A Comment on Anna Carabelli's «Keynes's Uncertainty as a Tragic Rational Dilemma»

A COMMENT ON ANNA CARABELLI'S « KEYNES'S UNCERTAINTY AS A TRAGIC RATIONAL DILEMMA»

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Among the highly relevant issues Anna Carabelli has dealt with in her seminal assessment of Keynes's *Treatise on Probability* (henceforth TP) since the 1980s, the paper presented at the STOREP meeting focuses on «tragic rational dilemmas». Tragic dilemmas emerge when the uncertainty individual agents face is characterized as what Carabelli calls «intrinsic incommensurability of probabilities». Unlike the uncertainty related to low weight of argument, this kind of uncertainty makes probability assessments indeterminate. Comparisons of probabilities are not possible, not even the qualitative comparisons of more and less that Keynes admitted for situations in which the weight of argument is low.

Carabelli claims that in the TP there are three «cases» distinguishing what Keynes considered as situations that can be dealt with in a formal way from those that cannot. A well-known diagram of the TP is reproduced in Carabelli's paper, in order to highlight what she terms Case 3(i), that is, the situation in which «we cannot compare probabilities belonging to different orders». Specifically probabilities U and V in the diagram cannot be compared since, first, they do not belong to the same «path» of qualitative, non-numerical probabilities and, second, the different paths they belong to do not intersect with each other. Still, what Carabelli focuses on is a more extreme situation that she terms Case 3(ii), when «quantitative comparison of probabilities is not possible because degrees of probabilities cannot be arranged even in an order of magnitude».[1]

In a closer examination of the diagram and of what it represents, it should first be observed that while U cannot be compared with V all other points indicated by Keynes in his diagram can be. Notwithstanding numerical probabilities are only those on the horizontal line O to I, non-numerical probabilities can be compared in most cases. The domain of non-numerical probabilities is not necessarily related to «intrinsical incommensurability» but to a much more ample variety of cases. Indeed, in the published version of the TP, Keynes (1973 [1921], 37) talks of problems of measurability − that is, of the necessity to admit that in general probabilities are «non-numerical» − and of problems of comparability − that is, of the necessity to admit that «it is not always possible to say that the degree of our rational belief in one conclusion is either equal to, greater than, or less

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[1] Given that «quantitative» comparisons are not possible in others cases as well, I will consider the specific problems relative to Case 3(ii) as impossibility of «qualitative» comparisons, adhering to a terminological convention that is proper to decision theory.

than the degree of our belief in another». Part II of the TP contains a method of approximation through which Keynes tries to show how to enlarge the domain of the ordering of probabilities even when there are problems of comparison.

However, as noted by Carabelli, among the variety of cases Keynes imagined there are also cases of, let us say, an incomparability so profound that it is indeed incommensurability. Case 3(ii) identifies situations in which not even a qualitative ordering seems to be possible, so that the method of approximation introduced in Part II of the TP cannot be applied to these extreme situations. Yet, it is not simple to say what is the actual content of this Case 3(ii), since Keynes does not highlight this situation, neither in the diagram nor in the description of situations the diagram is intended for (Keynes 1973 [1921], 40-43). One might think that Case 3(ii) should be represented by single points not belonging to any probability path. But in the diagram «every probability lies on a path between impossibility and certainty», so it seems as if the diagram can be useful to represent situations of non-comparability, but not of the intrinsic incommensurability Carabelli emphasizes. The diagram is introduced to summarize Keynes's ideas on the measurement of probabilities, but what really is uncertainty for Keynes is not representable through the diagram. On this issue, it would be very interesting to know Carabelli's position.

For sure, Keynes's ordering of probabilities is incomplete, something that Keynes's diagram clearly shows. Keynes himself states this when he notes that «a path or series composed of degrees of probability, is in general not compact». This property alone makes it possible to conclude that of some comparisons of probability one cannot say that one probability is greater, lesser of equal to the other. As reminded in my contribution to the STOREP meeting, the birth of modern decision theory hinges on Savage's explicit rejection of Keynes's worries about the too strict connection between numerical probability and qualitative probability that the property of compactness would guarantee (a point first noted by McCann 1994).

Carabelli seems to relate incompleteness to the specific, crucially relevant dilemmas Keynes referred to both in the TP and later, particularly what she classifies as the «umbrella dilemma» and the «Buridan's dilemma». This is why Keynesian uncertainty is a «tragic rational dilemma». But what do these dilemmas reveal in general terms? If one concentrates on the issue of representation, that is, how degrees of beliefs can be represented by means of probabilities, what is really relevant is whether the ordering of probabilities one can derive satisfy the usual properties of probabilities or not. Once it is agreed that this is not so, as for Keynes's non-numerical probabilities, the question becomes what alternative representation one can use. Moreover, if it is admitted that probabilities can be intervals the incompleteness of ordering emerges immediately.

Carabelli argues that the impossibility of ordering probabilities depends on information and knowledge, being associated to «heterogeneity of reasons, grounds or evidence». In current decision-making literature dilemmas are decision-making situation characterized by conflicting evidence (Smithson 1999). To conflicting evidence Ellsberg (1961, 661) made reference to justify the need to reject the idea that uncertainty can be reduced to risk and to introduce ambiguity in decision theory. Ellsberg showed that that ambiguity would emerge in the form of unknown (standard) probabilities, and that ambiguity has behavioural consequences. These behavioural consequences would not be exhibited by a rational agent who reduces uncertainty to (standard) probability. But he found no reason not to look for alternative representations, since economists are interested in a world in which decisions must be taken, even in the face of vagueness originated by conflicted evidence. Ellsberg stressed that he was working in the line of thought inaugurated by Keynes while he was arguing in favour of representations for incomplete orderings (Zappia 2021). Therefore, the heterogeneity of reasons Keynes wanted to highlight has been taken into account in the works of critics of mainstream decision theory (Binmore 2008). Whether there is a satisfying solution for this problem or not it is still today an open question and this testifies to the importance of Keynes's insights and of Carabelli's extreme position.

But the need to act − to move from «speculative ethics» to «practical ethics», as noted by Carabelli while assessing the early works on ethics culminating in the mature, 1921 version of the TP − is a fundamental part of Keynes's contribution. In her paper, Carabelli reports a very instructive case in which Keynes himself wonders whether in extreme situations of uncertainty one should simply admit that he does not know. When he was asked to assess how much the English Government could afford to spend on its employment policy in 1942, in the dramatic environment of an ongoing World War, he claimed that there were no adequate data on which to guess precise numbers. But Keynes was not satisfied to consider this an irresolvable dilemma, and he claimed that if forced to act he in the end would be able to reply, and in his guess he provided an upper and a lower value for his estimation of what the government could afford. The analogy with interval-valued probabilities as an instrument on which to act appears to me obvious, but it would be interesting to know what Carabelli's viewpoint is.

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