K
ISSN : 2609-2484
: Université de Lille

14 | 2025
Scienza della sottrazione: il gesto di Ettore Majorana

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https://www.peren-revues.fr/revue-k/1541

DOI : 10.54563/revue-k.1541

Jean-Marc Lévy-Leblond, « Sciascia and Majorana: the rejection of science? », *K* [], 14 | 2025, 08 juillet 2025, 29 juin 2026. URL : https://www.peren-revues.fr/revue-k/1541

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Sciascia and Majorana: the rejection of science?

Jean-Marc Lévy-Leblond

This article is an adapted translation of a chapter in Jean-Marc Lévy-Leblond, *Le Tube à essais. Effervesciences*, Seuil 2021.

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1 The publication of Leonardo Sciascia's book *The Disappearance of Majorana* in 1975[1], precisely half a century ago, led to a heated controversy between the author and Edoardo Amaldi, a close collaborator of Enrico Fermi in his pioneering nuclear physics team in the 1930's. Ettore Majorana, a young bright theoretical physicist of Fermi's team as well, had mysteriously disappeared in 1938. Sciascia's thesis was, in a nutshell, that Majorana had anticipated the development of nuclear physics leading to "atomic" weaponry, and decided not to assume any responsibility in it, retiring from the world by exile, seclusion, or suicide. Sciascia's final lines in his controversy with Amaldi are as follows:

> The men of my generation and those who are now entering workshops and universities have lived and are living more and more like dogs. Thanks to science, thanks above all to science.[2]

2 In this conclusion, Sciascia quotes an article by Camus published in the newspaper *Combat* in 1948, at the rise of the Cold War between the Atlantic bloc and the Soviet bloc. Camus begins his article as follows:

> The 17th century was the century of mathematics, the 18th century that of physical sciences, and the 19th century that of biology. Our 20th century is the century of fear. I will be told that this is not a science. But first of all, science has something to do with it, since its latest theoretical advances have led it to deny itself and since its practical improvements threaten the entire earth with destruction.

3 However, this text does not hold science responsible for the threats facing humanity (in fact, the word "science" does not appear again in the rest of the text), especially since this would mean that science would be "led to deny itself." In truth, Camus essentially questions the impotence of morality in the face of political conflicts.

4 Moreover, in the admirable editorial that Camus devoted to the bombings of Hiroshima and Nagasaki in the daily *Combat* on August 8, 1945, where he was practically the only French (and perhaps European) intellectual to emphasize the horror and danger for the future of nuclear armaments, he did not incriminate science as such, writing:

> We can sum it up in one sentence: mechanical civilization has just reached its final degree of savagery. In the not-too-distant future, we will have to choose between collective suicide and the intelligent use of scientific achievements. [...] That in a world torn apart by violence, incapable of any control, indifferent to justice and the simple happiness of men, science is devoted to organized murder, no one, unless they are an unrepentant idealist, will be surprised.

5 For Camus, therefore, if science in this context was admittedly the agent of "organized murder", it was certainly not the only one and in any case not its cause, and remained susceptible to "intelligent use."

6 We must therefore ask ourselves why Sciascia, in his brief quotation, seems to be unduly invoking Camus' moral authority to attribute responsibility for contemporary human misfortune to science, "especially science." For this is indeed the explicit moral of Sciascia's book, in which he confers on Majorana the foresight of the nuclear threat and thus explains the physicist's voluntary disappearance.

7 Understanding Sciascia's fear of "science" would require a deeper knowledge of his work and his person than I can claim to have. I would simply like to emphasize that this is the underlying motive for what he himself calls his "pamphlet-story," thus assuming the deliberately polemical, not to say provocative, dimension of his book. Should we go so far as to see in Sciascia himself a manifestation of this "rejection of science" which he claims has become "a way of life" "in this Sicily which, for more than two millennia, has not produced a single man of science"? In any case, several of the arguments put

forward by Sciascia to support his interpretation of the reasons for Majorana's disappearance are based on a deep and preconceived rejection of modern science and a lack of knowledge of its history. This is demonstrated by his certainty, maintained despite Amaldi's historical counterarguments – accepted by all those whom Sciascia somewhat contemptuously calls "the experts" –, that Majorana had "seen the atomic bomb clearly," as Sciascia asserts, not without a subtle use of preterition. For, despite all his genius, Majorana could in no way have foreseen or even sensed the short-term development of nuclear weapons. Let us be more precise. That there were gigantic reserves of potential energy in atomic nuclei had been obvious to all physicists since the early 1920s, but nothing that was known about the structure of nuclei allowed for the release and use of these energies to be envisaged. Thus, Fermi could write in 1923: "It seems impossible, at least in the near future, to find a way to deliver these frightening amounts of energy," and Rutherford himself, the "inventor" of the atomic nucleus, judged in 1933 that the idea of exploiting nuclear energy was nothing but "moonshine" (nonsense). It was not until the discovery of nuclear fission and certain contingent aspects of this phenomenon, that it became possible to imagine a chain reaction process allowing the release on a macroscopic scale of the energy contained within atomic nuclei. However, this discovery, which was quite unforeseen, was made, rather unexpectedly, several months after Majorana's disappearance at the end of 1938 and could not be interpreted until early 1939. Majorana's work on the atomic nucleus, although innovative, dates back to 1932 and 1933 and does not deal with the possible disintegration of nuclei, but with their very structure. And when he returned to theoretical physics research in 1937, after a few years of inactivity, he was working on problems that had no direct connection with nuclear physics.

8 Nevertheless, how can we not hear Sciascia when he raises the question of the moral responsibility of the scientists who designed and helped to build the first nuclear bombs? How can we not share his indignation today at the fact that men "without any restraint, and even with a touch of joy, proposed it, worked on it, developed it, and, without imposing conditions or demanding commitments (the non-observance of which would at least have mitigated their responsibility), handed it over to politicians and the military"? That in 1945,

with Germany crushed and Japan on the verge of defeat, the US decided to unleash nuclear fire on Hiroshima and Nagasaki remains an indelible stain on the victors of the war.

9 It is strange, however, that Sciascia does not recognize the tragic moral dilemma faced by American, British, and French physicists at the beginning of the war, faced with the prospect of Nazi Germany being the first to develop nuclear weapons, thanks to the expertise of its own scientists. It would have taken an almost superhuman moral conscience to refuse to participate in the Manhattan Project at the risk of losing the war. Sciascia believes he can contrast German scientists with those of the democracies, asserting that the former "behaved as free men who, for objective reasons, were not free," while the latter "behaved as slaves, even though they enjoyed objective freedom." He thus uncritically repeats the thesis that most German nuclear physicists refused to engage in a military program. This leads him to elevate Heisenberg to the status of a quasi-hero who resisted, at least passively. We now know that this is not the case. The majority of German physicists accepted the nazi rule, and a significant number of them, including Heisenberg, engaged in research on the application of nuclear physics for military purposes, without ultimately being able to carry it out, for reasons largely beyond their control [3]. This desire to exonerate Heisenberg can be seen as a retroactive argument in favor of the supposed scientific and moral prescience demonstrated by Majorana, who actively collaborated with Heisenberg in 1932 and 1933. And Sciascia, in his cold anger towards the physicists of the bomb, completely ignores the fact that when, in the spring of 1945, it became clear that no significant military nuclear program had been developed in Germany, many physicists involved in the Manhattan Project opposed any use of the nuclear weapon that was about to be developed. We should mention the explicit resignation of Joseph Rotblat (who founded the Pugwash movement of committed scientists and received – belatedly – the Nobel Peace Prize in 1995), and above all the petition signed by dozens of scientists participating in the project and addressed to President Truman in July 1945 – after which most of them lost their jobs. Leo Szilard, who initiated the petition, left physics after the end of the war to devote himself to biology. Together with Einstein, he created the Emergency Committee of Atomic Scientists in 1946, which was committed to

taking action against nuclear weapons. Szilard also wrote a remarkable collection of short stories entitled *The Voice of the Dolphins*[4] (1961), expressing his opposition to nuclear weapons. One of the stories, entitled "My Trial as a War Criminal," imagines a reverse Nuremberg trial in which the Axis powers, having finally won the Second World war, would prosecute the active members of the Manhattan Project. And we cannot fail to mention Franco Rasetti, a close friend and collaborator of Fermi, who, for moral reasons, refused to accompany him in the Manhattan project, and left physics for palaeontology and botanics. It is then most relevant that Rasetti, after the publication of Sciascia's book, strongly objected to his thesis about the reasons of Majorana's disappearance.

10 We cannot therefore assert, as Sciascia does – who, in his defense, did not have all the information that is known today – that it was "without setting conditions or demanding commitments" that scientists (implying all of them) "handed [the bomb] over to politicians and the military." Admittedly, several of them, and not the least important ones, showed little moral scruples. During the first test of the A-bomb (Trinity test, July 1945), after witnessing the monstrous explosion, some of the physicists present, who had participated in the Manhattan Project to build the weapon, said they felt a sense of "exultation" (Weisskopf) or "jubilation" (Rabi), while Oppenheimer, the scientific director of the Manhattan project, bombastically quoted the passage from the Bhagavad Gita describing "the splendor of a thousand suns." Almost alone, Bainbridge, who was oversawing the test, exclaimed "Now we are all sons of bitches[5]". To which, according to legend, Fermi replied: "Yes, but what a beautiful experiment!" And we know that several of the physicists involved in the Manhattan Project committed themselves after 1945, without much hesitation, to the design of the H-bomb (Teller, Ulam, and even Fermi, despite his opposition to such a development).

11 The goal here is not to contradict Sciascia by defending the honor and virtue of scientists in general. Rather, it is to understand why he implicitly condemns them en masse. His position is all the more problematic given that he was writing in the mid-1970s, at a time when a real nuclear de-escalation was beginning to accompany international détente: the US and the USSR, discussing since 1969, concluded the first SALT I agreements on the limitation of strategic

nuclear weapons in 1972, treatises that were further developed in the following years. And one cannot overlook the role played in the preparation of these agreements by some scientists, to wit, the Nobel Peace Prizes awarded to Linus Pauling in 1962 and to the Pugwash movement in 1995. Closer still in time and space to Sciascia's book, the 1970s, in the wake of the youth rebellions of 1968, saw many young scientists oppose capitalism's growing stronghold on the priorities and organization of scientific research, as evidenced by numerous actions, such as the opposition to several renowned senior scientists collaborating in the Vietnam War within the Jason Committee with the US military, and various critical analyses of the political and economic functions of contemporary science[6]. The paradox here is that by relying on the inconclusive case of Majorana as a counterexample, Sciascia ends up incriminating scientists as a whole, allowing those among them who refuse any critical examination of their social role to absolve themselves cheaply. Admittedly, Sciascia eventually clarified his position, writing in 1976:

> I want to point out that for me the expression 'rejection of science' means 'rejection of science at a certain point in the face of certain research, certain discoveries'. That is, rejection by scientists themselves.

12 But this reservation is hardly enough to mitigate the violence with which Sciascia holds science responsible for our "dog's life" and leaves open the question of his attitude, which undoubtedly concerns science itself rather than scientists.

13 Let us finally return to Majorana himself. Sciascia is certainly right to see his disappearance as the result of a very deep anxiety, undeniably linked to his scientific activities. But this distress probably had roots much deeper than the fear of the destructive applications of nuclear physics. Let us remember that he abandoned his research in this field in 1933, after his stay in Leipzig with Heisenberg, at a time when the prospect of nuclear weapons was nothing but "moonshine," as Rutherford put it. Based on what we know about Majorana's psychological state, could we not think that it was the very work of theoretical physics, with its strong and inevitable obsessive component, linked to the manipulation of abstract symbols and numbers on an inhuman scale, an activity that quickly threatened to become mono-

maniacal, which became constitutive of his neurosis? The idea has been put forward, and seems to be gaining ground, that Majorana suffered from Asperger's syndrome, which would explain many aspects of his personality and life. In any case, it seems necessary to understand, rather than his disappearance in 1938 and his prior withdrawal in 1933, when he stopped seeing his colleagues and isolated himself from the scientific community. Here we can follow Sciascia when he writes, speaking of this period and the rare contacts Majorana's friends had with him:

> Majorana carefully avoided any conversation about physics. He talked about fleets and naval battles, medicine, philosophy. But the fact that he didn't want to talk about physics shows precisely that he hadn't abandoned it and was even obsessed with it.

14 Amaldi thus writes:

> None of us, however, managed to find out whether he was still doing research in theoretical physics; I think he was, but I have no proof of it.

15 In fact, one cannot doubt it when reading Majorana's article, "Teoria simmetrica dell'elettrone e del positone" published in 1937, which clearly proves that he had kept abreast of his colleagues' research – he even quotes an article by G. C. Wick from 1935. And how else could he have easily taken his place in the academic institution after being appointed, in somewhat complex circumstances, professor of theoretical physics at the University of Naples in 1937, where the few lessons he had time to give before his disappearance showed him to be in full possession of his theoretical abilities?

16 But it was undoubtedly too late, and Majorana's demon too powerful for him to escape. It is the nature of this demon that Sciascia perceives with unparalleled acuity when he develops a penetrating analysis of the fear of work that grips certain creators:

> For precocious genius – such as Majorana was – life presents itself as an impossible limit to overcome: of time, of work. A limit that is attributed, as if it were imprescriptible. As soon as a point of accomplishment has been reached in the work, a perfection

> achieved, as soon as a secret has been completely revealed, [...] a revelation of a mystery in the order of knowledge [...] – immediately afterwards, it is death. [...] The precocious genius knows all this without knowing it. For him, "doing" is imbued with this premonition, this fear. He plays with his time, dodging and delaying. He tries to expand the measure, to shift the boundary. He tries to escape his work, the work which, once concluded, concludes. Which concludes his life.

17 These words of Sciascia are so powerful and convincing that it is difficult to understand the solution he proposes to the mystery of Majorana's disappearance. There is no need to invoke Majorana's fear of the material consequences of science if it is science itself that has taken hold of him with such power that it covers and ultimately annihilates all other forms of thought and existence. And we do not see that voluntary confinement in a monastery can remedy this possession. On the contrary, seclusion or isolation can only exacerbate such obsessive stranghold. This is undoubtedly what happened to Sciascia between 1933 and 1937, and other well-known cases could illustrate this inevitability (Cantor? Grothendieck?). Dürrenmatt shows this clearly in his play *The Physicists*[7], since the central character, a fictional physicist named Moebius (could it be because for him, science and life are one and the same?), clearly inspired by Majorana, voluntarily has himself locked up in an insane asylum in order to continue his work without any interference; the fact that, in doing so, he has surrendered himself to those who will exploit his discoveries is finally the lesson of the work). Assuming, like Sciascia, that Majorana actually took refuge in a monastery, the fact remains that "soon after, he died."

18 Today, in any case, we are in a position to understand that the problem is less one of the political responsibility of scientists than of democratic control of technoscience. The "freedom of research" that scientists boast about, draped in their white coats to resist any political influence, is either a meaningless claim ("Who made you a scientist?" the state, or increasingly industrial firms, sponsors, and organizers of research might ask) or an exorbitant privilege under common law. "Freedom of research" in a society where science is taken for granted no longer has anything to do with freedom of conscience or individual opinion – even if, in the past, they went hand

in hand for Galileo; today, it is hardly more defensible, in terms of principles, than freedom of property, whose holders have also had to give up some ground over the last few centuries. Demanding that technoscientific activity be explicitly governed by democratic choice does not, of course, amount to legitimizing arbitrary political intervention in its organization and development. On the contrary, it is only by agreeing to abide by the fair common rule and renouncing their privilege of political extraterritoriality (which is, in fact, under threat!) that those involved in science and technology will find the social alliances that will enable them to safeguard their relative autonomy and regain the collective support that is essential to them. It is therefore crucial to invent, experiment, and expand new forms of democratic debate on technoscientific development. Scientists have no other choice if they want to avoid becoming, as Brecht has Galileo say in his prophetic self-criticism (*The Life of Galileo*[8]), "a race of inventive dwarfs" in the service of this new form of political organization – the establishment of which is already well underway – which would be, symmetrical and equivalent to enlightened despotism, extinct democracy. It is not more, but better (and different) science that we aspire to. As Brecht again wrote:

> The more we wrest from nature through the organization of labor, through great discoveries and inventions, the more we seem to fall into the insecurity of existence. It is not we who dominate things, it seems, but things that dominate us. Yet this appearance persists because some men, through things, dominate other men. We will only be freed from natural forces when we are freed from human violence. If we want to benefit as men from our knowledge of nature, we must add to our knowledge of nature the knowledge of human society.

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1 Leonardo Sciascia, *La Scomparsa di Majorana*, Einaudi 1975. English translation in *The Moro Affair and The Mystery of Majorana*, Carcanet Press, 1985.

2 Leonardo Sciascia, *La Stampa*, 25 December 1975, p. 3.

3 Nicolas Chevassus-au-Louis, *Pourquoi Hitler n'a pas eu la bombe atomique*, Economica 2013.

Mark Walker, *Hitler's Atomic Bomb*, Cambridge University Press 2024.

4 Leo Szilard, *The Voice of the Dolphins and Other Stories*, Simon & Schuster 1961.

5 See « The Manhattan Project, An Interactive History », http://www.cfo.doe.gov/me70/manhattan/trinity.htm

6 For an anthology of these radical movements, see A. Jaubert et J.-M. Lévy-Leblond, *(Auto)critique de la science*, Seuil 1972. On a more theoretical level : G. Ciccotti, M. Cini, M. De Maria & G. Jona-Lasinio, *L'Ape e l'Architetto*, Feltrinelli 1976 (https://it.wikipedia.org/wiki/1976) – and many others.

7 Friedrich Dürrenmatt, *Die Physiker*, Arche, 1962. English translation : *The Physicists*, Grove Press, 1964.

8 Bertolt Brecht, *The Life of Galileo*, translated by Charles Laughton, Grove Press, 1966 ; ed. or. *Lebens des Galilei*, Suhrkamp 1963.

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