In spite of its relative innocuousness, the tarantula is still commonly viewed as the epitome of the venomous spider because of its impressive size, repulsively hairy aspect, and taste for biting. But nowhere did the fear of the tarantula reach such heights as in southern Italy from at least the fifteenth century to the twentieth, when the use of insecticides led to the arachnid's near extinction. For more than five centuries, the inhabitants of Apulia, and especially of the region of Taranto, seemed to be afflicted by a specific disease resulting from the bite of the tarantula. As we shall see, the symptoms of so-called tarantism generally resembled very closely those of melancholy. Inquiries into the causes of such pathology did not result in any consensus; nor could physicians explain why the only efficient remedy appeared to be music. Indeed, evidence from the seventeenth to the twentieth centuries showed that the t\textit{arantati} could only find relief through a complex music and dance performance: A group of musicians would be summoned to heal the patient; they presented him or her with ribbons of varied colors and played a selection of tunes on different instruments. Once the musicians had found the appropriate color and tune (usually a form of tarantella), the patient began to move about and then danced for

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hours, sometimes several days in a row. The patient's complete exhaustion was the sign of cure. But the disease would often come back, year after year, summer after summer, requiring the same costly performance.

In the last century, two major studies of tarantism sparked both a renewed interest in tarantism and numerous controversies about its meaning: first, a chapter of *Civilization and Disease* (1943) by Henry Sigerist considered tarantism the last remnant of pagan rites in a region that was once known as *Magna Graecia*; second, *The Land of Remorse (La Terra del Rimorso, 1961)* by Ernesto de Martino resorted to both textual sources and field inquiry, while combining approaches inspired by cultural anthropology, sociology, history, psychiatry, and musicology. De Martino agreed with the famous historian of medicine, stating that the "origins of tarantism presupposed the vigorous Christian polemic against the pagan orgiastic cults," but he rejected Sigerist's view that the pagan cult had disguised itself as a disease in order to escape Christian persecution. De Martino claimed that the transformation of the cult into a disease was actually achieved by the physicians of the Neapolitan Enlightenment.

Despite their inherent interest, these kinds of modern controversies on the origins and meaning of tarantism have somewhat distracted us from a well-established but scarcely studied fact: Already in the eighteenth century, tarantism was the object of an intense debate between its major observers, namely, physicians. The general phenomenon of medical rationalization does not account, however, for the numerous divergent reasons that were advanced by physicians. The French case is especially intriguing, for medicine played a crucial role in the campaign of the *philosophes* against superstitions and prejudices: How did rationalist physicians react when confronted with testimonies about tarantism? And what stance did Rousseau—the great

2 Ibid., 234-35.
philosophical renegade—take in this debate?

To the majority of physicians, the dissertation *De Anatome, Morsu & Effectibus Tarantulae* (Of the Anatomy, the Bite, and the Effects of the Tarantula [1696]) by the Apulian doctor Giorgio Baglivi remained the chief and most reliable source on the disease. In contrast, the works by the Jesuit Father Athanasius Kircher,\(^3\) imbued with biblical references and analogies typical of natural magic, tended to be overlooked despite their attempt to explain the musical cure by physical reasons, namely transpiration. However credible, all accounts of the symptoms linked tarantism and melancholy. Here is a description by Dr. Richard Mead, the author of *A Mechanical Account of Poisons* (1702), who translated Baglivi’s report from Latin into English:

The Patient within a few Hours is seized with a violent Sickness, difficulty of Breathing, universal Faintness, and sometimes Trembling, with a weakness of the Head; being asked what the Ail is, he makes no reply, or with a Querulous Voice, and Melancholy Look, points to his Breast, as if the Heart was most affected.\(^4\)

Other symptoms such as an irrepressible urge to go into water, suicidal tendencies, misanthropy, and physical numbness all converged on a diagnosis of melancholy.\(^5\) As for the taste for bright colors, such as red, green, and white, and the revulsion towards dark ones, such as dark blue and black, they were unabashedly included in the list of symptoms, as altered vision was commonly associated with melancholy—a vestige of the idea that dark humors really did darken one’s eyes. The ritual choice of colors was thus reduced to nothing more than a symptom of venom-induced melancholy.

If the symptoms of tarantism could be framed within the


\(^5\) Jean-Baptiste Pressavin, *Nouveau traité des vapeurs* (Lyon, 1770), 137.
classical category of melancholy, its etiology was much more difficult to establish as the bite appeared to be venomous only in the Apulian plains and during dog days. Even more humiliating for physicians was the utter inefficacy of the remedies on which they relied when confronted by poisoning, an inefficacy especially stinging when contrasted with the spectacular cure provided by random rural musicians. Seeking the causes of tarantism was the only way for physicians to overcome and eventually excuse their failure. In his dissertation, Baglivi considered the tarantula's venom as belonging to the class of coagulating poisons. According to the Apulian physician, the venom made the humors, and especially the nervous fluid, coagulate, thus causing headaches, absentmindedness, and immobility. In contrast, music, when performed with sufficient vigor and rhythm (as in a tarantella), was able to dissolve both spirits and blood. By fostering dance, music also indirectly induced a healthy transpiration, which expelled most of the "venomous germs."

By ascribing tarantism to a fermentation of the "nervous liquor" and the therapeutic power of dance to the extensive transpiration that carries off "the inflammatory particles," Richard Mead resorted to the same kind of general explanation as his Italian colleague. But he elaborated somewhat on the mechanical model, inasmuch as he grounded the search for the appropriate tune on the different tensions of the "elastic fibres of the brain": The physician characterized the patient as having a particular brain tension; thus, each patient required specific musical vibrations to be relieved. As a result, Mead's etiology hints both at the classical Cartesian model (the human body conceived as a hydraulic system) and at the emerging vibratory paradigm, which explained health and disease by specific tensions or vibrations of the fibres and/or the nerves and which had been encouraged by Francis Glisson's recent work on the elastic proprieties of the muscular fibres. In France, the hygienist Jacques Dumoulin relied on the same dual etiology, referring

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both to coagulation and to an irritation of muscular fibres that spread through the whole body by a contagion of "venomous impressions." But the most coherent and modern etiology of tarantism was proposed by a corresponding member of both the Royal Society of England and the Académie Royale des Sciences, Dr. Étienne-François Geoffroy, who had met Baglivi in Italy. In 1702, Fontenelle decided to publish an abstract of his account of the disease, approving of his new explanation. Basing his etiology entirely on nervous tension, Geoffroy implicitly refuted the purely hydraulic model of Baglivi and the dual models proposed by Mead and Dumoulin. The venom, he claimed, increased the nervous tension, and musicians had to find a tune appropriate to this tension. Only specific instruments played in a certain way would put the nerves in unison with the instruments themselves and permit the spirits to flow again. Of course, his etiology also remained dual inasmuch as Geoffroy seemed to conceive of nerves as both chords and canals—a compromise solution that was very common at the time. In Fontenelle's view, this theory had the advantage of explaining the enigma of attractive and repulsive colors without requiring the old theory of tainted humors: The tension struck the optic nerve as did any other, and its vibrations, which were caused by particular colors, could be as painful as dissonance to the ear.

Half a century later, tarantism still prompted contradictory diagnoses, even in the sanctuary of physician-philosophers, the Encyclopédie. On the one hand, Ménuret de Chambaud, a prominent exponent of the vitalist school of Montpellier, considered the medical remedy used to cure tarantism as a perfect example of the "effets de la musique." A proponent of

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the theory of vibratory nerves, which he would later illustrate in his *Nouveau traité du pouls* (1768), Ménuret expressed no doubt about the nature of tarantism and the virtues of medical music. But he was cautious enough to distinguish between the merely mechanical effects of sound and the patient sensibility to the "modified sound" or music. According to this double nature of music, men in general and patients in particular were more or less able to be pleased or healed, depending on their degrees of physical organization or character and education. On the other hand, in the article "*Tarentule,*"10 Louis de Jaucourt, a disciple of Boerhaave and one of Diderot's main ink-spillers, dismissed the reality of tarantism altogether after having summarized in great detail the etiologies proposed by his predecessors. Still, Jaucourt had to explain why this fictional disease occurred in southern Italy and nowhere else.11 At the end of his article, he proposed his own interpretation, based on "common sense," "verisimilitude," and the "knowledge of the character of Apulians": "They are dry, sanguine, voluptuous, drunken, impatient, easily moved, of a quick imagination, and have highly irritable nerves; they are seized by delirium at the slightest pain, and in this delirium, it is entirely natural that they fancy having been stung by the tarantula."

Actually, this skepticism about the very existence of tarantism was not totally new: Baglivi himself had already set aside fake manifestations of tarantism, which he nicknamed *carnavaletti delle donne* after the popular phrase and through which hysterical women vented their distemper. Furthermore, the Italian physician had also linked the disease with the physical and moral constitution of Apulians, who, breathing an air which

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11 As a matter of fact, some cases were also reported in Spain at the time; see Pilar León Sanz, "Medical Theories of Tarantism in Eighteenth-Century Spain," in Peregrine Horden, ed., *Music as Medicine: The History of Music since Antiquity* (2000; repr. Burlington, VT: Ashgate, 2001), 273-92. French physicians were not aware of these Spanish cases, however.
seemed to come from an "ardent furnace," were "thin, impatient, irascible, insomniac, very sharp-minded, quick-tongued, and extremely fast at taking action," but who were also highly vulnerable to "very hot fevers," "dementia," and other "inflammatory diseases." In a way, Jaucourt was radicalizing Baglivi's views by extending the suspicion of mental disorder and the hippocratic constitutional approach to all patients afflicted by tarantism, thus discarding the distinction between sensible peasants and manipulative hysterics. Jaucourt was also following a general trend of distrust towards testimonies about extraordinary pathologies when not confirmed by direct observation. For the same reasons, the Neapolitan Francesco Serao had also expressed his doubts about tarantism.\textsuperscript{12}

Probably more important than the opposition between believers and skeptics was the prominence of hygiene when considering tarantism. Baglivi and Dumoulin both believed in the reality of the disease, whereas Jaucourt and Pressavin dismissed it, but they all stressed the role of the Apulian climate in the origin of the symptoms, be they fake or real. The classical approach of temperaments allowed physicians to establish a strong link between the patient and his environment. According to Dumoulin, the venom simply aggravated the coagulation of blood that was already fostered by the temperament of the Apulians, for "the heat of the sun and the warmth of the food they eat constitute a blood scarcely tempered with lymph, and which ferments sometimes, so that, the most subtle particles being exhaled, leaving in the blood some kind of a thick and burnt oil, which induces the hypochondriac affections so common in all Sicilia and Naples."\textsuperscript{13} Some seventy years after this classical diagnosis of adust melancholy, Pressavin would also allude to the "very dry temperament" and the "highly mobile

\textsuperscript{12} Francesco Serao, Della Tarantola o sia Falango di Puglia, Lezioni Accademiche (Naples, 1742). On the gradual rationalization of tarantism in the context of the Neapolitan Enlightenment, see David Gentilcore, "Ritualized Illness and Music Therapy: Views of Tarantism in the Kingdom of Naples," in \textit{Music as Medicine}, 255-72.

\textsuperscript{13} Dumoulin, \textit{Rhumatisme et Vapeurs}, 200.
nervous fibre" of Apulians—but in order to draw the very opposite conclusion!14

In *Essai sur l'origine des langues*, written between 1754 and 1761,15 Rousseau also became involved in the public debate about tarantism. Scholars have generally noted that he was alluding to the recent "Querelle des Bouffons," which opposed the defenders of French music (the so-called "Coin du Roi") to the enthusiasts of Italian Opera (named "Coin de la Reine"), and they have extensively commented on his theory of sign and language.16 But they have not sufficiently appreciated the medical dimension of the controversy, which appears clearly in this excerpt:

So long as sounds continue to be considered exclusively in terms of the excitation they trigger in our nerves, the true principles of music and of its power over hearts will remain elusive. In a melody, sounds act on us not only as sounds but as signs of our affections, of our sentiments . . . As proof of the physical power of sounds, people refer to the cure of Tarantula bites. The example proves the very opposite. Those who have been stung by this insect do not, all of them, require either absolute sounds or the same tunes as a cure, rather, each one of them requires tunes [airs] from a melody he knows and phrases he can understand [entendre]. An Italian requires Italian tunes, a Turk would require Turkish tunes. Each is affected only by accents with which he is familiar; his nerves respond to them only insofar as his mind inclines them to it: he has to understand the language in which he is being addressed if he is to be set in motion by what he is told. Bernier's cantatas are said to have cured a French musician of the fever, they would have given one to a musician of any other nation.17

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14 Pressavin, *Vapeurs*, 140. "A dust melancholy" occurs when black bile is produced in excess by the unnatural "coction" of either bile or the four humors.


In a libel against French opera, Rousseau had already stated that "harmony is a purely physical cause" that excites in the "nerves but a fleeting and sterile shock," whereas melody affects sensibility both physically and morally. Of course, this theory supported Rousseau's bias against Rameau's rigid principles of harmony. While the strength of harmony was reduced to the physical power of random sounds, melody could touch the soul thanks to a sound perceived as a sign. If sounds were not to be interpreted as moral signs, they would not awaken our past feelings and would be equivalent to meaningless noises. According to Rousseau, music should not imitate natural noises nor aim to give auditory pleasure, but instead imitate the composer's feelings in order to touch the audience. Rousseau did not only oppose Rameau, but also—and above all—the way physicians used Rameau's ideas to support their views on the therapeutic powers of music. As I have already noted, in his article on the effects of music, Ménuret had also distinguished two kinds of effects achieved by music, namely mechanical ones and not exactly "moral" ones, but effects ascribed to the "sensibility of the human machine." Nonetheless, properly speaking, these effects were both physical. In Ménuret's view, musical sensibility simply depended on the quality of our perceptions. An appropriate education and a delicate physical organization accounted for a good perception of the natural proportions implied by the rules of harmony.

Rousseau undermined these arguments by asserting that listening to music is a matter not of perception, but of understanding. "Absolute sounds," that is to say, sounds considered physically, did not account for moral effects. Music


19 According to Rousseau's idiom, the distinction between "absolute" and "relative" is generally equivalent to the opposition between physical and moral.
acted upon men's hearts and could ultimately become therapeutic inasmuch as it was imitative and not merely "natural." Melody was superior to harmony, and touching tunes and songs were superior to sophisticated concords, because they unleashed the linguistic function of music. In other words, sounds became efficient (that is, had an effect on both body and soul) only when they turned into signs. By stressing the understanding of "phrases," Rousseau implicitly valued vocal works over instrumental ones, but it would be a misreading to conclude from this hierarchy that he favored an intellectual approach to music. To understand music meant both to relate past sensations to one another and to be sensitive to its accents. The strength of the musical remedy did not reside in the meaning of lyrics, but in the "Accent of language, which produces the Melody particular to a Nation." The heart, not the brain, belonged to the empire of music.

Rousseau's explanation of the moral power of music becomes clearer when compared to a pedagogical failure depicted in Emile. The preceptor did not succeed in sharing his enthusiasm with his pupil while viewing a magnificent sunset. In fact, Emile lacked the experience necessary to feel the "complex

Moral feelings make us relate to others.

20 See the distinction between "natural" and "imitative" music in "Musique," Dictionnaire de musique, 310-11. In the same article, Rousseau had first considered the musical cure of tarantism as an example of physical action (315). Gilbert Rouget insightfully discusses this palinode—and the difficulty to date it with precision—in La musique et la transe (Paris: Gallimard, 1990), 309-10. In this article, I chose to concentrate on Rousseau's final and most developed thoughts on tarantism.

21 A misreading that could be suggested by Gourevitch's translation of "phrases" as "lyrics." Jean-Jacques Rousseau, "Phrase," A Complete Dictionary of Music, trans. William Waring, (London, 1779), p. 317. A phrase is "[a] continuance of an air or harmony, which forms, without interruption, a sense more or less finished" (my emphasis). Rousseau adds that "[i]n melody the phrase is constituted by an air," and that "[i]n harmony, the phrase is a regular continuance of concords all united together by dissonances, expressed or understood."

impression which was the general result of all these sensations."\textsuperscript{23} The visual sensation of a glorious sunset could be suggestive only when related to other sensations, and only once the spectator of nature had entered the moral realm, that is, only when he had been initiated into both love and religion.\textsuperscript{24} Rousseau applied the same dual and sensationist approach to the contemplation of landscape and to the listening of music—the only striking difference being that the former was universal, whereas the latter highly depended on national linguistic features. Such a combined perspective was perfectly suited to Rousseau's fight against physical reductionism.

Paradoxically, Rousseau's final allusion to Bernier's cantatas leads to the conclusion that he was taking a position in the medical debate, not just engaging in a controversy over music or expounding a general theory of signs. The cure of a feverish French musician had indeed been reported by Dr. Denis Dodart and used by Abbé Yvon in his article "Âme" to illustrate the interaction between body and soul. Dodart's case came after discussing lesions of the brain and religious melancholy and was followed by a reference to the article "Tarentule." After all, Rousseau's originality did not lie in his dualistic assumption that one's spirit could arrange nerves in a certain way ("his nerves respond to them only insofar as his mind inclines them to it"), but rather in his use of sensationism in his fight against physical reductionism. He would defend similar views when confronted with the epidemic of nostalgia among Swiss mercenaries, who turned melancholic whenever they listened to a pastoral tune from their fatherland, the ranz des vaches.\textsuperscript{25} In this case, the power of music did not rely on the purely physical principle of harmony, nor on the melodic virtue of accent, but worked as a "memorative sign" (signe mémoratif). Rousseau thus opposed materialism and a simplistic version of dualism by distinguishing

\textsuperscript{24} Emile, in \textit{Œuvres}, 4:431-32.
\textsuperscript{25} Rousseau, "Musique," \textit{Dictionnaire de musique}, 317.
three different levels in audition: sounds could be considered first as noises, second as imitative signs representing either nature or feelings, and third as memorative signs awaking a whole chain of past sensations.

Such a sensationist approach implied the rejection of a purely physical etiology, but does it mean that Rousseau also rejected the hygienic concerns we mentioned earlier? Not at all. In his attempt to elaborate "sensory morals" (morale sensitive), Rousseau had tried to merge sensationism and moral hygiene: Anyone could dispose himself to virtue by controlling the environment and filtering his sensations. Moreover, he did not conceive of language as a mere collection of signs, but as a means of communication deeply ingrained in a specific climate, hence the famous distinction between northern tongues, based on needs, and southern tongues, devoted to passions. Actually, if Rousseau fought against reductionist physicians endlessly delving into the mysteries of etiology, he was very close to the neo-hippocratic movement, which valued semiotics over etiology, hygiene over remedies, and in general observation over action. Hygienists such as Théodore Tronchin or Samuel-Auguste-André-David Tissot were also trying to build a physical and moral anthropology, but none of them relied so much on sensationism to ground their moral hygiene.

The constant rise of hygiene in the approach to tarantism proves to be more significant than controversies over its real existence. Tarantism was considered an appropriate object of

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26 Rousseau, Confessions, in Œuvres, 1:408-09.
27 Of course, hygienists did not dismiss etiology all together, but they deemed "non-natural" causes (which we would call environmental and behavioral) much more important than "natural" (that is constitutional) ones. This emphasis on a physico-moral approach (by opposition to a strictly physical perspective) suited Rousseau's concerns.
28 Hygiene "prescribes Rules for the Preservation of Health" in order to control the six "non-natural" factors (air, food and drink, exercise, sleep, excretions, passions) that do not depend on the body's nature (physiological causes). Robert James, A medicinal Dictionary (London, 1743-45), 2:247.
study by hygienists for many reasons: first, because this disease was affecting a specific people in a specific country, it fitted perfectly Hippocrates' theory of "epidemical constitutions"; secondly, disorders induced by passions were considered legitimate objects of hygiene; and, lastly, the inefficiency of usual antidotes favored a preventive approach. By rejecting physical etiology and expanding semiotics thanks to sensationism, Rousseau opposed reductionist physicians but agreed more or less with hygienists. He defined a new physical and moral approach that would still inspire some leading hygienists at the end of the eighteenth century and would make them praise the declared enemy of physicians. In his outline of a course of public hygiene proposed in 1800, Moreau de la Sarthe, a disciple of the famous hygienist Vicq d'Azyr, included both a study of tarantism and a "physiological account of the effects caused by the ranz des vaches." By considering the "medical influence of sounds, regarded in relation with the local effect they provide, or with the numerous ideas they recall,"29 Moreau tried to reach a balanced statement between Rousseau's sensationist method and the reductionism of his opponents. This was not the least nor the last effect of an insect's bite, which spilled more ink than venom.

29 Jacques Louis Moreau de la Sarthe, *Esquisse d'un cours d'hygiène, ou de médecine appliquée à l'art d'user de la vie et de la conserver: extrait d'une partie des leçons d'Hygiène faites pour la première fois au Lycée Républicain, en l'an VIII* (Paris, 1800), 24-25.