



## An interview with Michael Dummett : from analytical philosophy to voting analysis and beyond

Rudolf Fara and Maurice Salles

LSE has developed LSE Research Online so that users may access research output of the School. Copyright © and Moral Rights for the papers on this site are retained by the individual authors and/or other copyright owners. Users may download and/or print one copy of any article(s) in LSE Research Online to facilitate their private study or for non-commercial research. You may not engage in further distribution of the material or use it for any profit-making activities or any commercial gain. You may freely distribute the URL (<http://eprints.lse.ac.uk>) of the LSE Research Online website.

**You may cite this version as:**

Fara, R. & Salles, M. (2006). An interview with Michael Dummett : from analytical philosophy to voting analysis and beyond [online]. London: LSE Research Online.

Available at: <http://eprints.lse.ac.uk/archive/00000552>

This is an electronic version of an Article published in Social choice and welfare, forthcoming. Copyright © Springer.

<http://link.springer.de/link/service/journals/00355/index.htm>

The authors gratefully acknowledge that work on this paper was partly supported by the Leverhulme Trust (Grant F/07-004m).

# AN INTERVIEW WITH MICHAEL DUMMETT: FROM ANALYTICAL PHILOSOPHY TO VOTING ANALYSIS AND BEYOND

RUDOLF FARA AND MAURICE SALLES

## 1. INTRODUCTION

Social choice and welfare economics are subjects at the frontier of many disciplines. Even if economics played the major rôle in their development, sociology, psychology and, principally, political science, mathematics and philosophy have been central for the manifold inventiveness of the employed methods and for the diversity of the studied topics. This phenomenon can be compared with game theory, a subject which has, of course, many connections with social choice and welfare. This fact is reflected by the disciplinary origins of the contributors to the subject and, as an anecdote, by the disciplinary origins of the board of editors of this journal. Philosophers are expected to contribute mainly to the study of social justice and related ethical questions. But there is a tradition among logicians for studying voting theory. A famous example is C. L. Dodgson (Lewis Carroll), even though the complete works of Dodgson on voting occupy only a few pages. A major recent example is Michael Dummett. Michael Dummett is famous among social choice theorists for his joint paper with Robin Farquharson published in *Econometrica* in 1961. Later he wrote two important books on voting (Dummett (1984, 1997); for an overview see Salles (2006)). But it must be outlined that Michael Dummett is also, and above all, one of the greatest contemporary philosophers whose work on the German logician Frege, on intuitionism, realism, anti-realism, justificationism has been central for the development of analytical philosophy in the second part of the last century and in this century (an example is the Symposium in a recent issue of *Mind* (see Peacocke (2005) and Dummett (2005)).<sup>1</sup> Sir Michael Dummett is Wykeham Professor of Logic emeritus at Oxford University. His interview was conducted at New College, Oxford in September 2004.

## 2. INTERVIEW

**M. Salles:** Could you tell us a little about the origin of your interest in philosophy in general and in analytic philosophy, logic, and philosophy of mathematics in particular?

**M. Dummett:** Well, my interest in philosophy, and in particular analytic philosophy, simply derives from my study as an undergraduate. I had a history scholarship to the Oxford college of Christ Church which I gained in 1943. Then I went into the army and I was four years in the army, two years during the war and two years after the war. When I came out I realised that I'd forgotten a large amount of the history that I'd learnt at school, so I thought it would be a mistake to read history, and I decided to read philosophy, politics and economics. I'd read a little philosophy and been interested in it, but not yet gripped by it, and I thought it would be very useful to know both politics and economics. I was absolutely gripped by the philosophy that I studied as an undergraduate, and that became my overriding interest. It was analytic philosophy that was absolutely dominant in Oxford, and indeed throughout Britain I think at that time, so that was the

---

*Date:* August 2005.

The authors gratefully acknowledge that work on this paper was partly supported by the Leverhulme Trust (Grant F/07-004M). We would like to thank Liz Docherty who remarkably made the basic tape transcription.

<sup>1</sup>All footnotes and references have been added by the interviewers. For Dummett's works in philosophy and logic see Dummett (1978, 1981, 1981a, 1991, 1991a, 1991b, 1993, 1993a, 2000, 2004, 2005).

kind of philosophy I learnt to do. I've always remained an analytic philosopher—but as for logic and the philosophy of mathematics, that's a separate thing. It happened, well again, quite accidentally. I took, the first time it was set, an optional paper in philosophy in my final examination. It was one invented by John Austin and it was called, absurdly, *The Origins of Modern Epistemology*. What it was was a collection (a rather large collection) of texts, starting with Plato's *Theaetetus* and finishing with Frege's *Foundations of Arithmetic*. These were texts which one wouldn't normally have come across during the ordinary Philosophy, Politics and Economics course in Oxford, and I worked my way through these. I was very interested by a lot of them but I was absolutely bowled over by the *Foundations of Arithmetic*, and I thought, I want to read everything this man has written. I thought it was the most brilliant work of its length, that I had ever come across. So when I got elected as a prize fellow of All Souls College I started to read everything that Frege had written. Very little was translated into English at that time, so I had to read it in German, and naturally since he was the founder of modern mathematical logic and a lot of his writing was about logic in general, philosophical logic, but also it all was directed at the philosophy of mathematics, so I decided I must learn some mathematics and some mathematical logic. Well, as far as mathematics was concerned, I planned to do an undergraduate course in mathematics and to take the final examination, but the Warden of All Souls—I mean in those days such figures had much more authority than they do now, you did what they said—forbade me to read the Mathematics School, on the grounds that if I didn't get a first class degree in the subject, it would shame the college. So I found someone, John Hammersley, a mathematician, who very kindly gave me tutorials in the subject (although I wasn't going to take the examination) and I read a certain amount of mathematics for myself. As for mathematical logic, there was no one in Oxford at that time who could teach it to me, so I went and spent a year at Berkeley, California. Berkeley was then much the best for mathematical logic. It was done both in the mathematics and in the philosophy departments, and Tarski of course was there.

**R. Fara:** Michael, it would be helpful if perhaps we just had a few dates here, so when are we talking about?

**M. Dummett:** Yes, I came up to Oxford in 1947, took my finals in 1950 and sat the All Souls examination for prize fellowships in the same year, and was lucky enough to be elected. It was in 1955 that I went to Berkeley. When I came back I retained my interest in the philosophy of mathematics generally, not just in Frege. I was always very interested in Frege's work, and I've written about it a good deal, but, studying different philosophies of mathematics, I came upon Brouwer and the whole intuitionist school and became very interested in that. In about 1963 the position of Reader in the Philosophy of Mathematics became vacant—it had been held by Friedrich Waismann who had been a member of the Vienna Circle. He had come to England as a refugee from Hitler, and he had been Reader in the Philosophy of Mathematics, but he switched to become Reader in the Philosophy of Science so that the position was open and I was lucky enough to get it. I held the post for thirteen years. I lectured on that subject and we got the new Honours School in Mathematics and Philosophy for undergraduates started. I took a large part in the foundation of that, and then had to do an enormous amount of teaching for it because we loaded it with mathematical logic. So I had to do about twice as much lecturing as the university required in order to cover it all. Then we got Robin Gandy—he was Reader in Mathematical Logic—and later we had Dana Scott as Professor of the subject. So the burden of teaching was very much lightened after these people came. Also I gave courses in philosophy of mathematics. So for 13 years that was my principal obligation to the university. Of course I kept up an interest in philosophy in general, in philosophy of language and its effect on metaphysics. Those were my interests outside the philosophy of mathematics but that wasn't what I was professionally doing.

**M. Salles:** The readers of *Social Choice and Welfare* are mainly economists, and most of them ignore that you are one of the most famous philosophers. Could you describe your work in philosophy, even if this seems quite impossible in a short time?

**M. Dummett:** Well I'll do my best! A very, very brief answer. I have a kind of side interest in the philosophy of time. One of the first things I published was an article arguing that backwards causation (where the cause comes after the effect) was not logically impossible. I suppose that the principal interest I've had, and certainly what I'm best known for, is a critique of realism and the truth-conditional theory of meaning that underlies it. That is, the theory that the meaning of a statement consists in the condition for it to be true. Now, what we learn when we learn a language is what counts as establishing a statement as true. Not in general by observation but more usually by inference from premisses established by observation. We also learn what you're committed to by accepting a statement as true; that's the practice of speaking a language. But the realist position normally involves the principle of bivalence (that every unambiguous statement is determinately either true or false). On that position, the being true of the statement can go beyond what we are capable of recognizing. But what we are capable of recognizing consists in our ability to recognize whether the statement is established as true. The simplest possible example is this. It's normally assumed, a realist assumption, that the magnitude of any physical quantity is absolutely determinate and exact, that's to say that it would be given in terms of some suitable unit, by a real number which might be rational or irrational. We can never discover that. We can only measure to within a margin of error. So there is a statement which is true but which we are incapable ever of recognizing as true. There are plenty of such statements, and I want to question, I have questioned, how we can come by such a notion as that of a statement as being true, independently of our being able to recognize it as true? And how can we manifest possession of such a concept, and in any case, in what does it consist? It seems that there is a circularity. You explain what it is to grasp the proposition expressed by a statement, in terms of your grasp of another proposition; namely that it would be true under such and such conditions. That can't be manifested in the actual practice of using the language, because all that manifests is your capacity to recognize it, to recognize the statement as true in favourable cases. So, if you reject this realist account, this truth-conditional theory of meaning, you have to have a different theory of meaning which I call justificationist (to understand a statement is to know what would justify you in asserting it, in other words being able to recognize it as true). And if you take that as your account of meaning, you have to jettison this principle of bivalence because there are statements for which we have no means of recognizing whether they're true or false, so you can't assume that every statement is either true or false. I mean you're now identifying truth with the existence of something whereby we could recognize a statement as true. That means that you have to reject classical logic in favour of what's usually called intuitionist logic. So, now, I've never actually identified myself with a denial, a rejection of realism, I've been concerned simply to pose a challenge to the realist standpoint and ask how it can answer these questions that I've posed about how do we get the concept of being true, and also to work out the implications of denying realism and adopting the justificationist theory of meaning. What effect does that have on metaphysics essentially? Is it coherent? I mean are there problems which show it to be untenable? So that has been my major interest. I've written a great deal also about the philosophy of Frege, I've retained my admiration for and interest in his work, so that is exegesis—it's exegesis which brings you to the frontiers of the subject, I think.

**R. Fara:** If I may summarize, would it be fair to say then that the intuitionism in a sense underpins the anti-realism?

**M. Dummett:** Yes.

**R. Fara:** So, would your take be something along the lines of Quine, who never denied that there are other possible logics—in fact nothing was ever sacrosanct in his view—but just basically that you were stuck with bivalence because it got you the results that you required in science, and it was simplicity that was at stake? And are you saying in a sense that we shouldn't just draw boundaries, and we shouldn't be so quick and content to retain boundaries; that maybe we should just look a little bit further forward to see what we might come up with if we put the full support towards something other than bivalence? Is that a fair position of where you stand . . . ?

**M. Dummett:** Yes, yes.

**R. Fara:** . . . Of course you recognize bivalence and its power in what it does in mathematics, but what would happen if?

**M. Dummett:** Right, yes, exactly.

**M. Salles:** Another possibility to deny bivalence would be to accept multivalence.

**M. Dummett:** Yes, but that's not the way that I've gone actually. In intuitionist logic you can't assert of any statement that it is neither true nor false, that would be for the intuitionist a contradiction. What you can't do is to assume that it is determinately one or the other.

**R. Fara:** Yes, 'it's P or not P' is what is rejected.

**M. Dummett:** Yes, right, and you can't ever close off the possibility that something will be shown to be true. It may be very unlikely that it is, but there could always be evidence that would turn up. So you can't close it off.

**M. Salles:** What leads a major philosopher to devote a significant time to social choice and voting theory?

**M. Dummett:** Ah, well there's a very short answer to that. I don't see why one shouldn't be interested in more than one thing. I think it's a pity in fact to concentrate just on one thing, so . . .

**M. Salles:** Yes, concentrate, I agree, but still . . .

**M. Dummett:** It's not that I see any link between them. It's just that they both interest me.

**M. Salles:** So could you describe your work in social choice and welfare?

**M. Dummett:** Well, it's been very spasmodic. I was first interested in the theory of voting as such. I still think that the application to voting is the salient kind of application that social choice theory has had up to now, although it's much more general than that as a theory. I was first interested in the theory of voting by Robin Farquharson who was a very brilliant young man and had become interested in the theory of voting while he was still an undergraduate. I knew him well, and then we wrote a paper together and that was my first contribution to the subject, in print anyway. John Hicks who, as professor, was a Fellow of All Souls at the same time as I was, congratulated me on having a paper published in *Econometrica*. Well then as you know Robin Farquharson fell victim to this awful mental illness and couldn't really do any more creative work. I retained an interest in social choice theory and I followed it a bit because people sent me offprints of articles

which I read, but I didn't make any attempt to keep up with the subject systematically. I was still very interested in the theory of voting and very interested by the absurdity of many of the voting procedures adopted within my college, and in other colleges, and indeed in electoral systems, but I didn't really attempt to do any more work in the subject. I very much regret that I didn't because of that conjecture that we made in the *Econometrica* article, that no voting system could exclude the possibility of successful strategic voting, which was established by Gibbard and later Satterthwaite.<sup>2</sup> I believed that that would be a terribly difficult thing to prove, but actually I don't think it was so difficult to prove as the theorem we proved in the article. I just had this impression that it would be frightfully difficult to prove. So I never attempted to do so. Then I conceived the idea of writing this book which I published named *Voting Procedures*, and I thought well, if I'm going to write this I'll have to get myself up to date in the subject of social choice theory. Luckily it happened that Amartya Sen, whom I knew quite well, had written a resumé of the history of social choice (I don't know if he ever published it), and he lent this to me and I studied it carefully.<sup>3</sup> Then I started to write the book. The idea behind the book was to make a bridge between social choice theory which was studied mostly as you say by economists who published papers and proved all sorts of theorems, and the people practically concerned with the devising of voting procedures—I mean politicians, members of boards of directors and so on, most of whom were completely unaware that there was any such thing as social choice theory, that anyone ever studied the theory of voting. I wanted to build such a bridge. It wasn't, I'm ashamed to say, until I read Amartya Sen's history of social choice theory that I became aware that the conjecture which we had made in that paper (about the non-existence of strategy proof procedures) had actually been proved. Now, Sen mentioned both Gibbard and Satterthwaite as having proved it, but didn't give the proof. So, I became aware that it could be proved, and that it wasn't too difficult for anyone to prove. So I sat down and produced a proof of my own. I hadn't yet even looked at Gibbard's paper and, as I say, I felt extremely annoyed when I found it because I thought I could have done this at any time. Since then I've done very little except that one paper which you published (in *Social Choice and Welfare*) about the Borda count.<sup>4</sup> That's the sum-total I'm afraid of my contribution to the subject. I know you liked my book, and I'm quite proud of it myself, but that's all I've done: the first article, and the book, a little article later, and also a more popular book called *Principles of Electoral Reform*.

**M. Salles:** Could you say a little more about your work with Robin Farquharson? You gave a talk in Caen on this in the history of social choice conference.<sup>5</sup>

**M. Dummett:** Yes, yes right. Well, the talk in Caen contains everything really I know about Farquharson . . . certainly all the interaction I had with him. I told you in that talk, I think, about this dramatic episode when he entered the prize fellowship examination at All Souls. He quite certainly would have been elected but for the insane telephone conversation he had with the Warden on the eve of the election meeting—the first manifestation of the mental illness from which he suffered for the rest of his life, and which the Warden revealed only at a late stage of the discussion, in strict compliance with the rules governing the discussion. That was tragic, I mean he really was very brilliant even though I discovered that he only got a second class degree in Finals. Perhaps he'd been concentrating too much on the theory of voting!

---

<sup>2</sup>Gibbard (1973), Satterthwaite (1975).

<sup>3</sup>Michael Dummett most probably makes reference to a typescript eventually published in 1986 as a chapter in the *Handbook of Mathematical Economics* (see, Sen (1986)).

<sup>4</sup>Dummett (1998)

<sup>5</sup>Dummett (2005a)

**M. Salles:** And can you tell us also about your decision to submit the paper to *Econometrica*?

**M. Dummett:** Oh, I have no explanation of that. Robin Farquharson said we should send it to *Econometrica*, so I sent it to *Econometrica*. That's all. In answer to your earlier question about Robin Farquharson, I'll just say something about that article. I can't now remember who actually wrote the main body of the text. I mean, we wrote it together, but the machinery, the technical notions and technical vocabulary, that all came from him. There's just one point that is of minor interest that I might mention. I think we used the word 'situation' for an actual course of the voting, taking the voting procedure as given, whatever it might be. So that would of course determine the outcome—which candidate was elected, which alternative was decided on. But I think it's normal now to take the preference scales of the, let me say voters, as defined over a given set of, say, candidates or possible outcomes. We didn't take that as given. What we took as given were the situations, the courses of the voting, and with the preference scales defined over those. The point of this was to allow for someone who says 'I'd prefer that such and such a candidate would be elected, but I wouldn't want him to be elected with a very narrow margin; rather than that, I would prefer it to be someone else'. It allows for that possibility if you take the preference scales as defined over the situations in our sense. Then we could define a possible outcome as an equivalence class of situations under the relation that every voter is indifferent between the two. Anyway, as for the theorem, we assumed weak preference scales, allowing voters to be indifferent between situations. And the theorem was, if for every three possible outcomes there was one which no voter thought worse than the other two, then the whole lot had a Condorcet winner (which we called a top). Now, I didn't think of that theorem. Robin Farquharson came to me with it as a conjecture<sup>6</sup> and said "Can you prove this?" and I worked away for some days and came up with a proof and that's contained in the little 'Demonstration' at the end of the paper. And as for that conjecture<sup>7</sup>, well I don't remember which of us proposed it first, but we agreed on it, and I say I stupidly thought it was far too difficult to prove.

**M. Salles:** Although you have been interested in the practical aspects of voting, in your first book on voting, *Voting Procedures*, you devote numerous pages to the more theoretical aspects of social choice including Arrow's theorem and the Gibbard-Satterthwaite theorem.

**M. Dummett:** Well, as for Arrow's theorem, everyone says—certainly it's historically true, and I think it's probably theoretically true—that it's the basis of the whole subject. You have to know that. I hadn't meant to state a slightly different theorem from that which Arrow proved; I included it because I agreed that it is fundamental. As for the Gibbard-Satterthwaite theorem, I thought it was essential to convince people of that. There have been advocates of specific electoral systems, in particular STV (Single Transferable Vote), who have claimed that this system makes it impossible for anyone to gain any advantage by strategic voting. I thought it was absolutely essential to prove that there can't be any such system, before discussing any particular system, because, if people think that it is possible to have a voting system that always denies advantage to strategic voting, they will have a wrong approach to the whole question. So that's why I put that in.

**M. Salles:** I have two questions on Borda. Could you present for us first Borda's rule, the classical Borda rule, and second, your quota Borda system?

**M. Dummett:** Well the first one. Look, I have a pretty strong belief (qualified in a way that I'll explain in a moment) that if you could compute the Borda score of the candidates, as based on each individual's true preferences, his real preferences, that would

<sup>6</sup>'conjecture' refers here to the existence of a Condorcet winner for majority games.

<sup>7</sup>'that conjecture' is what is now known as Gibbard-Satterthwaite theorem.

yield you an estimate of which candidate or which possible course of action was maximally acceptable for the whole body of voters, much more so than the Condorcet winner. The Borda score is of course computed by assigning, for each individual, 0 points for the candidate he least favours, 1 point for the candidate last but one on his preference scale, and so on upwards, and summing the scores each candidate thus obtains. I don't have any belief in majorities, as such, for pretty obvious reasons. Well, one way of justifying the Borda count is to say that the distance on an individual's preference scale between two alternatives, A and B, is a rough measure of the strength of the preferences; the way of estimating, as it were, cardinal preference from ordinal preference. As for its use as a practical method, especially if you're just trying to select one course of action or elect one candidate, I'm not at all sure of its merits. Because quite apart from agenda manipulation, there is a temptation for people to vote tactically by putting the preferred candidate at the top and then the rest in inverse order of likelihood of being elected. Now, if a few people did that it would not disturb very much. If a lot of people did that, it would produce a result that bears no relation to actual preferences, because the better they are at guessing which are the candidates likely to be elected, the more it would disturb them. By putting those likely to be elected at the bottom of their lists, and those not at all likely to be elected high up, they're actually converting the popular candidates into unpopular candidates. So I simply do not know, and I don't know how we could actually find out, how much people could be tempted to vote tactically if the Borda count were used as a practical method. But, as a method of estimating from the true preferences of the voters which candidate is the most generally acceptable, I think it ranks very highly. Now one reason that it may not be perfect in that respect is exemplified precisely by this business of agenda manipulation (for instance by inserting a candidate who everyone will think slightly worse than the one you favour). In such a case—I mean, described as I've just described it—quite obviously, the preference for the one who's slightly better over the one whom everyone ranks just below him is very slight, compared with most of the preferences the voters have. That was what the paper I wrote was about. There has to be a method of estimating from the whole—all the preference scales of the voters as between the alternatives—which preferences are slight and which are strong, so that we don't just count each one as of equal weight. The trouble is (well, that paper I wrote showed that) it makes it extremely complicated to compute the result. That's a fatal disadvantage of using such a method in practice: it is essential to a voting system that the count should be simple to carry out and for the voters to understand. I haven't thought about it since, I'm afraid. Some very simple method, or comparatively simple method, of computing the scores might be able to improve the way in which the Borda count reflects the strength of preferences. That's all I have to say about that.

**M. Salles:** And the quota system?

**M. Dummett:** It seems to me that the great advantage of STV is what it does for minorities; it guarantees that the minorities get represented. Otherwise it has no advantages at all. It's an almost chaotic system in the sense that a very small change in preferences would have results that change completely the outcome because it would affect the order in which candidates got eliminated, and so which votes were distributed at each stage. So I think that it really is a very bad system, but it has this particular advantage, and I think the principle of trying to get what is maximally generally acceptable is overridden by the necessity that minorities should be represented. If a minority that considers itself to have special needs (that is, things that matter particularly to it, but not to the general electorate), the worst thing for such a minority is the feeling that it has no voice; that there's no one to speak for it. I mean the representation of minorities that you get under STV is not very great, it just means that in some multi-member constituencies large enough minorities get a representative. Of course in the country as a whole, they won't get a large number of representatives. The Quota Borda system was intended to superimpose on the



Borda count this principle of identifying minorities by the way they voted. That is, they identify themselves when they all vote for the same two or three candidates in perhaps different orders, but they put them all at the top. That identifies the minority, and if it's a sufficiently large minority (amounting to a quota, say the quota with STV), then it's bound to get represented. Under the Quota Borda system, the rule is that it gets represented. Out of say three candidates, who may all be voted for in different orders, you pick the one who has the highest Borda count. You don't just leave it to the minority to pick their representative; their representative is the one who is maximally acceptable to the electorate as a whole. But, he may be one who would never get elected on a simple Borda system. The intention was to superimpose that idea for the representation of minorities on the Borda system.

**M. Salles:** What made you decide to write your second book on voting, *Principles of Electoral Reform*?

**M. Dummett:** I've got a very simple answer to that. As I said, my idea in the first book was to build this bridge. I decided that I had completely failed to do that. I said in the introduction, quite truly, that I had assumed no mathematics except addition and multiplication. But I realised that what I had asked people to do was to think in a mathematical way, and they're simply not prepared to do that. I decided that was the reason why I had failed to build a bridge, so I wrote this, as you say, more popular book in order to build a sort of bridge without ever actually proving any theorems, or giving any arithmetical examples, or anything of that kind, but just as a way of getting over some elementary principles.

**R. Fara:** Can I follow up on that a little bit? You speak about your social justice concerns (a very broad area) and how important it is for minorities to be given a voice. There's some intuition that we all share—and why we are so in favour of democratic systems versus oligarchic or dictatorial systems—that people should be represented, and we have the idea that the vote is the way for individuals somehow to be represented; and for people who represent us to act within our authority. So having your vote and having your say is fundamentally important. And whenever you do give your representatives authority to speak on your behalf, for example in the EU, United Nations, or wherever, it is important that your vote as a citizen of your country is no less equal than that of a citizen of any other country. Only a voting system that somehow captures that is going to ensure that I, as an individual voter, am going to be appropriately represented. So it is a fundamental necessity to try to get the voting system right. But we've failed all across the board, nationally and internationally, to do this. Is it just the case, that because voting theory is so technical and so mathematical and so outside of the domain of understanding of our ruler types, that it's not to be taken into consideration? I don't think that there's a conspiracy to keep voting theorists away, but on the other hand I don't think either that it's simply a failure to hear that voting theorists are knocking at the door. So to start with, what are your thoughts about confronting these people, be it the politicians and journalists, or first of all I suppose, the interested lay person? How do we become a voice in a conversation with the interested lay person?

**M. Dummett:** I'm not sure I know the answer to that. I wish I did. I mean, the first thing is to convince people that devising an equitable voting system needs a lot of thought. (They mostly don't think that. They think it's an easy thing.) How you convince people of that I really don't know, do you? I mean I realise that you're supposed to be interviewing me . . .

**R. Fara:** Well, I have some ideas, but first, I suppose, is to get the intuition across of the difference between the concept of voting weight versus the concept of voting power,

that the voter or the representative of the voter possesses. This is usually counter-intuitive because the numerical weight doesn't actually tell you what power the person has or hasn't to influence the outcome of any decision. Now we can get across to people what the difference is at an intuitive level. The trouble is, that it becomes so complex so quickly that it requires technicians and computer power in order to make any sense of it all, and politicians are reluctant to hand over influence to technicians. Perhaps you might agree that the younger you introduce persons to the problem—perhaps not school children, but somewhere along the line—you'll get people at an early age to say 'yes, this is a problem I'd like to contribute to'. Only a tiny minority might go off that way, but at least everyone will be confronted with it and be aware of it.

**M. Dummett:** Okay, that means convincing people who teach political theory, politics, political science, whatever you call it, that they ought to pay attention, maybe learn, so they can introduce their students to the question. University students you were speaking of?

**R. Fara:** Yes, I think school in the UK would be difficult. Perhaps in Europe and the United States where you have civics courses it could probably be introduced quite early on without any technicality. At least the intuition could be got across that voting systems are designed to make institutional governance work in a representative and democratic fashion, but that there are all kinds of voting systems, and these have to be designed with an idea of what it is that you want. These are the kind of ideas that could be got across at the early stages. And then when you know things like Borda and Condorcet, an introduction to the formality of the system may come later. Probably it would have to be seriously discussed at a university course level, but where do you go? To the political science department?

**M. Dummett:** Well you have to convince those people, those who teach in the political science departments, that's right. As for the Borda and Condorcet principles, those ideas could be introduced at school. They're very easy things to understand. But, as for attachment to the idea of majorities—I mean, I think it's very common to hear people say 'Well, we have to do what the majority wants, that's democracy isn't it?'—to disabuse people of that idea. Then we need to influence them away from votes with just two possible outcomes—(that's where the belief in the majority comes from, from such votes where you can't do anything but follow the majority). We had this ridiculous thing, I don't know if you know, in the House of Commons they were discussing what form the House of Lords should take—once we had abolished the right of hereditary peers; how should the members of the House of Lords be appointed? There were, I think, five different suggestions. Each was voted on separately, yes or no, instead of having them arranged in order of preference. The result, of course, was that they all failed! I think we need to encourage people to think more in favour of votes where there are a number of different possibilities and you have to arrange them in order of preference. Then the questions arise, how do you decide? How do we begin to get people thinking seriously about these problems?

**R. Fara:** In your inaugural address of the Voting Power and Procedures program at LSE entitled *Bridging the Gap*, you said that there's still a crying need for something to be done. When you spoke about the sort of persons who were in charge of adjudicating on the forms of voting, you suggested the difficulty was that social choice or voting theory experts have to drop any kind of technical jargon and terminology to become a voice in the conversation. So I think the sort of tactic that you were suggesting was probably the right one.

**M. Salles:** I wanted to ask whether there might have been a tension between your work as a philosopher and your involvement in social justice; that is, a tension between

the fact that you are not a moral philosopher, but you are a moral practitioner.

**M. Dummett:** I've always thought that intellectuals, if they see a possibility—which usually there isn't—of making a practical difference, they have the duty to try to do so. I was lucky, I was very lucky. Both my wife and I thought that I had ruined my career by involving myself in the struggle against racism, and therefore for some time not producing any work of my own, but just doing my teaching. I did think I'd thrown away my career, but luckily it didn't work out that way.

**R. Fara:** Yes, your interests in social justice certainly didn't work out that way. I know that most of my philosopher colleagues all think that Professor Sir Michael Dummett was knighted in 1999 because of his philosophical prowess but, correct me if I'm wrong, you were knighted for your work on racism.

**M. Dummett:** Well, for both actually. It was for contributions to philosophy and to racial justice.

**R. Fara:** So there wasn't a tension as far as your ultimate accolade; they saw no tension in it?

**M. Dummett:** No they didn't. I was very glad to have that citation.

**R. Fara:** You answered one of the questions which I wanted to ask which was, I wondered whether you believed that philosophers should, or perhaps stronger, whether they had a duty or an obligation or responsibility in some way to take an active part in practical life and make a difference where they can. I mean in the sense perhaps that Wittgenstein, whose influence you might have been under in your earlier days. . .

**M. Dummett:** Yes, I do believe that.

**R. Fara:** . . . would have probably taken a bit of the other stance and suggested that you certainly don't need philosophers dabbling in what people ought to be doing!

**M. Dummett:** I suppose he would.

**R. Fara:** But you turned against that. And among the great and influential philosophers—of which you are certainly one—I mean, the tradition brought by Russell and Chomsky, and currently Peter Singer and so on, is to be involved. But you are in the minority it must be said, particularly of analytical philosophers in this country.

**M. Dummett:** Yes that's true, yes. I've never tried to persuade anyone to take a different attitude. But you're right that very few think that there's any call on them to be involved in any practical sense, and partly it's a tradition in this country, I must say, and not only amongst philosophers. Well, I was very impressed recently, a few years back. I and various Italian philosophers, and other British ones as I recall it, we all published articles in an Italian daily newspaper on philosophy. Now, that's unthinkable in this country, absolutely unthinkable! It's thinkable in France. But the idea that philosophers should write articles for newspapers! (I mean, these weren't articles on politics they were articles on philosophy.) In France, and to a lesser extent in Italy, intellectuals generally and philosophers in particular are expected to make remarks on political and social questions. In this country, not. I remember very many years ago going with my wife to an exhibition in Paris of Picasso paintings, and I can't remember where it was held. As we came down the stairs on the wall facing us was a big plaque headed 'Intellectuels morts pour la France.' I mean we just laughed at the thought of 'Intellectuals who died for England,' or

something like that! So I think the whole atmosphere as a country (England) is against people like philosophers becoming involved. Russell was a very special case. When I was involved, none of those who were involved with me, thought of me as a philosopher, or even as an intellectual, but just as one of a number given to this work. It's a whole attitude that we have here.

**R. Fara:** Maybe it's got something to do with the analytic tradition as it's practised particularly in the Anglophone world as compared with the continental tradition in which man, and his place in society, and so on, is very much grist for the philosophers' mill. I want to go just a little bit into your work on racism and immigration. You wrote a book in 2001 on immigration and refugees, and it's pretty fair to say probably that immigration and asylum have moved to the centre stage in world political discussion now. The standard model that tends to be discussed is that we have rich countries and we have poor countries (or poor countries that are persecuting, rogue states). Out of the poor countries we have an economic migration, or out of the persecuting states we have asylum seekers, refugees, and that's the model. The rich states are trying to protect their populations against this horde. Now you wrote your book and it is essentially in two parts, Principles and History.<sup>8</sup> In Part 1, Principles, you give a fairly uncompromising rights-based story to govern the individual's inviolable right to move to seek a better and decent life on the one hand, and it's on the recipient's country whose door you are knocking on to give an argument for why they should refuse you entry.

**M. Dummett:** Right, I think that is a fair brief summary of my ideas.

**R. Fara:** In the second, the historical part, you say that roughly since the second world war what we have underpinning all of this in trying to keep the movement of peoples down, is a racism throughout Europe and the UK. So could you flesh this out, and the book, and your sentiments about it?

**M. Dummett:** Well, let me just say about the historical part, I think there was built up in this country an official encouragement of racism. The racist groups we had here (extreme racists), their demand was always for control on immigration, and that has always been the response of the government—to turn the screw tighter and tighter. By doing that, they very much encouraged the racist feeling that there was in the country because people obviously saw that tightening control against immigration—and immigration was always thought of as coloured immigration, white immigrants from America and Australia weren't really counted—anyway, they saw that as a declaration: 'we don't want those people here!' And that of course foments the racism of those who think, 'we don't want them here, they should all go.' Now, there came a point when it was virtually impossible to turn the screw any tighter, and people were beginning to see through political parties' claims to be able to do, or promises to do, that. And I think the politicians deliberately switched this hostility against people of certain races, to hostility towards asylum seekers, and they started doing lots of propaganda about asylum seekers. I mean, our present government recently rejoiced in the reduction in the number of claims for asylum. And how did they achieve this reduction? Not by diminishing the persecution from which the refugees were fleeing. No. By preventing them from even ever getting here to make such claims! And that is now the popular demand, to reduce the number of asylum seekers admitted. That is just a transformation of the popular demand, to reduce coloured immigration, or reduce immigration which was understood to be coloured immigration. So I think that the politicians have just switched this hostility which they helped to generate against people from the Caribbean, from the Indian sub-continent, and so on. They just switched it to asylum seekers. That's a very good way of becoming popular. Hitler knew that. You

---

<sup>8</sup>Dummett (2001)

identify some group as the enemy, and then you promise to do everything to keep the enemy out and you get votes that way. So, that's about the historical thing you wanted me to talk about.

I identify two grounds which a state might reasonably have for keeping people out, for not accepting people who wanted to immigrate. One is very dangerous to talk about because it's part of the rhetoric of those who are against refugees, who say 'we're being swamped!' Mrs Thatcher said it about immigrants from India and the Caribbean, 'we're being really rather swamped' she said on a national Tory broadcast. Well, I avoided using the word 'swamped', I used 'submerged', it's something that does happen, not often but in particular cases. Tibet is a good example. There is a case when a country with a particular culture is threatened by having a lot of people who don't share that culture coming in. Fiji is a very obvious example where that happened, when under the British Empire Indians were encouraged to come to Fiji in large numbers. I think at one point they were a greater number than the indigenous population. So, that's one legitimate ground for restricting immigration. I want to emphasize that that's a rare situation, but I think it is a situation that does justify restricting the number of people who can enter. The other is over-population. I mean, you could say that many countries at the moment are overpopulated, but this should be judged according to the population density in the region of the world, say Western Europe or South East Asia or wherever. I think there can be a case for restricting entry of people if it's going to lead to serious over-population in comparison with other countries in the region. Again I don't think that applies to any Western European country at the moment, but I think that is a legitimate ground for restricting entry. I think a state has to have a ground for restriction: you're restricting people's freedom to move where they want, and there has to be a reason for restricting anyone's freedom. The question is never 'why should we allow someone to do that?' The question is always 'is there a reason to stop people from doing that?' That has to be the question. So, I also think under that picture you gave, what you call the usual model, I mean I actually think that advanced countries would probably mostly benefit from having a great deal more immigration than they have. That's a factual matter. . .

**R. Fara:** . . . Yes, I think that's right. I think it's shown that the immigration numbers are tiny. There are 2 to 5 percent (5 percent being the highest in any European country, 2 percent is probably one of the lowest) and what they contribute to the economy in terms of taxes vastly outweighs any sort of 'handouts' that they're meant to be receiving. So I think the facts speak for that.

**M. Dummett:** And what they contribute to their home countries too just by sending money back!

**R. Fara:** Yes, I'll come to that in a moment in fact, because that's how Rawls thinks the way things can go—I mean, he reaches opposite conclusions to you. You're aware of the book, *The Law of Peoples*.<sup>9</sup> That was his Amnesty Lectures at Oxford in 1993, devoted to the subject (you were perhaps aware of this even when you were writing your own piece). He comes to an opposite conclusion here where he says that rich countries don't have any responsibility for the rights of poor countries, to allow them entry or whatever. Somehow he seems to ground this on the idea that they've not tended to the economic base that they've inherited, and in fact that they're better off to stay where they are and emulate the more prosperous countries in the process. I know which of the philosophies I would be in favour of when comparing yours and what Rawls offers. Perhaps you'd like to comment.

**M. Dummett:** Well, Rawls simply thinks almost exclusively of single societies in effect defined by the nation states we've had, and I don't think one should think on that

---

<sup>9</sup>Rawls (1999).

basis. I think each one of us has duties to anyone in the world whether a fellow citizen or a citizen of some other country; I mean, if it comes to it and you can do something about it. Duties of states derive from duties of the citizens, and citizens have duties not only to their fellow countrymen but to anyone else in the world whose condition of life they can affect. So I think arguing in the way that you've just described is simply fallacious.

**R. Fara:** Yes, I think I would agree. Your position, your contrary position to Rawls was such that his grounds are unfounded.

**M. Dummett:** I think so. It's not quite, but it's very nearly the view that a state has duties only to its own citizens, which is a view that I attacked very strongly in that book.

**R. Fara:** Yes, yes, exactly, that's what I thought. A number of reviewers who picked up the book—2001 it was published—suggested that at heart what was doing the work in your high ethical principle in the first part of the book, was your Catholicism and a Kantian approach. Interestingly the Kantian approach was always regarded as what was doing the work behind Rawls in *Theory of Justice*, but we won't go down that route. I wanted to talk to you a little bit about your Catholicism. As you know, I've interviewed Quine and Davidson at great length (you in fact were part of the project with Davidson) and Strawson too, and these are some of the most influential philosophers of the second part of the twentieth century along with yourself, and were your contemporaries and your colleagues in many instances too). They all proclaimed an atheism, not simply mentioned that they were and that was it, but actually proclaimed it. That seems to me to be a thread that runs through the analytical philosophy community; it seems almost to be regarded as a pre-requisite. If one had any sort of moral leaning, this was some kind of humanism; some secular activity was the ground for it, and atheism was pretty much the required card to carry. You were brought up in the Anglican tradition at school, certainly at Winchester. By your own proclamation, by the age of thirteen, you had become an atheist. At the age of nineteen you joined the Roman Catholic Church where you've remained as a member ever since. I just wanted to hear from you this rather refreshingly different presentation of your religion.

**M. Dummett:** Well, I mean, there wasn't a tension between my work against racism and philosophy, they're both very much connected in my own feeling with my religion. I think that it's a duty to help the poor and oppressed if you can, and that springs very much from, or I mean is a consequence of, a Christian view of the world. But you're not asking me about that so much as generally. In philosophy, I think the duty of someone who has a religious belief as I have is to seek the truth. I mean, I know that people say that people with a religious belief adopt philosophical ideas because they think they know the answer already and it gives them grounds. As far as I'm concerned, I've never done any work in philosophy with a view to supporting my religious beliefs. I think the duty of the philosopher is simply to follow where the argument leads, if it appears to lead in a direction against his beliefs, he just has to leave it there and say 'there must be an answer to this' or 'I must have gone wrong somewhere, I don't know where'. I agree that, particularly in America, it's not just atheism, it's straightforward materialism that has become almost axiomatic among analytic philosophers. That used not to be the case here. I remember years ago there was a series of Wolfson lectures (lectures sponsored by Wolfson College); there were six. Quine and Davidson were among the lecturers, so there are two atheists for you. As it happened, all the other four were Catholics. There were myself, Peter Geach, Elizabeth Anscombe and Dagfinn Føllesdal—it's not generally known that he's a Catholic, but he is. So we had four Catholics and two atheists. It used not to be the case here that religious belief was so rare among philosophers—there are still one or two like myself—but I don't know whether that's the increasing influence of American philosophy or just chance. I do think that in philosophy . . . well I believe in *metaphysics*

(I haven't done much work in metaphysics, and I think a great deal of metaphysics is basically the philosophy of physics), that metaphysics is concerned with clarifying our conception of the universe in which we live; whereas a lot of other philosophy is concerned with clarifying theories about ourselves, about intention, about emotion and so on. So I think that philosophy needs to be pursued by . . . I mean if you declare yourself as an atheist or a materialist, you're just as much giving the conclusion in advance, in fact rather more than if you declare your adherence to a religious faith.

**R. Fara:** It seems somehow that the mind-body distinction in philosophy of mind and consciousness studies has been a sort of bogeyman. The reduction programme to single state materialism would leave no room for the spiritual sphere, that's on one side. There's also another tension, the explosion of Marxism, again for different reasons, sending one off on the atheistic path. I wondered if you agree that neither of those two things really touches the concepts of metaphysics, philosophy of physics, philosophy of mathematics, logic and the technicalities of the subject.

**M. Dummett:** Well I agree, they are irrelevant. I think all this concentration on the notion of consciousness is because it seems the last obstacle to oppose to a materialist reduction of reality, I think that's a kind of inheritance from Cartesian dualism. Questions like: 'What is consciousness for? What is the point of there being such a thing as consciousness?' I think those are ridiculous questions. I think they are questions which come from a kind of dualism in the first instance. They want everything. They want to arrive at monism, but they can't quite get there.

**R. Fara:** And finally, we want to talk a little bit about a passion, or a pleasure—your interest in tarot cards.

**M. Dummett:** Right, well my interest in the first place was in the games—it more than any other kind of card game—the history of the cards is a tool to the history of the games. Well, you want to ask me why I'm interested. I don't think anyone should be interested in the subject who doesn't enjoy playing cards, because this is an enormous family of very interesting and often very intricate games. I'll give two examples. In Bologna they play a game with the local form of the Tarot pack. It's for four fixed partners as in Bridge, and the greater part of the scores at the end of the hand comes from the multitude of different combinations of cards that you and your partner have in the tricks that they've won. So it's not like Bridge where you're just concentrating on making so many tricks. Two-thirds of the cards in the pack can contribute to these combinations, and so you're trying to win such combinations, and prevent your opponents from getting them. So almost every single card matters. All right, that's one fascinating form of the game. In Bologna they play with sixty-two cards. In Hungary they play with only forty-two. You have twenty-two fixed trumps and only five cards per plain suit. Through very strict rules governing the bidding, you can often tell a great deal about what cards people have in their hands. And the thing is, you get a certain score. You have partners, but the partners are not fixed, they're determined by the declarer. The successful declarer calls a card, which he doesn't have in his hand, and the player who has that card becomes his partner, but he doesn't say so. And so until that card is played, you don't know for sure who is whose partner. Besides the score you get for winning the game, there are also scores for all sorts of feats you can get in play like winning the last trick with the smallest trump, winning the two top trumps and the bottom trump and so on. The most valuable is winning the second highest trump with the highest trump. Now sometimes it's worth not winning the game in order to make one of these feats. You'll score more that way. So again, when you start, it's not certain what the objective of the declarer and his unknown partner is going to be. Well that's another example of a really fascinating game. I got interested in all this in a very odd way. We were on holiday in France. We bought a tarot pack. There were

rules of the game with the pack. We started playing with our family. We thought it was a very good game. When I was back in England, I came across an Austrian pack with rules and this was an obviously related, but a very different game. So I wrote to various people asking if they could tell me how the game was played in other countries. I wrote to experts on card games. None of them could tell me, so I started trying to find out for myself, and it gradually grew into a serious piece of research. Trying to discover the history . . . I mean, there are written rules of games from the seventeenth century onwards, but before that, there are just some literary allusions. So it really becomes a piece of serious detective work, and that's part of the fascination. I'll give you an example of a puzzle. I know a lot of people who are collectors of playing cards. In the 1930s—this is quite a short time ago—there was a kind of tarot pack. My collector had the wrapping and it was written in French, 'Tarot à soixante treize cartes' (or possibly 'septante trois cartes'). It was just like an ordinary Austrian pack, so that the suits had eight cards in each suit, but instead of twenty-one numbered trumps it had forty numbered trumps. Now it's still a total mystery, it's a mystery I'd love to solve. In some French-speaking parts of Europe they played this game. I mean, these packs have not been made since the 1930s. We wrote to the manufacturer and they had a record of making these packs, but not where they were sold, so I still don't know who played it or why. So there are all sorts of problems of this kind. So I enjoy playing, I enjoy meeting people who play. That's a very good way to meet people, and I've done a lot of this in Sicily. In Sicily, the game only survives in four scattered towns, in each of which it's become a local tradition . . .

**R. Fara:** Which towns can I ask?

**M. Dummett:** Oh, you know Sicily? Calatafimi, Mineo—do you know Mineo? It's a small town south-west of Catania—Barcellona Pozzo di Gotto (near Messina) and Tورتorici, inland. In about 1900 you could still play it all over the island. But now if you ask anyone in Palermo, no one has heard of it. Just in these four places. I mean, they play differently but the substrate of the basic rules are the same; and it's different from any other tarot game played elsewhere. So I enjoy that part of it; going and meeting people who play, and they teach me the game. So it became a sort of passion. The fortune telling and occult part of it has never been my principal interest, but I wrote a chapter, in the first book I wrote on tarot, on the occult use of the tarot for fortune-telling, taking it up to about 1920. I had to do some work for that. But then I thought, it's a chapter which no one interested in that subject will ever see, and no one interested in card games would take any notice of. So I thought of extracting it and finding someone to bring it up to date, and publish the result as a book. Then Donald Laycock, an Australian anthropologist, sent me an article that he'd written on modern occultist tarot packs. So I wrote to him suggesting he should collaborate with me and bring the history down to the present, and he agreed. But while I was in California I received a pathetic letter from him saying, "I have contracted a form of leukaemia and can no longer work"; very soon after writing it he died. I obtained a new collaborator, Ronald Decker, and we enlisted a third, French, collaborator, Thierry Depaulis. It was going to be a single book bringing the history down to the present, but it turned into two, because it got too long. So I went on with the second volume in collaboration with Ronald Decker, who did the largest part of the work; and even then we only reached 1970.

**R. Fara:** So the two books were, the first was *A Wicked Pack Of Cards* and the second was called?

**M. Dummett:** *A History of the Occult Tarot 1870-1970*. 1970 was when there was a great explosion. Before that people were content to choose just one occultist tarot pack out of the few that existed. Now all these different occultist packs were being produced:



witches' tarot and feminist tarot, native American tarot, Basque tarot, Japanese tarot—tarots from every culture that had never had anything to do with it, and people started collecting occultist tarots.

**R. Fara:** And you've just completed a third book.

**M. Dummett:** Ah, that is about the game of tarot!—or rather the many games. The largest part of it consists of detailed rules of the different games, as played now or in the past. This is essentially bringing up to date my *The Game of Tarot* of 1980; so much has been discovered, not only by me, since then. So this new book is just called *A History of Games Played with the Tarot Pack*; it's in two volumes, because it's an enormous family of games. It is historical as well as covering games played at the present day.

**M. Salles:** Is it published?

**M. Dummett:** It was published, yes. I'm sorry I haven't got a copy of it here. Anyway, only real enthusiasts would buy that book!

**R. Fara:** I must say it's extremely refreshing to hear that the former Wykeham Professor of Logic and one of the foremost practitioners in philosophy of mathematics and logic has actually been co-authoring with Ronald Decker, who is, I think, curator of the playing-card museum at the American Playing Card Company in Cincinnati, Ohio. It's an absolutely fascinating part of your life.

**M. Salles:** Do you still play tarot?

**M. Dummett:** Well the trouble is, we used to have a little club in Oxford which I founded years ago. Now it's disintegrated. I mean some of them left Oxford, some of them died, so I don't have that anymore. All I have is a computer programme for playing French tarot. Well it's not so much fun as playing with real people, of course; but I sometimes beat those three little men in the computer!

#### REFERENCES

- Dummett M (1978) *Truth and Other Enigmas*. Duckworth, London
- Dummett M (1981) *Frege: philosophy of language* (second edition). Duckworth, London
- Dummett M (1981a) *The interpretation of Frege's philosophy*. Duckworth, London
- Dummett M (1984) *Voting procedures*. Clarendon Press, Oxford
- Dummett M (1991) *Frege and other philosophers*. Clarendon Press, Oxford
- Dummett M (1991a) *Frege: philosophy of mathematics*. Duckworth, London
- Dummett M (1991b) *The logical basis of metaphysics*. Duckworth, London
- Dummett M (1993) *Origins of analytical philosophy*. Duckworth, London
- Dummett M (1993a) *The seas of language*. Clarendon Press, Oxford
- Dummett M (1997) *Principles of electoral reform*. Oxford University Press, Oxford
- Dummett M (1998) The Borda count and agenda manipulation. *Soc Choice Welfare* 15:289-296

- Dummett M (2000) Elements of intuitionism (second edition). Clarendon Press, Oxford
- Dummett M (2001) On immigration and refugees. Routledge, London
- Dummett M (2004) Truth and the past. Columbia University Press, New York
- Dummett M (2005) The justificationist's response to a realist. *Mind* 114: 671-688
- Dummett M (2005a) The work and life of Robin Farquharson. *Soc Choice Welfare* 25
- Dummett M, Farquharson R (1961) Stability in voting. *Econometrica* 29: 289-296
- Gibbard A (1973) Manipulation of voting schemes: a general result. *Econometrica* 41: 587-601
- Peacocke C (2005) Justification, realism and the past. *Mind* 114: 639-670
- Rawls J (1999) The law of peoples. Harvard University Press, Cambridge (Mass)
- Salles M (2006) Michael Dummett on social choice and voting. In: Auxier RE (ed) Library of living philosophers: the philosophy of Michael Dummett. Open Court, Chicago and La Salle
- Satterthwaite MA (1975) Strategy-proofness and Arrow's conditions: existence and correspondence theorems for voting procedures and social choice functions. *J Econ Theory* 10: 187-217
- Sen AK (1986) Social choice theory. In: Arrow KJ, Intriligator MD Handbook of mathematical economics Volume III: 1073-1181

CPNSS, LONDON SCHOOL OF ECONOMICS, HOUGHTON STREET, LONDON WC2 2AB, UNITED KINGDOM  
*E-mail address: R.Fara@lse.ac.uk*

CREM, UMR-CNRS 6211 AND INSTITUT SCW, MRSH, UNIVERSITÉ DE CAEN, 14032 CAEN CEDEX, FRANCE  
AND CPNSS, LONDON SCHOOL OF ECONOMICS, HOUGHTON STREET, LONDON WC2 2AB, UNITED KINGDOM  
*E-mail address: maurice.salles@unicaen.fr*