

# AN INTIMATE RELATION

*Studies in the History and Philosophy of Science  
Presented to Robert E. Butts on his 60th Birthday*

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MESMER IN A MOUNTAIN BAR:  
ANTHROPOLOGICAL DIFFERENCE, BUTTS, AND  
MESMERISM

Here the learned do not bargain for paper treasures,  
One measures not the roads to Rome and Athens  
Reason one does not tie to scholastic precepts,  
And no one teaches the sun to move in its orbits

(. . .)

And here nature gave the teaching of how to live right  
To man in his heart and not in his brain.

(Composed 1728)<sup>1</sup>

Albrecht von Haller: "The Alps"

I would really rather be climbing a mountain, tending bar, or driving a taxicab than writing a philosophical book. (Robert E. Butts, 1968)<sup>2</sup>

I. INTRODUCTION I

I am not sure whether Bob Butts at the present time would still prefer to be a taxi driver rather than a philosopher. That twenty years after this confession he still prefers bars and mountains to philosophical seminars and conferences, is something I believe I can present as a confirmed fact on the basis of extensive, pleasant experiences shared at such places. Among Butt's favorite mountains are certainly the Swiss Alps, which Albrecht von Haller (1708–1777) praised in his great poem, "The Alps". I hope I am not being too partial to the flatter foothills when I say that in the last decade our friend of the mountains has grown very fond, too, of this part of the country.<sup>3</sup> Especially that magic triangle between *Constance* with its lake, *Wildhaus* in Toggenburg with the simple wooden house where Huldrych Zwingli (1484–1531) was born and grew up, and *Zürich* with the *Kronenhalle*, where James Joyce used to keep his beer from getting flat.

This magical German-Swiss triangle is Mesmer country. Franz Anton Mesmer was born in 1734 in the small village of Iznang, on that part of Lake Constance called the "Lower Lake". He attended school

(Gymnasium) in Constance, where he returned in 1812 after a very eventful life in the European urban centers of Vienna and Paris and after a long exile in the neighboring Swiss canton of Thurgau. In 1814 the by now 80 year old Mesmer moved to Meersburg on the northern shore of the lake, at that time the Summer residence of the bishops of Constance. One year later Mesmer's stormy life found its final resting place in the cemetery at Meersburg.

## II. INTRODUCTION II

Like theologians philosophers too have a tendency to stylize themselves in profound and mystifying ways. Especially in Germany, the home of dark profundity, one scarcely finds a philosopher who does not enjoy creating the impression that he is concerned with nothing other than the fate of reason or morals, the end of Western metaphysics with its 'ontological difference',<sup>4</sup> the future of all of mankind, and whatever else there is of importance and sublimity. Almost everyone who has the opportunity wants to be known as a guru, even if it is only as one who leads through the shallow waters of, say, the second-order predicate calculus with identity. Some are certainly astonished when a philosopher confesses that, instead of writing profound and epoch-making books, he "would really rather be climbing a mountain, tending bar, or driving a taxicab".<sup>5</sup> And yet such preferences can, like Haller's "Alpen", reveal a philosophical attitude. By no means do they need to be an obstacle to writing excellent philosophical books. Butts's *magnum opus* is itself a prime example.<sup>6</sup> This book stands out among the wealth of literature on Kant for several reasons. I would like to mention three of these: first, a philosophico-historical reason, second a reason connected with the method of writing the history of philosophy, and finally a purely philosophical reason.

*First of all*, Butts has succeeded in explaining Kant's pre-critical and critical writings in terms of a single motivation: Kant's enlightened mission to "help to secure and maintain individual and social mental health" (p. 4). In Butts's reconstruction of Kant's spiritual health is endangered by the belief in a *possible* theoretical approach to the supernatural. People who believe in such theoretical access to the supernatural do not usually sit in insane asylums. On the contrary, they stand, according to Kant, before the learned pulpits of scholastic metaphysics or publically praise their superstitious metaphysics of the marketplace. Kant's prophylactic *medicina mentis* ("the philosopher's

diatetic of the mind" (p. 295)) has two main ingredients: (a) the spatio-temporal conception of everything that should be considered sensory intuition and (b) 'grammatical'<sup>8</sup> forms, which steer the conceptualization of perceptual data.<sup>9</sup> The decisive point of this conception is that sensory intuitions have something very important in common with alleged experiences of the supersensible: they are *private*. Only the grammatical forms for processing data "mould private sensations into publically available objects of possible experience" (p. 7). It is the public sphere or intersubjectivity of spatio-temporally ordered sensory intuitions produced by these transsubjective, grammatical (Kant: 'transcendental') forms of knowledge that separate possible experience from secular enthusiasm (*Schwärmerei*).

Leibniz divided the world into two completely different realms: the realm of supernatural and spiritual objects and that of sensually perceivable things or natural bodies. The realm of nature as the domain of necessity constantly stands under the reign of mechanical forms of explanation. The realm of the spirit is also the realm of freedom. In it have their home, if I am permitted to use this earthly and spatial metaphor, the forms of natural things, our souls, and also God. Mechanical forms of explanation naturally are not predominant in the realm of the spirit. This realm stands instead under the rule of the principles of noncontradiction and sufficient reason. Butts describes this methodological dualism in Leibniz with the beautiful metaphor '*Double Government Methodology*' (DGM). In short, according to Leibniz, there are two fundamentally different areas of experience which are both accessible to human knowledge. All we have to do is choose the proper method in each case. / t t s

Thus we come to Kant and his relationship to Leibniz's DGM. Here one can do nothing better than quote Butts himself (p. 11).

Although Kant surely accepts the Double Government Methodology of Leibniz, he turns it on its head. Mechanical explanation that for Leibniz was only required because as defective human knowers we have to be able to deal with physical objects, becomes for Kant the preferred method of knowing because its principles are seen to constitute nature for the only knowers we can comprehend — ourselves. Metaphysical explanation that for Leibniz captures the basically real features of the universe by resolute attention of pure thought, becomes for Kant a set of demands of reason in its effort to regulate, to methodize, human inquiry. Drop Kant's demand for data, for publically available objects of inquiry, and the Leibnizian form of DGM is restored, along with the threat of a new outbreak of the disease of the soul that takes frenzy, not data, as the proof of genuine knowledge.

This should establish Kant's philosophical antidote for all types of

ts *Schwärmerei* as well as the value of Butts's book on Kant for the history of philosophy. A *Second* merit of this book lies in its contribution to *method in the history of philosophy*. In it Butts exemplifies the usually insufficiently considered thought that philosophy (among real philosophers) is not to be separated from the life of those who produce it.<sup>10</sup>

The *third* and final merit of this book lies in the way Butts implicitly and indirectly presents — if I am not mistaken — a systematical philosophical thesis that goes beyond methodological considerations about the history of philosophy, a thesis concerning a possible task and a possible goal of philosophy: *philosophy is the dietetic of the mind*. Apart from all that ostentatious business about Gurus, Butts shows that philosophical reflection can be a preventive measure against a whole range of those frightening mental afflictions which, sometimes quite out of the blue, seem to threaten our mental health<sup>11</sup>: "They all result from attempts to objectify things thought to exist beyond the space and time of the ordinary human experience" (p. 298).

In my opinion the three points just mentioned here contribute to the special attraction of *Double Government Methodology*. It seems to me that all three have something in common that I would like to call *anthropological difference*. By 'anthropological difference' I intend a formal parallel to Heidegger's 'ontological difference'. Heidegger accuses Western metaphysics of having up to now taken an interest only in what lies in the foreground, in being things; not, however, in what is ostensibly real, the being, that is presupposed by all 'being' things and for all knowledge about them. Whatever else the status of being and being things may be, 'anthropological difference' means something more modest and closer at hand. With this concept I want to point out how little so many philosophical efforts have to do with everyday life. I want to name that commonly accepted axiom according to which philosophy and life would have as little to do with each other as mathematics and life or physics and life; the axiom is that philosophy is 'pure' thought or at least concerns 'pure' thought. Butts shows us that even the philosopher of 'pure reason' cannot be properly understood solely as a pure thinker. Kant saw this difference. Indeed, one can say that Kantian philosophy — and along with it philosophy in Butts's sense

ts — is philosophy of reflected anthropological difference.

An important application of philosophy as dietetics of the mind was in Kant's time the so-called animal magnetism that Mesmer believed he

had discovered.<sup>12</sup> Completely in accordance with his philosophical dietetics Kant takes Mesmerism to court:

Against this nonsense there is nothing other to do than to let the animal magnetizer magnetize and disorganize, so long as it is pleasant to him and other gullible people. It should be suggested to the police that morality should not be approximated too closely, and to carry on oneself, following the sole path of natural research, through experience and observation, which make recognizable the characteristics of objects of external sense.<sup>13</sup>

The Kantian philosophical dietetics of the mind has still another side, besides distinguishing between possible experience and *Schwärmerei* with respect to data: the *distinction between science and pseudoscience*.<sup>14</sup> It was precisely this problem that in connection with Mesmerism strongly moved the spirits of established scientists and which I will consider more thoroughly in the following sections.<sup>15</sup> In the process, I will first sketch (in Section III) Mesmer's conceptions and their resonance. Then (in Section IV) I will take up the problem of demarcation between science and pseudoscience. With respect to Mesmerism, this problem found a viable solution in a report of the Paris Academy of Sciences in 1784. This report is based on principles of successful scientific practice. Finally, in Section V, I take a stand on the rejection of the very idea of scientific rationality and of the demarcation between science and pseudoscience.

### III. MESMER'S DOCTRINE

Mesmer's views can be grouped into three distinct areas: (a) a *comprehensive theory* covering a variety of astronomical, physical, and organic phenomena (TAM); the specialization of this theory to a *medical theory* (nosology; henceforth abbreviated NAM); and finally a practice of healing based in turn on his nosological theory of animal magnetism (and which I will naturally call HAM).

When Mesmer himself views TAM as 'theory', he finds himself in agreement with the common use in everyday language where almost everything can be called theory that does not deal with mere description. Mesmer was a successful practitioner, but not a great scholar. His theory TAM remains strangely unclear, although he elaborated it in a series of papers and pamphlets. This is all the more remarkable since

he himself viewed TAM as a *mechanistic theory of fluids* of the type so highly valued in 18th century physics as a means of explaining phenomena like electricity, heat, and mineral magnetism. Theories of fluids conceive of these as well as other phenomena as results of the movements of most subtle, invisible, and imponderable matters that were called *fluida*. Their movements are to be described by means of the mechanics of fluid bodies.<sup>16</sup> Rudolf Tischner, perhaps the most knowledgeable person on Mesmer's work, holds the very cogent view that TAM is in principle merely a *mechanistic* version of the old magical magnetic theory of medicine. This theory had appeared prior to Mesmer only in the guise of vitalism.<sup>17</sup> In his *Mémoire sur la découverte du magnétisme animal* (Paris 1779), Mesmer summarizes TAM in 27 short 'propositions'. The most important are: (i) There exists a multitude of mechanical interactions between heavenly bodies, the earth, and living organisms (proposition 1 = p 1). A lawlike expression of these interactions remains unknown. (ii) The medium of these interactions, to which gravitation also belongs, is a universally dispersed subtle fluid that I would like to call *fam* (fluid of animal magnetism). (iii) All events in Mesmer's cosmos occur in places where *fam* is unevenly distributed. In the case of the earth the moon has the greatest influence on the uneven distribution of *fam*. Its occurrence has a periodicity comparable with the ebb and flow of the tides. (iv) All characteristics of animate as well as inanimate bodies on earth are influenced by the effects of the bodies surrounding them as well as by heavenly bodies. *Fam* is the means by which these effects are mediated. (v) Animal organisms (including man, who is an animal) reveal a special receptivity for effects mediated by *fam*, although the nature of the receptivity may differ from one organism to the next. The interaction between bodies and animal organisms mediated by *fam* affects the nerves. These effects are polar and analogous to common magnetism. This is why the receptivity for the fluid *fam* is called 'animal magnetism' (pp. 9, 10). (vi) Not only animals possess this receptivity; that is, animal magnetism. Plants and inanimate objects such as water and minerals also possess animal magnetism. At this point, I should make a terminological remark. Mesmer uses the word 'animal magnetism' in two different senses. Up to now, it has been used to refer to the general receptivity of natural bodies for the universal fluid *fam*, making it a characteristic of natural bodies. To this original meaning of 'animal magnetism', Mesmer adds a second and more important one (p. 20)<sup>18</sup>.



According to this conception, 'animal magnetism' refers not only to the characteristic of natural bodies to be receptive to the fluid but also to the special form that *fam*, distributed throughout the universe, assumes in animal organisms. For the sake of brevity, I will refer to the general fluid *fam*, when it occurs in animal organisms, as 'A. M.' instead of 'animal magnetism'. A. M. is the focal point of both NAM and HAM. (vii) A. M. has the following physical properties: (a) like electricity, A. M. can be accumulated, stored, and transported (pp. 12, 17); (b) A. M. can act at a distance without the necessity of a conductor (p. 14); (c) A. M. can be transmitted and amplified by sound (p. 16); and (d) A. M. can be reflected and amplified by mirrors.

Mesmer's nosological-medical theory, NAM, can be characterized as a variant of *humoral pathology* commonly found in classical antiquity, particularly in Galenus.<sup>19</sup> For Mesmer, health consists in an age-dependent, harmonic relationship between *movement*, on the one hand, and *solidification*, particularly muscular solidification, on the other.<sup>20</sup> According to Mesmer movement is sustained by an invisible '*fire of life*' received by human beings at birth. He defines *illness* as muscular inactivity resulting from a solidification that exceeds the solidification typical of aging. The disturbed muscular activity is responsible in turn for obstructions in the circulation of the bodily humors. The symptoms of illness result from these obstructions. The cause of illnesses, the abnormal solidification of the muscles, comes from a deficient '*fire of life*'. The complete extinction of the flame means, finally, the *death* of the organism.

Mesmer's *practice of healing* (HAM), which is based on TAM and NAM, should not be difficult to guess by now. In structural terms, it is closely related to the *iatromechanical* therapeutic conceptions prevalent at the time.<sup>21</sup> The fire of life is nothing other than A. M.. The art of medicine consists in the physician concentrating A. M. in his own body and transferring it to that of his patient. The transmission affects the patient's nerves, sets the muscles in motion and infuses the patient with the fire of life. This eventually results in the orderly circulation of the bodily fluids and the reinstatement of health. So much for Mesmer's conceptions of TAM, NAM, and HAM.

Mesmer always and vehemently viewed these three conceptions as a *contribution to the serious, scientific study of physics and medicine in his time*. This means that he places his efforts — following Kant completely — under the rule of the mechanical section of DGM. Of

course, he may have feared right from the beginning that his assessment would not be accepted everywhere. Mesmer sent his first publication on animal magnetism<sup>22</sup> (which he wrote in 1775 shortly after its discovery), a small work of 12 octavo pages in the form of a letter, to all the European academies of science with the request that they evaluate it.<sup>23</sup> Only Berlin responded. One of the members of the Berlin Academy, Johann George Sulzer, however, had to inform the interested public that, after a short account of Mesmer's booklet before the academy, he did not find "this society disposed to become involved in a closer examination and judgement of it. One judged throughout that both what Dr. Mesmer says about his magnetic cures, as well as what he says in particular about his experiments concerning the communication of the magnetic force to very different types of bodies and its collection in bottles, has been subjected to quite significant doubts; and that the latter contradicts present reliable experiences of magnetic force to such an extent that one has no sufficient reason, on the basis of Mr. Mesmer's too indefinite report, to take his supposed discoveries under serious consideration".<sup>24</sup> Only Sulzer's discrete suggestion that one would "probably do his royal imperial [Austrian] majesty's plenipotentiary at this [i.e. the Prussian] court, his highness Baron van Swieten, a favor" brought about the formation of a small commission.<sup>25</sup> The Berlin commission, in the space of less than one printed page, justified why the Academy did not find it "necessary to become involved in a closer investigation and judgement of this matter which rests on such uncertain and indefinite foundations."

The Bavarian Academy also came to a decision. This was favorable to Mesmer and animal magnetism. But in Munich one did not subject himself to the rigours of making an argument. The academy designated its approval of animal magnetism by making its apparent discoverer an academy member.<sup>26</sup> This impressive recognition probably rests on the fact that, in the meantime the Catholic church which controlled the Munich academy, was highly indebted to Mesmer. With the help of Mesmer's expert opinion, it succeeded in neutralizing a famous-infamous village priest and exorcist from Vorarlberg (Austria) by the name of Gassner. Even more than this successful exorcizing of the devil by Beelzebub, the fact that the president of the academy considered one of Mesmer's magnetic cures to have caused relief of pains that had been plaguing him, spoke on behalf of Mesmer.

Not without reason do I mention these apparently extraneous factors

that seem to determine the assessment of Mesmer's theory in its early stages. Since Thomas Kuhn's book on scientific revolutions, quite a few people are of the opinion that such *external* factors having little to do with the actual object of scientific investigation are precisely what guides the acceptance or rejection of theories and the demarcation between science and pseudoscience. Today, of course, it is less common for external factors speaking for or against theories to present themselves in the successful fight against exorcists or the curing of the various ailments of leading academics. And yet it is a hard blow to established belief in the rationality of science if, according to a commonly held conception, factors *external to* science and no longer *internal arguments in* science should determine the direction of the development of science and its difference from pseudoscience.

It is clear that empirical data cannot determine the choice between alternative theories. The reason for this is the 'underdetermination of theory by data'. As far as the demarcation between science and pseudoscience is concerned, empirical data cannot help either. Here the problem is not simply to identify 'real' data in the spirit of Kant's dietetic of the mind. Rather it is the problem of correctly explaining these data that is at stake. Here again, as at the level of producing data, we encounter two radically different ways of explaining data: on the one hand, alledged experience of the supersensible corresponds to pseudo-scientific explanation; on the other, spatio-temporal intuited data (that in addition have been shaped by transcendental categories) correspond to reliable scientific explanation. At this level of explanation it seems hopeless to strive for a criterion or criteria of the sort used by Kant at the simpler level of producing data.<sup>27</sup>

Mesmer's wish in 1775 that the established scientific bodies of his day seriously investigate the scientific nature of animal magnetism was only fulfilled ten years later, in 1784 in Paris (that is, taking a side-glance at what was happening elsewhere at the same time, three years after the publication of Kant's *Critique of Pure Reason*). But his request for investigation was fulfilled in a way that differed from what Mesmer had expected and wished for. For in 1784 TAM, NAM, and HAM were no longer the ideas of an unknown Viennese physician fighting for quasi-official recognition among the scientific community. On the contrary, Mesmerism in 1784 was a highly controversial *cause célèbre* that had *tout Paris*, right into the Chambers of Marie Antoinette, holding its breath.

But in 1784, Big Brother, too, was already closely watching the turbulent scene. As Robert Darnton observes in his excellent book dealing with the role of Mesmerism on the eve of the French Revolution, the government was suspicious of Mesmerism for two principle reasons.<sup>28</sup> *First*, Mesmer had been joined by a number of would-be philosophers and scientists who were not taken seriously by official bodies such as the Academy or the university. These individuals, failures in the eyes of the scientific 'establishment', viewed Mesmer as one of their own, despite his renown and, even if disputable, his fame. For Mesmer's ideas, too, had been jeered and laughed at by large parts of the scientific establishment. This frustrated group of would-be philosophers and scientists (among them Jean-Paul Marat, although he was not an advocate of Mesmerism) viewed the scientific establishment as part of the established political regime. Only the massive assistance of the government could keep so repressive and deceitful a system as established science in power. Thus, the resentment of those who felt they had been mistreated by the scientific community was finally destined to turn against the government, which, in time it did. *Secondly*, because of its allegedly detrimental influence on morals and religion, Mesmerism was considered to be a "matter for the police". This was the view expressed by Jean-Pierre Lenoir, lieutenant-general of the Paris police at the time.<sup>29</sup> Mesmerism finally became so dubious in the eyes of the ruling powers that they thought they must act. Of course, simply banning Mesmerism, together with Mesmer's expulsion, could not have been seriously considered in Paris, which was the major center of European Enlightenment. Things really could be, so the rulers may have thought, the way Mesmer and his followers said they were; namely that the triad of TAM, NAM, and HAM represented a matter of serious scientific interest. If that were really the case, officially banning Mesmerism would mean suppressing scientific truth by decree; and surely no one in the land of Diderot, d'Alembert, La Mettrie and Voltaire would want to be guilty of such an outrage.

#### IV. THE PARIS REPORT

So what happened is what would happen today in such a situation. On March 12, 1784, Louis XVI, king of France, called upon "the physicians [chosen by the medical faculty of the University of Paris] de Borie, Sallie, d'Arcet, Guillotin to investigate the cures which Mr.

Deslon [a physician and follower of Mesmer] was applying and to submit a report to him about this. At the request of the four physicians five members of the Royal Academy of Science, Messieurs Franklin, Bailly, le Roi, de Bory, and Lavoisier were also named by his majesty."<sup>30</sup> The task of the commission consisted in two points concerning the question of whether Mesmer's teachings were part of the realm dominated by mechanical methodology: (1) to examine the existence of animal fluids within the limits of the theory TAM, and (2) to examine the therapeutic value of HAM.

The above-mentioned gentlemen began to work quite industriously and, divided between medical faculty and Academy, had already prepared separate, comprehensive and extensive reports by August 1784. The physician's report, however, is comparatively weak and a little diffuse, whereas the report of the Academy members, written for the most part by Lavoisier<sup>31</sup>, was very comprehensive and analyzed and argued with precision. Despite all the precision in the argumentation, however, it is clear that in 1784 we find ourselves in what claims to be an enlightened, but not a democratic age. For belonging to the commission of physicians was an additional member, of whom no word is mentioned in the report, not even in the list of the members of the commission. And yet in the Paris of 1784 the publication of an officially suppressed dissenting vote was still possible: almost at the same time as the report was printed, the distinguished Botanist and physician, Antoine-Laurent de Jussieu published his dissenting opinion which did not agree with the rejection of Mesmerism by both commissions.<sup>32</sup>

The commission's reports on Mesmerism offer us virtually unique historical material for the examination of theses concerning the demarcation between science and pseudoscience. A commission consisting in part of highly qualified people attempts to examine a new theory. How will they ground their judgement? Will it rely on internal criteria of scientific rationality that are also in and of themselves valid? Or will it base its decision on ostensibly rational criteria that are in reality extraneous, external criteria such as political opportunism? In fact this last possibility suggests itself in Mesmer's case. For the members of the commission must have known that the heads of government were suspicious of Mesmerism. They had to know that the report demanded of them was intended as scientific support for the government's impending ban on Mesmerism. It did not matter much that at the same

time Mesmerism also had a number of adherents at court and among the nobility.

It is Robert Darnton who in fact suggested that the members of the commission argued against Mesmerism in an ostensibly scientific way whereas in reality, political factors played a decisive role in causing them to anticipate obediently the wishes of those in power. And this was exactly Mesmer's opinion too.<sup>33</sup> According to Darnton the arguments presented by the Academy members would be applicable to a theory of one of its members, Lavoisier, as well as to Mesmer's animal magnetism. For Lavoisier's so-called caloric theory of heat also relied on a subtle fluid of the type that was not accepted in the case of Mesmer's TAM. According to the caloric theory, all material bodies are permeated by the smallest invisible pores. The more caloric fluid is in these pores, the warmer the body. Caloric fluid is extremely subtle, virtually weightless and indestructible. Its existence and its characteristics cannot be observed directly, because it is invisible. The existence as well as the properties of the caloric fluid have to be deduced from the effects ascribed to it.

Now stories in which generals are cowards, cardinals godless, members of the salvation army alcoholics, bankers fraudulent, and dentists have a bad set of teeth, will on the whole, generate more interest than those in which the generals are heroes, the cardinals saints, the members of the salvation army teetotalers, the bankers trustworthy, and dentists flash their beautiful white teeth. It appeals to us more when we see that others are hewn out of yet more crooked wood than ourselves. In this sense an account of how scientists, ostensibly the guardians and supporters of rationality, turn out to be unreasonable hardheads, frauds seeking fame, cunning intriguers or nimble opportunists can count on sympathy of a broad segment of the public. This seems to me to be the source of a good part of the fascination that external explanations for the development of theories encounters everywhere. This is, of course, not to deny that in the history of science, and probably also in contemporary scientific practice, extraneous, external criteria have often enough influenced or even temporarily determined the acceptance or rejection of theories and the distinction between science and pseudoscience. In the present case as well, I assume that political opportunism as well as — with the physicians — simple envy of their successful colleague, influenced the commission's ruling. These motives may have actually been dominant. In any event

the members of the commission viewed themselves as a policing body which was to serve the state by regulating reason. Bailly explained when the report was presented before the Academy: "If, however, such an error [like mesmerism] emerges from the realm of science, and spreads among the common masses, dividing opinions and making rebellious when it offers the ill a fraudulent remedy and prevents them from seeking other remedies [. . .], a good government will find it useful to eradicate it. What a marvelous use does not one make of one's authority when one uses it to spread light! The commissioners have taken great pains to fulfill the intentions of the administration and to make credit to the honor of having been chosen."<sup>34</sup>

Despite the fact that the Academy's rejection of Mesmerism seems to rest heavily on external grounds, I would like to advance the view that *the rejection of Mesmerism was sufficiently justified by internal motives of scientific rationality*. This can be shown by refuting Darnton's view that the commissioners noticed the splinter in Mesmer's eye while completely ignoring the log blocking Lavoisier's vision. What I intend to show is that, whereas TAM contradicted fundamental principles of scientific practice, Lavoisier's caloric theory, at least at this time, cannot be accused of similar defects.

I am talking here of internal theoretical *motives*, not of *criteria* of scientific rationality guiding the rejection of Mesmerism as pseudoscientific. In doing so, I return to a point mentioned already in section III: it seems hopeless to look for a demarcation criterion between science and pseudoscience. Science is an extremely varied and heterogeneous enterprise. It mirrors, in this respect, the varieties of life. Scientific rationality can as little be covered by one or two criteria as can life. Given this situation, it seems more sensible to check scientific and pseudoscientific practices in order to find reasons for demarcating science from pseudoscience.<sup>35</sup> According to this view scientific rationality is not a property of scientific statements, but a characteristic of the acts and procedures that produce these statements. Thus, *flawed practices* are the basis of pseudoscience. In speaking of flawed practices, we have left the field of criteria with its yes/no decisions. Here *judgement* is needed. Judgement cannot be learned like ABC; it has to be acquired while practicing it. The best practice for acquiring judgement in matters of scientific rationality is active participation in scientific research. But we know that practicing scientists do not reflect very much about these matters.<sup>36</sup> In the Paris of 1784 things were

different, for first rate philosopher-scientists were at work. They, in fact, answered the king's question on the existence of the animal fluid *fam* by investigating the practices that led Mesmer and his disciples to claim to have demonstrated it. These mesmeristic practices differed considerably from those performed by Lavoisier and others with respect to the caloric theory of heat. There are, according to commission's review, *three aspects of flawed practice* that make Mesmerism a pseudoscience. These practices would, I believe, *mutatis mutandis* destroy every-day life as well as science: (1) disregard for the law of causality, (2) disregard for the difference between facts and hypotheses,<sup>37</sup> (3) disregard for what I would like to call the 'principle of experience'. That principle says that one is not allowed to contend what one likes, without being prepared to let one's assertions pass the test of the experience of reality. Mesmerism failed in all of these points.

To prove that, I would like to touch briefly on the caloric theory of heat as Lavoisier formulated it, i.e. the theory that the temperature of bodies is determined by the amount of caloric fluid contained in them. My first question is this: Did Lavoisier insist on the *existence* of the caloric fluid?

In two papers he wrote with Laplace on the caloric theory of heat, we find, in the first place the fundamental distinction between *observable facts* and *hypotheses*. The two authors discuss two competing contemporary hypotheses explaining the phenomenon of heat<sup>38</sup>: (1) the caloric theory of heat, and (2) the so-called mechanical theory of heat. According to the mechanical theory, heat "is nothing other than the product of imperceptible movements among the molecules of matter".<sup>39</sup> However, for Lavoisier and Laplace, the observable data on the nature of heat are not sufficient to justify favoring one theory over the other: "We do not want to decide between the two [. . .] hypotheses. Some observations tend to favor the latter, for example, the fact that heat is created by rubbing two solid bodies together. Other observations, however, can be explained more easily according to the first theory [i.e. the caloric theory]."<sup>40</sup> Lavoisier and Laplace place more confidence in the explanatory power of the caloric theory, using it as a basis for their research.<sup>41</sup> Perhaps they even believe — privately as it were — in the existence of the caloric fluid. And yet they leave no doubt that their imponderable caloric fluid is only an aid in explaining empirical phenomena, but not an observable object or fact. The fact that caloric theory can be used successfully to explain phenomena is, for Lavoisier



and Laplace, insufficient evidence for the assumption that the caloric fluid exists. Additional deliberations are necessary here in order to prove the existence of a hypothetical substance. Although they do not comment on the nature of such deliberations, they do state very clearly that the evidence available is insufficient for deciding between mechanical and caloric theories and even more so for assuming the existence of the caloric fluid.

Mesmer is a different story altogether. From the very beginning, he is completely and (unfortunately) unshakably convinced of the existence of his fluid *fam*. Certain effects that occurred when steel magnets were placed on diseased parts of the body gave him the idea that *fam* was at work there. Within a short period of time he constructed on the basis of this idea, a comprehensive, though scarcely coherent system that relied on the mechanistic terminology of established science, though not on its methodology and customary practices. Most importantly, he was (1) not familiar with the difference between hypotheses and facts, (2) did not want to accept, at least for his own experimental practice, the usual standards for conducting successful experiments (including the law of causation, according to which identical causes have to have identical effects), and (3) was unwilling to accept the principle of experience according to which theories have to be tested by experience. It is precisely because of these three deadly sins that the members of the academy criticized TAM. I believe they were amply justified in doing so.<sup>42</sup>

In a series of experiments the commissioners determined that, first of all, the effects of the animal fluid A.M. among the persons examined, depended on whether they possessed magnetic sensibility. Of fifteen people being tested only five demonstrated this sensibility. Among the magnetically sensitive persons, allegedly mostly women, the magnetic effect only appeared when these individuals *knew* they were being magnetized. The effects ranged all the way from sensations of warmth to convulsive states and spontaneous excretions; effects that were considered to be signs of a 'crisis'. If the magnetized persons did not know they were being magnetized, then the effects predicted by the theory did not appear, or they appeared in the wrong place, or in a similarly defective way. In this situation, keeping conditions constant, the *ceteris-paribus* principle, becomes particularly important. The members of the commission were also very careful to observe this. The inevitable conclusion is that here an allegedly existing physical agent

should, under constant conditions, exert an effect at one time, but not at another. That, however, violates the law of causality.

What, then, caused the obvious presence of these magnetic states or processes M if they occur independently of the actions A required in TAM? The Academy commission answered this question much the way John Stuart Mill did later with the "method of agreement", which he condensed into the following rule: "If two or more instances of the phenomenon under investigation have only one circumstance in common, the circumstance in which alone all instances agree will be the cause of the given phenomenon".<sup>43</sup> If we apply this to the case of Mesmerism, it means that the knowledge of the operations of the magnetizers is the only event occurring in all experimental situations with magnetic effects, and that it is thus the decisive cause of these effects. According to the words of the commissioners, it was thus 'imagination', based on a knowledge of magnetic operations and effects, that was ultimately responsible for the appearance of mesmeristic states among the persons observed.

Thus (and here it is the *distinction between fact and hypothesis* that is concerned) it is not necessary, in order to explain the phenomenon of Mesmerism, that one assumes the existence of a physical substance, the fluid *fam* or A. M. respectively, supposed to cause this. On the contrary, the investigations of the Academy members did not reveal the least indication of the existence of *fam*, though this seemed to make absolutely no impression on Mesmer. To his dying day, he clung tenaciously to his belief in the existence of a physical agent called 'animal magnetism'.

This perseverance was further fed by his supreme lack of consideration for the *principle of experience*, which left him indifferent to the results of empirical tests of his theories. Once he decided that he was in possession of the truth, he had nothing more to learn from the test of experience. Mesmer's disregard of the law of causality and the principle of experience corresponds to an apparently indestructible trust in the validity of the old fallacy 'post hoc ergo propter hoc'.

Mesmer's own conviction, and probably also his ability to convince others, depended on patients, believing, after a magnetic cure, that they were healed — whether justifiedly or not is of no importance here. On the other hand, the members of the commission pointed out that these supposed therapeutic effects of magnetic treatment could be the result of imagination. The self-healing powers of nature should also not

be left out of consideration. And finally, even aspects of the magnetic treatment, such as strongly pressing or rubbing parts of the body, could create effects that Mesmer ascribed to A. M. This argument, too, did not impress Mesmer. Mesmer's distorted understanding of causality led him to view the apparent proof of the success of HAM as support for TAM and as proof of the existence of *fam* and A. M., for that matter.

Moreover, it is not the case that the members of the commission cast doubt on the existence of mesmeristic phenomena as such. On the contrary, in his exposé for the Academy, Bailly stated explicitly that magnetic phenomena are "facts for a still new science, the science of the influence of the moral on the physical".<sup>44</sup> We see here in Bailly's remark the anti-Leibnizian program of taking psychic phenomena out of the realm of metaphysical government into that of mechanics. The science projected by Bailly, which simply examines in other words the interaction between mental and physical states has since itself been established in many variants. Full knowledge of the "influence of the moral on the physical" would consist, however, in solving the so-called mind-body problem, which we are very far from doing and perhaps will never achieve.

Mesmer's supporters now made it clear, entirely in the spirit of their hero, that the — in their eyes — corrupt and stupid academy report was counterbalanced by Jussieu's minority vote.<sup>45</sup> This assessment is not justified by Jussieu's report. Jussieu by no means supported radically flawed practices in science. Neither did he doubt the distinction between fact and conjecture, nor believe that one can do without respect for the law of causality. Finally it is also clear that he did not hold that scientific theories need not care about experience. Jussieu's report contradicts that of the majority only in expressing doubts that the experiments conducted by the majority are themselves sufficient to justify a negative vote on Mesmerism. Moreover, Mesmer may have used an unsuitable theory to explain magnetic phenomena. Jussieu knew of a better one that was worth investigating. His own theory, however, is indebted to a type of theory that in his day had already been surpassed by scientific progress. Similar to alchemical theories, it is a so-called theory of principles according to which all natural events can be traced back to the 'principles' of matter and movement. The principle of movement reveals itself in apparently different ways, for example, in magnetism, in electricity, and in heat. Heat, more than anything else, is responsible for the mesmeristic phenomena, since it is

conveyed through the contact taking place during the magnetic treatment. The therapeutic effects of HAM are essentially those of the time-honored method of contact medicine which was simply renewed in this case. Jussieu, moreover, gives no indication in investigating these alternative theories that he does *not* intend to accept the above-mentioned criteria for distinguishing between science and pseudoscience.

As for the second question put to the commission by the king, namely, the question about the therapeutic value of Mesmerism, the argument of the commission is less convincing. Among its objections to the therapeutic value of Mesmerism is, first, that the resulting violent convulsions are not compatible with supporting the healing powers of nature by 'soothing' means. In view of the treatments advocated by academic medicine at the time, this is a hypocritical argument. In addition, the commission feared that convulsions could become habitual, finally occurring without magnetic stimulus. They would reach epidemic proportions and become inheritable. In fact, the Review of the physicians even claimed that the convulsions were carcinogenic. Just as convincing as I find the argumentation of the members of the commission concerning the theoretical status of TAM, NAM, and HAM, their arguments concerning the use or abuse of magnetic treatment are just as unconvincing. In my view, the only convincing argument for or against the therapeutic use of HAM, or any therapy for that matter, is whether it eases the suffering of the patient without keeping him from what might be a better therapy. Whether such a therapy also possesses a corresponding theory is of secondary importance.

#### IV. ANYTHING GOES?

Paul Feyerabend is frequently said to have voiced the opinion that all attempts at establishing criteria of scientific rationality, and perhaps even all attempts at identifying characteristics of successful scientific practice, are irrelevant and to be rejected in their entirety. Scientific progress has never been furthered by criteria of rationality, but rather came into existence for the most part by neglecting or even infringing upon such criteria. On the whole, it is clear "that the idea of a fixed method, or of a fixed theory of rationality rests on too naive a view of man and his social surroundings".<sup>46</sup> If this is referring to eternally fixed, universal *theories* of rationality and demarcation between science and pseudoscience that have failed historically many times over (cf. fn. 14),

then one can only agree with the Feyerabendian conception. If, however it means that all *practical principles* for good science are to be declared obsolete, then I would no longer agree. In such a conception I see rather a certain unenlightened, one could even say, postmodern naiveté that is not completely harmless. Where Feyerabend is right is in pointing to numerous examples from the history of science which appear to show that important scientists were not bothered when their new hypotheses apparently contradicted established facts. But it is important to recognize that in so doing, these scientists did not seek to nullify the principle of experience, but only to call for a new interpretation of certain facts or to point out a wrong way of looking at things. The *application* of principles of good science like those used by the members of the Paris commission may be controversial in concrete cases. But the principles themselves in all successful theories in the history of modern science have not been. One can rightfully say that the undeniable success of modern science is due in the last analysis to such principles.

In recent times, the attacks mounted against such principles seem to have increased. Think of the growing strength of anti-evolutionary creationism in the U.S., or the dismal *mélange* which blends modern physics with far eastern conceptions of wholeness that is supposed to constitute the theoretical nucleus of a 'New Age'. Against these pseudoscientific errors, I would point to the firm anchoring of scientific practice in an enlightened way of life, i.e. a way of life grounded in independent thinking and in self-responsibility. Thus, finally, the distinction between science and pseudoscience is fixed in a rational life-practice. From that it follows that there is no Archimedian point from which one might distinguish between science and pseudoscience. Pseudoscience springs from a flawed way of life and cannot, therefore, be refuted by arguments.

Rational life-practice as a basis for scientific practice and thus of science not only borders on irrationality, in a "downward" direction as it were, but also on the centers of political and religious influence in an "upward" direction. One of the members of the commission, Benjamin Franklin, knew already by the end of August 1784 that the persistent reliance on principles of rational scientific practice in the commission's report was also felt here and there as a threat. In one of Franklin's letters he writes: "The Report is publish'd and makes a great deal of Talk. Everybody agrees that it is well written: but many wonder at the

Force of Imagination describ'd in it, as occasioning Convulsions &c. and some fear that Consequences may be drawn from it by Infidels to weaken our Faith in some of the miracles of the New Testament."<sup>47</sup>

Whoever resists the arrogance of a privileged access to exclusive truths about nature which are not subject to the law of causality, whoever requires the sober empirical control of theoretical flights of imagination, in short, whoever demands generally acceptable reasons for statements, holds onto a conception of man as a being who "should have enough courage to use his own mind". Kant, who said this, wrote in his letter to Borowski (see section II, fn. 13): "A comprehensive rejection here [of Mesmerism] is against the dignity of reason and does not accomplish anything; contemptuous silence is more appropriate for such a type of insanity." Kant's actions, however, stand in opposition to these words. As Butts has shown, Kant did *not* keep silent. His whole philosophical and theoretical work aims in a fundamental way at overcoming the anthropological difference between scientific knowledge and an irrational way of living. Kant himself, however, considered this goal to be unattainable or at least only partially attainable. He closes his letter to Borowski with the apparently resigned comment that "such events [as Mesmerism] last only a short time in the moral world in order to make room for other follies".

The goal of a perfect rationalization of life, however, is not just unattainable. It does not even seem to me to be desirable. In a world where anthropological difference has been removed, i.e. in a perfectly rationalized world Mesmer would never drive a taxicab to a mountain bar, in such a world we would not like to live any more.<sup>48</sup>

(Translation Steven Gillies)

#### NOTES

<sup>1</sup> [...] Zwar die Gelehrtheit feilscht hier nicht papierne Schätze,  
Man mißt die Straßen nicht zu Rom und zu Athen,  
Man bindet die Vernunft an keine Schulgesetze,  
und niemand lehrt die Sonn in ihren Kreisen gehn.  
[...]

Und hier hat die Natur die Lehre, recht zu leben,  
dem Menschen in das Herz und nicht ins Hirn geben.

<sup>2</sup> Slightly modified from the editor's introduction to Butts (ed.), (1968). The fact that I am writing this on December 15th, 1987 is a mesmerizing coincidence since Butts wrote his foreword on December 15th, 1967.

<sup>3</sup> Perhaps the bars are better there. — But, *de gustibus non est disputandum*: D. H. Lawrence (1956, p. 123), for example, wrote in September 1913: “When I was in Constance the weather was misty and enervating and depressing, it was no pleasure to travel on the big, flat desolate lake” — Christiane Schildknecht, to whom I owe this quotation, finds even misty days at the lake neither depressing nor enervating.

<sup>4</sup> Heidegger (1965, p. 15) coined the phrase ‘ontological difference’: “Ontic and ontological truth concern to different matters: being things in their being and the being of being things. They belong together essentially because of their relation to the difference between being and being things (ontological difference)”.

<sup>5</sup> See fn. 2.

<sup>6</sup> Butts (1984). In the following quotes from this book cited in the paper will be referred to only by page number.

<sup>7</sup> Cynical observers of universities will perhaps find the normal meaning of the term ‘insane asylum’ too narrow.

<sup>8</sup> In the sense in which Wittgenstein used this term.

<sup>9</sup> Kant speaks (a) of the “forms of pure intuition of space and time” and (b) of the “concepts of pure understanding” or “categories”.

<sup>10</sup> Fichte (1845, p. 434) expressed this thought with respect to the reasons for choosing between ‘idealism’ and ‘dogmatism’ (= realism) as follows: “What philosophy one chooses depends [. . .] on what kind of person one is: for a philosophical system is not a lifeless household item that one could get rid of or acquire as one likes; a philosophical system is animated by the soul of the man who has it”.

<sup>11</sup> Here are a few rhapsodic passages that I have collected: “The apothecary and the surgeon seek to help ailing bodies by empirical and mechanical means; the philosopher directs people to appreciate the powers of reason over feeling” (p. 312). “The power of the mind, of reason, is the power of self-regimentation; it seeks to prevent mental distress by automation of healthy response patterns” (313). “Philosophy produces a feeling of strength that can compensate for bodily frailties by providing a rational estimate of life’s worth” (315).

<sup>12</sup> I hope that the reader still has together in his mind the different parts of the somewhat dadaistic title of this paper.

<sup>13</sup> Kant (1972, p. 446) to Ludwig Borowski, written between March 6th and March 22nd, 1790.

<sup>14</sup> According to Laudan (1983) previous attempts at providing a general criterion for distinguishing between science and pseudoscience were not convincing.

<sup>15</sup> I draw for support on my article Wolters (1988).

<sup>16</sup> In view of the claim that TAM is part of mechanistic science, it is surprising that a quantitative or numerical account is nowhere to be found in Mesmer’s writings. Also missing are complete diagrams, of which there is otherwise no shortage in 18th century physics books.

<sup>17</sup> Tischner (1928, p. 71). Thus, for example, the theory of the 17th century Scottish physician William Maxwell is nearly identical with Mesmer’s TAM, if one replaces Maxwell’s vitalistic terminology by Mesmer’s mechanistic one of subtle fluids. F. A. Pattie (1956) mentions another point of similarity.

<sup>18</sup> Cf. Mesmer (1800, pp. 31).

<sup>19</sup> Cf. Rothsuh (1978, pp. 185).

<sup>20</sup> Cf. Schott (1982, pp. 205) with reference to Mesmer (1814, p. 166).

<sup>21</sup> Cf. Rothsuh (1978, p. 224); Schott (1982, p. 241).

<sup>22</sup> Mesmer (1775).

<sup>23</sup> Cf. Tischner/Bittel (1941, p. 40).

<sup>24</sup> Sulzer (1775, p. 190).

<sup>25</sup> The father of the ambassador, Gerard van Swieten, was personal physician to the Empress Maria-Theresia of Austria and Professor at the University of Vienna. For this reason he probably had the best contacts to Mesmer's Viennese enemies, and it was probably also the case that van Swieten wanted to support these people with an expected negative report from Berlin.

<sup>26</sup> Cf. Bittel (1940, p. 27).

<sup>27</sup> Cf. fn. 14.

<sup>28</sup> Darnton (1968, pp. 83).

<sup>29</sup> Darnton (1968, pp. 86).

<sup>30</sup> Bericht (1785, p. 15). — Only those two French members of the Academy commission who played a decisive role in preparing the final report experienced the French Revolution five years later. These were the astronomer and later revolutionary mayor of Paris, Jean-Sylvain Bailly, and the very successful (not just as a tax collector) Antoine-Laurent de Lavoisier, considered to be the father of modern chemistry. It is not without tragic irony that both these individuals were executed by the machine named after their colleague on the commission, Guillotin.

<sup>31</sup> Cf. Duveen/Klickstein/Fulton (1954, p. 253): "The first and more extensive *Rapport* is in the style of Lavoisier; a slightly differing version which exists is actually in his handwriting (Oeuvres III, pp. 513–527)."

<sup>32</sup> Jussieu (1826).

<sup>33</sup> Mesmer (1800, pp. 8).

<sup>34</sup> Bailly's exposé before the Academy is in Bericht (1785, pp. 8). It is striking that Bailly, like Kant in his letter to Borowski (see section III, fn. 13), also wants to call in the state to assist in the fight against Mesmerism; with the difference, however, that Kant wants to do this only when morality is threatened. Bailly, on the other hand, seems to have been an eighteenth century version of McCarthy.

<sup>35</sup> This useful suggestion has been made by Lugg (1987, p. 228).

<sup>36</sup> That gives us philosophers a chance.

<sup>37</sup> Here the level of correct data processing in Kant's sense reappears.

<sup>38</sup> Lavoisier/Laplace (1862, pp. 285).

<sup>39</sup> Lavoisier/Laplace (1862, p. 287).

<sup>40</sup> Lavoisier/Laplace (1862, pp. 286).

<sup>41</sup> Lavoisier/Laplace (1862, p. 288).

<sup>42</sup> I would not like to contend, however, that these three characteristics cover all aspects of good scientific practice.

<sup>43</sup> Mill (1973, p. 390).

<sup>44</sup> Bericht (1785, p. 17).

<sup>45</sup> Cf. e.g. Tischner/Bittel (1941, p. 291).

<sup>46</sup> Feyerabend (1979, p. 27).

<sup>47</sup> Letter to William Temple Franklin, August 25, 1784, in Franklin (1970, p. 268).

<sup>48</sup> I am grateful to Mic Detlefsen for revising the text.



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