scientific orthodoxy: Benjamin Franklin formulated an 'elastic ether' theory to account for electricity, for example, while George Le Sage's 'kinematic ether' was offered as explanation for a wide range of phenomena, including gravity, weight, and chemical affinity (cf. Laudan, 1981).

While most of these unsuccessful theories were simply forgotten, some of that which never became official science (at least not for any substantial period) would become highly influential in the emerging world of the post-Enlightenment ‘occult’. A primary example of this is Franz Anton Mesmer’s notion of ‘animal magnetism’, first conceptualized as a pseudo-mechanistic theory of subtle fluids, interpenetrating the cosmos and living beings, accounting for various physical and psychical ailments as well as special mental rappings between human beings (see the article on Mesmerism and Animal Magnetism). The different theories and practices associated with Mesmerism came to exert an enormous influence on nineteenth-century esoteric currents, notably occultism and spiritualism. It provided a science-like explanation of magic in Joseph Ennemoser’s *Geschichte der Magie* (1844), which in turn became the single most important influence on H. P. Blavatsky’s published works of Theosophy. Eliphas Levi’s massively influential *Dogme et rituel de la haute magie* similarly looked to Mesmerism for its account of the magical agent, ‘astral light’. Finally, the new interpretation of alchemy as *spiritual* alchemy, first outlined in Mary Anne Atwood’s *Suggestive Inquiry into the Hermetic Mystery* (1850), used Mesmerism as the prism through which this physico-spiritual discipline was to be understood.

A number of other occult forces were proposed throughout the nineteenth century, modeled on concepts taken from physics. Among these we should mention the ‘odic force’ of the baron and industrialist Karl von Reichenbach, a form of vital energy named after the Norse god Odin, and the ‘vril force’, invented by the British author Edward Bulwer Lytton for his fantastical novel *The Coming Race* (cf. Strube, 2013). All these occult forces – animal magnetism, astral light, the odic force, vril – found their way into the synthetic doctrines of the Theosophical Society, and became central ‘sciency’ terms in occultism in the nineteenth and twentieth centuries. As forms of rejected scientific knowledge, they became important resources for occultists to *challenge* established science, typically perceived as ‘materialistic’ and ‘dogmatic’, while at the same time claiming a form of rational knowledge for themselves (cf. Hammer, 2001; Aspren, 2012, 446–59).

### SCIENCE AND THE OCCULT IN THE TWENTIETH CENTURY: THREE RELATIONS

At the dawn of the twentieth century, both ‘the occult’ and ‘science’ had acquired meanings that are relatively close to those of our own days. Science referred to a privileged body of knowledge about the natural world, sanctioned by specialist institutions, supported by professional educational programs enjoying high prestige, and basing its epistemic claims on a set of increasingly sophisticated methods of inquiry. The ‘occult’, by contrast, was a residual category that included a great number of rejected knowledges, pursued on a social arena of secret lodges and occult societies, and disseminated through a number of periodicals and books provided by a flourishing occult publishing industry. ‘The occult’ thus included the theory and practice of ritual magic as taught by various Hermetic and Rosicrucian orders; it encompassed the arcane doctrines of Theosophy, the practice of astral travel, the Mesmeric trances, Spiritualist séances, and telepathic and clairvoyant communication; and a number of alternative histories of lost continents, hidden masters, and powerful secret societies were discussed in occult publications. While the contrast with

– Egil Asprem –

professional science is evident, the invocation of reason and scientific legitimacy was seldom far away when such topics were discussed.

Thus, even when we limit our investigation of relations between science and the occult to a period in which these terms are relatively stable, that is, from about the start of the twentieth century until today, the picture remains complex. Recalling the words of caution that opened this chapter, I shall proceed to look at three different kinds of relations between science and the occult, namely: science *in* the occult, the occult *in* science, and science *of* the occult. Together, these three approaches reveal the most central aspects of the complex relationship between science and the occult in the modern world.

### Science in the Occult

As we have already seen, there is a tight genealogical connection between the occult and the disciplines of science and natural philosophy. As a wastebasket category of rejected knowledge, the occult has thus come to include much that, from the perspective of contemporaneous scientists, would be associated simply with superseded or pseudo-scientific knowledge. It is hard to deny that the post-Enlightenment occult has typically been characterized by an *oppositional* ethos – sometimes revolutionary and utopian, other times ‘reactionary’ and counterrevolutionary – that brings an automatic fascination with all that is rejected by religious, political and scientific Establishments (cf. Webb, 1974). Thus references to occult forces bearing exotic, technical-sounding names only accrue over time, as we have seen.

The fascination for rejected and therefore ‘forbidden’ (and therefore powerful and subversive) scientific knowledge can thus be seen as a consequence of the *social form* and status acquired by the occult in the nineteenth century. However, this is not the whole story. The ‘occult’ of any given period (for it must always be seen as tied to historical contexts) shows an equal, if not even higher, interest for contemporary *established* science. Failing to recognize this comes at the risk of automatically assuming ‘the occult’ to represent simply a form of ‘regressive’ tendency of the human mind, a conception that has often been put forward (e.g. Adorno, 1994, 172: ‘occultism is a symptom of the regression of consciousness’) but which hardly squares with the historical evidence. Whether we are talking about Theosophy in the 1880s or ‘New Age’ in the 1970s, spokespersons of the occult are often deeply fascinated in what they consider to be the big scientific questions of their time. In the late nineteenth century, this included things like ether physics and controversies over Darwinian and non-Darwinian theories of evolution (e.g. Asprem, 2011; Asprem, 2013). There were genuine scientific controversies and uncertainties on these issues, and occult spokespersons were more than happy to share their own interpretations. A century later, the basic relation was the same, but now with quantum mechanics in the role previously occupied by ether physics.

How do we interpret occult interest in contemporary science? One aspect has to do with the air of *legitimacy* conferred by the appeal to science in modern society (Hammer, 2001). With the rise of prestige for the scientific project after the Enlightenment, science became a much sought-after commodity. Possessing it is to possess a form of cultural capital that may potentially elevate one’s social status. The

occult has thus found itself in a precarious situation where the legitimacy of science is very much desired, while the perceived worldview-implications of its most successful theories are something to be fiercely combated. The use of scientific knowledge in the occult is thus often part of an exercise in turning science against itself: the scientific Establishment got the basic facts right, but is led astray by materialistic and disenchanting dogma. An initiated, occult interpretation of science is needed to gain the higher insights that essentially *transcend* science, religion and philosophy alike. This type of fascination with ‘higher knowledge’ must be considered a major motivation for modern occult spokespersons to engage with current scientific thinking in the first place (cf. von Stuckrad, 2005; Aspren, 2012, 428–554).

Another aspect that must be mentioned here is the presence not only of scientific themes discussed by occultists, but of *individual scientists* contributing directly to occult discourse. Despite the occult’s status as constituting a form of rejected, pseudo-scientific knowledge, a number of well-established and highly influential scientists have taken part in occult milieus, and willingly lent their credibility to support ideas circulated in them. We may think of the celebrated physicist and chemist Sir William Crookes, who was an ardent explorer of spiritualism and a supportive member of the Theosophical society in the late nineteenth century. The physicist Sir Oliver Lodge similarly spent the better half of his life defending spiritualism by aligning it with ether physics, lending credibility to the occult concept of the ‘etheric body’ (Aspren, 2011). In the second half of the twentieth century, all the most noteworthy authors of so-called ‘New Age science’ have been trained as scientists: Fritjof Capra, David Bohm, Rupert Sheldrake and Ilya Prigogine are only a few examples of more recent figures who are equally at home publishing technical scientific papers in peer-reviewed journals as writing popularizing, speculative interpretations of science mysticism for a broader pop-occult audience (cf. Hanegraaff, 1996, 62–76).

Finally, we should consider the question of scientific *method* in the occult. It is true that, for the most part, the uses of science in occult discourses are *speculative* in nature. The aim is to squeeze out arcane secrets from a body of static knowledge borrowed from past and present sciences, and to harmonize these with religious, mythical and esoteric knowledge found elsewhere. In this process, science is just treated as a prestigious and hence desired body of knowledge, *not* as a set of methods or a system of organized scepticism actively concerned with *building* knowledge. In other words: despite criticizing the scientific establishment for being ‘dogmatic’, what occult spokespersons looking for higher knowledge in science actually do is to elevate certain pieces of knowledge to the status of unchallengeable dogma. This has created quite some problems for occult syntheses that have aligned their higher knowledge with the best science of a specific period only to see the scientific profession change their minds dramatically in light of new evidence and theory. This happened to the Theosophical Society, which faced major problems reconciling their old doctrines, harmonized with Victorian ether physics and pre-Mendelian biology, with the radical scientific changes of the early twentieth century (Aspren, 2012, 460–97; Aspren, 2013). The result is that, still to day, references to quantum mechanics and relativity theory are simply patched onto a system that is still teeming with etheric bodies and vital forces.

While this appears to be a general trend, there are also a few examples of attempts to apply ‘scientific methods’ to the pursuit of esoteric knowledge. The *rhetoric* of scientific methodology was a central point for many spiritualists, basing itself on a

– Egil Asprem –

rather unconvincing form of verificationism. Something similar is found in Annie Besant and Charles Webster Leadbeater's programme of 'occult chemistry'. Their project, begun in 1895 and continued in the early decades of the twentieth century, was to use clairvoyance to observe the chemical elements by direct vision – a method of observation that was claimed to be superior to the indirect and instrumentalized methods at the disposal of mundane chemists and physicists. While this represented a new way of engaging science from the perspective of the occult, emphasizing experiment and (occult) observations rather than the mere proclamation of esoteric doctrines, it was still far from recognizing the strictures of scientific methodology.

Aleister Crowley, whose magical system of 'Scientific Illuminism' was intended to make magic properly 'scientific', took a rather different approach (Asprem, 2008). Unlike most of his occult contemporaries, Crowley did not believe that using scientific nomenclature had anything to do with being 'scientific'; in fact, he frequently criticized other occultists for thinking so. Instead, Crowley sought to devise new methods of controlling and correcting magical practice. An important part of this was to construct magical rituals as experiments, taking measures to avoid subjective validation and confirmation bias by making the effects of magic intersubjectively available and subjected to a form of occult peer-review. This was done primarily through the use of a magical diary, which was to be written as a scientific protocol so that others could see what had actually been done and achieved. In addition to this, Crowley sought to recreate the hermeneutical tools of the kabbalah to work as ways to check the occult correspondences of magical *visions* – effectively inventing ways to falsify subjective experience. While Crowley's system hardly qualifies as science in its own right, a sincere attempt to incorporate scientific thinking in magical practice has to be recognized.

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### The Occult in Science

One of the lasting impacts of Frances Yates' much-read classic, *Giordano Bruno and the Hermetic Tradition* (1964), was the notion that 'the occult' (loosely understood as the 'Hermetic', 'esoteric' and 'mystical') had been a potent force in the establishment of the modern sciences. According to the Yates thesis, now generally dismissed, the fascination for the newly discovered Hermetic texts in the Italian Renaissance, and the attempted renovation of magic, constituted an important aspect of the first phase of the 'scientific revolution'. It was through a magical emphasis on 'man as operator' that the new experimentalism (later associated with the likes of Bacon, Boyle and Locke) found its original impetus, and it was the solar worship of the Hermeticists that gave heliocentrism its spiritual motivation. The Yates thesis thus gave some credit to identifying occult influences on actual scientific development. While the thesis is now generally dismissed, at least in its original form (cf. Hanegraaff, 2001), it remains the case that it is difficult to separate 'science' from 'the occult' in the medieval and early modern period, as we have discussed above. It is, however, problematic to ascribe a scientifically 'progressive' quality to Renaissance natural magic, or even to describe disciplines such as alchemy or astrology as 'proto-sciences'. Doing so means to abstract away everything in those broad fields that does not fit what we nowadays think of as science, keeping only the parts that, with hindsight of history, turned out to look a bit like predecessors for modern practices. By doing this one loses sight of the complexity of early modern natural philosophy, of which the

so-called occult sciences were integral parts, while at the same time making an artificial link between our present concepts of ‘the occult’ and ‘the sciences’.

Discussing the role of the occult *in* science we must therefore be more specific. One obvious place to start is by returning to the issue of scientific professionals who make the link between their scientific research and occult doctrines. Such individuals represent a form of *social* overlap between the *milieus* of the occult and of science; if we think in terms of Venn diagrams, it means that we can locate parts of the occult milieu within parts of scientific milieus. While this is in itself significant, it still remains a fact that there is little evidence of these occult-scientific threshold figures bringing occult concepts directly into their scientific work. The transaction is for the most part one-way, and it goes from science to the occult.

There are a few exceptions to this, but they remain rather superficial: When Francis Aston discovered the isotopes, for example, he first thought he had discovered a new element, which he named ‘meta-neon’ – after one of the elements ‘clairvoyantly’ described by Besant and Leadbeater’s occult chemistry. Aston had read the Theosophical literature with fascination, and found that his ‘shadow element’ had similar properties to those Besant and Leadbeater had described. However, it is revealing that Aston failed to mention this borrowing in his official publications at the time (Hughes, 2003). Similarly, there was a revived fascination for alchemy in early twentieth-century chemistry, revolving around the discovery that the elements of the periodic table were not stable and indivisible as previously thought, and that genuine transmutation of elements was not only possible, but happened spontaneously in nature through radioactive decay (cf. Morrison, 2007). Once again the fascination was for the most part aesthetic, with scientists finding exciting metaphors and tropes in which to couch their narratives of scientific exploration when communicating it to a wider audience (cf. Asprey, 2012: 109–19). An influence of alchemical theories on actual scientific research is much harder to spot.

The role of the occult in science has been much more important as a resource for the *popularization* of science, and the attempted creation of worldviews based on scientific concepts. This brings us back to the genre of ‘New Age science’. We should however also mention the more prestigious field of ‘natural theology’ – still very much alive today, supported by the economic muscles of institutions such as the Templeton Foundation. Natural theology was traditionally a theological branch of natural philosophy, concerned with the study of the divine through the application of reason and empirical investigation of nature. As a discipline, it lost credibility with the professionalization of the natural sciences after the Enlightenment, but it was revived in the late nineteenth and early twentieth century. Influential twentieth-century scientists and thinkers such as William James, Alfred North Whitehead, Henri Bergson, Arthur Eddington and James Jeans may be said to have contributed to the genre (see e.g. Witham, 2005; Bowler, 2001). Contrary to ‘the occult’, natural theology has mostly retained its status as a high-brow intellectual and respectable liberal-Christian discipline (e.g. Bowler 2001); nevertheless, its theological conceptions border very closely on the occult – whether in its reliance on forms of ‘mysticism’ and unmediated experience (as in the case of James and Eddington), in their views of a mathematical, Pythagorean godhead, graspable through pure reason (as in the case of Jeans), or in the immanent, panentheistic, evolutionary ways of conceiving the divine in e.g. Whitehead, Bergson, and a host of other ‘emergentist’ thinkers (cf.



– Egil Asprem –

Asprem, 2012, 282–90). While they have been able to keep a mantle of respectability, these theologies are about as heterodox as any occult doctrine, and very much for the same reasons: they break the separation between creator and creation, muddle the eternity and unchangeable nature of the divine, and hold higher, soteriological knowledge to be attainable outside of revelation, by the seeker's own initiative. Given such theological overlaps, it is reasonable to see the literature of natural theology as belonging to the broader occulture.

### Science of the Occult

The final type of relation we shall consider in this chapter is that which occurs when science takes 'the occult' as its object of study. Here, all the meanings of 'science' are activated: professionals working in scientific institutions take the best methods of their disciplines and apply them in a study of what they consider 'occult phenomena', publishing their results in peer-reviewed journals. The reasons for undertaking such research are varied, oscillating between a wish to debunk and discredit and a wish to prove and legitimize specific occult phenomena. Spiritualism elicited such responses from the very beginning, and these would lead to the discipline of 'psychical research' – later developed into modern parapsychology while also providing a foundation for the organized 'Skeptics movement'.

We can thus divide 'science of the occult' into at least three camps based on *intentions*: (1) those who seek to justify occult phenomena, (2) those who seek to debunk them, and (3) those who study occult phenomena as interesting cases for the discipline they happen to belong to, whether this be psychology, sociology, or history. While the *intentions* differ, however, the *consequences* of all three types of research may in fact overlap in interesting ways. A historical study of occult movements may in practice have a legitimizing effect on occult practitioners, and a parapsychological study intended to demonstrate clairvoyance may in practice lead to a strengthening of the null-hypothesis of the sceptics.

While it will take us too far afield to discuss the full extent of such effects (examples may be gleaned from the articles on psychology and sociology of the occult in the present volume, as well as the one on the Society for Psychical Research), we should mention some notable contributions to science that have come about precisely from the scientific study of occult phenomena. The study of the occult has notably been an important experimental challenge, yielding significant methodological innovation in fields such as psychology, physiology, and statistical analysis. The 1784 investigation of Mesmer's animal magnetism by a commission of the French Royal Academy led to the development of the first blinded and controlled clinical trial, and the discovery of a placebo effect (cf. Herr, 2005). A century later, experimental studies in psychical research triggered much discussion about probability theory, with major figures such as C.S. Peirce contributing. It was also in the context of early experimental parapsychology that the full gamut of blinding, control and randomization were employed together in experimental trials for the first time (cf. Hacking, 1981). These may not have been quite the kind of contributions to science that most psychical researchers would have in mind, but they are nevertheless remarkable achievements of critical thinking. As these examples suggest, the scientific study of the occult is riddled with unintended consequences.

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