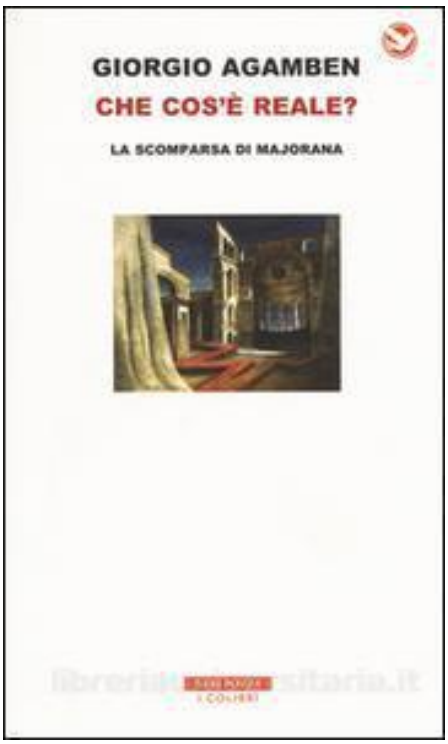

Che cos'è reale? La scomparsa di Majorana

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Quarant'anni dopo il libro di Sciascia, il mistero della scomparsa di Ettore Majorana, avvenuta il 25 marzo 1938, è rimasto immutato. Com'è possibile che il più promettente e geniale fra i fisici riuniti intorno a Enrico Fermi sia sparito senza lasciare traccia? Sciascia aveva ipotizzato che la decisione di scomparire e di abbandonare la fisica fosse stata presa da Majorana nel momento in cui si era reso precocemente conto che le ricerche di Fermi avrebbero portato alla bomba atomica, ma la sua ipotesi è stata sempre smentita dai fisici. Agamben in questo libro affaccia un'altra e più persuasiva ipotesi. Analizzando attentamente un articolo postumo di Majorana sul "Valore delle leggi statistiche nella fisica e nelle scienze sociali", che dimostra che nella fisica quantica la realtà deve dissolversi nella probabilità, Agamben suggerisce che Majorana, scomparendo senza lasciare tracce, ha fatto della sua persona la cifra stessa dello statuto del reale nell'universo probabilistico della fisica contemporanea e ha posto alla scienza una domanda che aspetta ancora la sua risposta: che cos'è reale?

Che cos'è reale? La scomparsa di Majorana Details

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From Reader Review Che cos'è reale? La scomparsa di Majorana for online ebook

Leif says

Would you like a beautifully made and elegantly tailored story about a brilliant physicist whose mysterious disappearance coincides with international controversy about quantum mechanics and the nature of science itself? Yes? Would you like it to embody some of the largest questions about how we view governmental power and how we understand complex subjects through statistics? Yes? Would you like an Italian philosopher to wrap all of the above up for you in, oh I don't know, 60 pages or so?

No wasted words. No unfounded thoughts. No dependence on canon. Agamben, you brilliant man. This is a lesson in probability, superimposition, and governance; it is about science and dice. As the physicians such as Majorana have realized,

> Any experiment performed on an atomic system exerts a finite perterbation on it that cannot be eliminated or reduced for reasons of principle. The result of any measurement seems, therefore, to be concerned with the state the system is led to during the experiment rather than with the unknowable state of the system before being perturbed.

This, from an essay where the physicist describes the parallel between the natural and social sciences. Of course, many social scientists will agree too, and have known this for a long time: the presence of an experiment(er) changs the outcome of an experiment. These bizarrely-called "social facts" are assertions of power in a domain ruled by probability.

But this is about not just the experiment but also how the vision of experimentation to understand the world has changed; we are not trying to understand the world any longer, we - scientists - seek to understand the probability of something, abstracted from a controlled situation in which their intervention has changed reality. I'll let Agamben say it: "[Majorana] clearly saw the implications of a mechanics that renounced every non-probabilistic conception of the real. Science no longer tied to known reality, but – like the statistics of social sciences - only intervenes in it in order to govern it." For Agamben, and here he is also following Simone Weil, this entails that science has left behind its objective for so many years that was to understand the reality of the world. Now science moves through statistical reason and it assumes a probabilistic model of the world. And "as soon as we assume that the real state of a system is in itself unknowable, statistical models become essential and cannot but replace reality." Governance follows; the world departs from sight; the pursuits of human activity become speculative and ungrounded; and science, so long the bastion of humanistic reason, can no longer answer the simple question: what is real?

Massimo Magon says

Che cos'è reale? domanda che sempre più acquisisce senso in un mondo che, nel lavoro, nelle relazioni, nei bisogni, si dematerializza costringendoci a nuove modalità di percezione, quindi a diverse forme di necessità e desiderio, codifica e comprensione, che creino e stabilizzino la realtà.
Ettore Majorana, geniale ed inquieto fisico che avrebbe potuto "competere" con Fermi, scompare la sera del 25 marzo del 1938, dopo essersi imbarcato a Napoli su un piroscafo diretto a Palermo. Nessuno lo rivedrà né ne avrà notizie: le ultime risalgono a due lettere contraddittorie dello stesso Majorana, datate il giorno della

sua scomparsa e quello successivo: nella prima si accomiata lasciando presagire una volontà di suicidio; nella seconda annuncia il suo ritorno e la rinuncia all'insegnamento universitario. Questa indeterminatezza è lo spunto da cui Agamben muove le sue riflessioni nello stesso campo di studi di Majorana: la fisica, che in quel particolare momento storico è la fisica quantistica.
Da Planck a Bohr, da Heisenberg a Einstein, da Schrodinger a Fermi e Oppenheimer, a partire dai primi decenni del Novecento i maggiori fisici mondiali conquistano e si lasciano conquistare da una nuova teoria che affianca le leggi generali della fisica classica, senza mai sostituirle: è la fisica degli atomi, dei quanti, degli stati discontinui dell'energia, dell'influenza dell'osservatore sul sistema osservato e dell'impossibilità della conoscenza, ovvero della misura, dello stato di un sistema, della capacità degli esperimenti di governare la materia.
La fisica quantistica opera una rivoluzione rispetto alle leggi deterministiche della fisica classica, fondata sul concetto di probabilità: prima dell'osservazione (sperimentale) un sistema si trova contemporaneamente in tutte le posizioni ed è solo al momento dell'osservazione (e della misura) che ne occupa una, secondo una distribuzione di probabilità. Poiché per sua natura la probabilità non si riferisce mai a un singolo evento reale, ecco che nasce un mondo parallelo a quello reale, quello delle probabilità, che può influenzare le scelte rispetto alla realtà, ovvero permette di intervenire sulla realtà, governandola. Ecco quindi che, nella fisica quantistica, la realtà si eclissa nella probabilità.
Su questi presupposti si è compiuto lo sviluppo scientifico dell'ultimo secolo, le cui scoperte e applicazioni stanno, negli ultimi decenni, imprimendo un'accelerazione al mutamento delle tecniche e delle tecnologie e, di conseguenza, delle società, accelerazione che per il momento ci impedisce di fissare la realtà in uno stato determinato. Anzi la realtà sembra sempre più assumere essa stessa la forma di una distribuzione probabilistica che ancora non siamo in grado di calcolare. Ed è qui che Agamben chiude il cerchio: la scomparsa di Majorana sarebbe avvenuta per la volontà stessa di Majorana di confutare la teoria oggetto dei suoi studi, come metodo di dimostrazione della sua validità e universalità. La scomparsa risulta essere un evento assolutamente reale e al tempo stesso assolutamente improbabile, non potendo essere misurata per effetto dell'assenza dell'oggetto da misurare, in questo caso il corpo dello scienziato. Un modo geniale ed inquieto per riproporre la domanda cui la scienza non ha ancora saputo dare risposta: che cos'è reale?

"La statistica non è una scienza volta alla conoscenza sperimentale del reale: è, piuttosto, la scienza che permette di prendere decisioni in condizioni di incertezza".

Liam says

‘I’ proto-outcome of successive indifferent ‘blind chance’ ‘dice rolls’ etc ‘contend’ (formally) with the thesis-encapsulation that *‘‘quantum mechanics relies on the convention that reality must be eclipsed by probability, then disappearance is the only way in which the real can peremptorily be affirmed as such and avoid the grasp of calculation’’*(42, 43), since (a) QM as a subset of ‘ineluctable’ character to perception ‘to world’ merely renders/dissolves ‘essential reality’, so there is no allegorical hiding of a theoretical ‘thing-in-itself’/absolute (excepting ‘unavoidable’ descriptors, ‘logical rules’, though ‘baseless’ for anything other than as ‘sticky’, relative referents by agreement) (b) the ‘incomplete infinite arbitrariness’/‘impassive’ ‘infinite sequence’ in abstraction (gruesome possessiveness of ‘minimal representation’) has ‘inverse/abnormal’ results (c) *‘‘assume(...)in itself unknowable(...), unknowable state of the system before being perturbed’’*(42) - false equivalency, every case has been ‘ungraspable’ ‘ordained augury’ of theory, this happened before QM, whether Aristotle-substance/Plato-forms/Weil-God/classical mechanics referenced (&recursive) -almost reason enough not to use QM for philosophy (when of definitives), any result can be theoretically posited- (d) appears as wish fulfillments for preserving enigmatic ‘cloud of unknowing’ (whether QM/’post’-classical physics is intelligible or not is a distinct aporia) (e) difference between

possibility and probability, Majorana's 'disappearance' as an 'existing progenitor' (capable of causes) is perhaps an escape for probability of individual nomos 'calculation', 'we' lack some valent information, the 'texture' of decision, yet the manner of 'throwing the dice' remains as an 'actualized' possibility, by 'rules of large numbers',*crudely* statistically predicted/'contained' ('we' know velocity/motion if not position in the allusive sense of M's objection) though (f) given transposed operators depend upon 'introduced order' (skeletal force-ful suturing) by human interference... symbolically declaration ('universal form') *may* 'render ambiguous every experimentally detectable trace''(43) to 'himself' *only*, to 'us' we cannot comment ((or 'we' say (e)), yet this is not an 'escape'.

Regarding the *Value of Statistical Laws in Physics and Social Sciences* 'transdisciplinary' paper (one can 'confidently' state this, for example given the quote: *''both quantities[probable lifetime, & transformation period*] are independent of the atom age'', 63), M's/any attempt to be among the *''negligible amount of exceptions, wholly or in part''*(56, one of few expressions italicized) not formally defined by the 'macroscopic state' (A) seems a pointless/unattainable/simply a delaying of the 'time' where a transformation period occurs, the disintegration of a given atom, because, (embedded 'in a context of' social sciences/'human affairs', with metaphysical notation (of feeling) by the language used, composition of simplistic alchemical like-sentences, somewhat vague, with importantly, rare use of commas, which in the topical sense of his writing, could signify a 'deviation' or 'deflection' from the 'initial state of a sentence', or thermodynamic system, or metaphorical anthropomorphised subject as M); is so 'inevitable', may we say 'determined', even if M states (to 'me' an incorrect/logically flawed) that *''single radioactive atoms do not undergo any reciprocal influence concerning the instant of transformation''*(63) – especially from the mentioned ''random fluctuations(...)the probabilistic character of the individual law of transformations''(ibid).

[So if M 'removes himself' from the dynamic system, others would venture onto/demonstrate nuclear fission, even maybe counterfactually be drawn to reasons for his 'disappearance', speeding up the process, (did this actually historically happen, upon discovery by Otto Hahn/Fritz Strassmann six months after, both worked with M/Fermi's earlier research??!); he himself relinquished influence, to change the course of Newton's first law. Ethical preliminaries or 'common' scientific standards' would 'statistically' not be listened to in bellicose late 1930's, his location/possession as professor in fascist Italy, M likely did not want to participate with Axis/Allied powers; though he could have pre-emptively 'defected' before or with Fermi in the same month of O/F's Dec 1938 fission findings, Hiroshima/Nagasaki may not have happened & nuclear weapons may have been demonstrated earlier to deter further German annexation, though probable actual deployment we will assume from six months earlier (interval March-Dec 1938) to much before Dec 1942. Variables of M's knowledge & ability to satisfy NF are unknown here, so M did not (unless he seriously thought no-one else could satisfy NF, unlikely, and assumption his reason for leaving was for this reason): *''provide an immediate and concrete evidence of reality''*(65), given his mentioning that the powers of *''interpretation(…) a special skill(…) is an important support of the art of government''*(ibid). The decision (however you judge 'principally') of M however does not relate, or be a 'solution' to the theoretical arguments, or question to 'What is Real' 'posed by' QM & M/Agamben, reason for two stars].

^Apologies in the previous for the confused 'behind the lines' again alchemical language used, this is reproduced in M's thesis, one would have to read to understand (though 'I' disagree with 'conclusions' as delineated, briefly, above), it is observable that M knew and ingrained sociological/far reaching effects of any initial state of conditions, more than usual narrow confines of those in the mean-established scientific orthodoxy.

Ben says

I approached this small book with some trepidation, since contemporary continental philosophers/theorists have developed a bit of a side industry in (mis)addressing quantum physics (A. Plotnitsky's attempt to favorably link N. Bohr's "complementarity" pseudo-system to Derridean deconstruction; F. Laruelle's grafting of "superposition" for his own purposes, etc.).

The "setup" of Agamben's analysis — the rather coy, understated means by which Agamben vaguely suggests a deeper, or somehow intentional, connection between the mysterious 1938 disappearance of the physicist Ettore Majorana and interpretative debates over a deterministic versus inherently probabilistic nature of fundamental physics — at first reading may seem to be a similarly "cheap," or at least gimmicky, correspondence. But the main sections of Agamben's actual analysis — distinct from his ultimately just suggestive opening and closing references to Majorana's disappearance — are incisively focused on the concept of probability, and how, in many ways, confusion over the role of probability in contemporary philosophy of science still remains to be sorted out coherently in relation to ontology.

The crux of Agamben's argument seems to come down to:

> It is evident that, as was suggested by Simone Weil, the paradoxes in question in quantum mechanics derive from the unconditional assumption of probabilistic conceptions, which are not matched by an adequate reflection on the very nature of the notion of probability. For both the supporters of the orthodox theory and their critics, the state of the system before and after observation is not a real but a probabilistic state; however, they seem to produce a representation of this state and argue as if probability were a very special kind of reality, which one can think in a paradoxical way (for example, as if a particle were at the same time in both state A and state B). But is it correct to represent the probable as if it were something that exists? In other words, what is at stake is a problem concerning the ontology of the probable — or the possible, since probability is nothing other than a possibility qualified in a certain way. . . (pp. 27–28).

And (Agamben interestingly relating these debates to his more familiar references to potentiality in Aristotle):

> . . . Chance is a non-cause, or an accidental cause, which we refer to when events that seem to have been produced because of a given final cause are instead produced accidentally and unexpectedly. . . . It goes without saying that Aristotle rules out that there can be a science of chance and what is accidental. . . . If we try to define probability in Aristotle's terms, we may say that it is a potency emancipated from its hierarchical subjection to the act. Insofar as it has secured an existence that is independent of its actual realization, such a possibility tends to replace reality and thus to become the object of a science of the accidental — unthinkable for Aristotle — that considers possibility as such, not as a means of knowing the real, but as a way of intervening in it in order to govern it. The analogy with Aristotelian *dynamis* is all the stronger here since the latter was indeed the specific dimension of human techniques and knowledge. In *De Anima*, Aristotle thus comes to define the intellect as "a being whose nature is potential being" and compares it to a writing tablet on which nothing has yet been actually

> written. What happened in modern statistics and quantum physics is that the writing tablet — pure possibility — replaced reality, and knowledge now knows only knowledge itself. . . (pp. 39–40).

Agamben, by way of his analysis of the nature of probability itself, at least does *not* — as many contemporary "quantum"-inspired writers are prone to do — just regurgitate Bohr's early, quasi-philosophical and ultimately incoherent formulation of the meaning of quantum physics as if it's a *fait accompli*, or the only possible interpretation of the experimental results. Agamben even briefly mentions Louis de Broglie's "pilot wave" model as an alternative, deterministic account (p. 23), after summarizing Simone Weil's objections to using epistemological uncertainty (ignorance of initial conditions) as a basis for throwing out determinism altogether — an underlying confusion which results in what have become the most common, incoherent ontologies of quantum physics (to the extent that, even today, many physicists apparently seriously consider it somehow more "reasonable" that an entire, new *universe* is somehow splintered-off due to each quantum measurement, rather than simply accept that some version of nonlocality/entanglement is just a fundamental aspect of nature at the quantum scale or below/beyond it; cf. https://www.quantamagazine.org/why-th...).

This book also includes Majorana's own essay on statistical laws from the 1930s, first published in 1942, four years after he disappeared. There's some irony in the fact that Majorana began his essay, an essay stressing the fundamental shift toward probabilistic frameworks, using astronomy and planetary motion as the contrast to (the ontologically-probabilistic interpretations of) quantum physics. Recently, studies have actually demonstrated geometric parallels between pilot-wave-like models of both quantum systems and planetary systems — that is, showing that density distributions of both planets and electrons, for example, can be explained by modeling peaks and valleys of interference patterns among waves (cf. http://oaji.net/articles/2017/5459-15... & https://www.scientificamerican.com/ar...) — which, if true, implies exactly the *reverse* of Majorana's assumption that there is an insurmountable "probabilistic" break within physics between micro and macro levels. (For any physicists out there doubting this [that realist models of QM still exist in relation to actual experiments], see, for example: http://advances.sciencemag.org/conten... — nonlocal-realist theories of QM have not been disproved, rumors to the contrary notwithstanding; and, in this sense, Agamben's reliance upon Weil's earlier criticisms of the causal incoherence of the initial interpretations of the quantum results may have more current *scientific* — not just "philosophical" — relevance than even Agamben himself may fully realize?). Nonlocality/entanglement is an unavoidable result of quantum physics, but any claim that inherent nonlocality somehow throws out "reality" altogether is unfounded; to Agamben's credit, he at least ends this book with a question ("*What is real?*"), rather than with a lazy ode to "complementarity" or some other undeveloped philosophical interpretation of the quantum results.
