

Preface

Models of Time

In the last fifty years, the formal philosophy and the logic of time have gained an increasing interest by specialists. Stemming mainly by the work of Arthur Prior (1914-1969), a variety of topics has evolved by crucial remarks to the condition of solid fields of research.

The logic of branching time originates from a philosophical problem (*indeterminism*) and in the last twenty years has had a number of applications in the logic of agency and in computer science, going beyond philosophy (at least as traditionally conceived) and the issues it was designed for.

At the same time, a number of philosophical debates has been advantaged by the use of temporal logics and temporal languages, two of the many formal devices that allow us to settle traditional problems with higher rigour and precision. Far from being a mere embellishment, these tools have increased our mastery of the problems and our chances of facing them with the highest clarity (if not of solving or dissolving them). The traditional debate on presentism and eternalism has been thus reshaped, and has witnessed a tremendous development in the way its issues are settled and its many facets are acknowledged. The cognate discussions in the metaphysics of time (time realism vs time antirealism, threedimensionalism vs fourdimensionalism) have gained similar benefits, as the discussion of the subjective experience of time.

Remarkably, this growth in the analysis of the problems and the use of a formal language has determined a better connection between different areas of philosophy. Compatibility between a metaphysical view on time (say, time antirealism) and the view on time emerging by contemporary physics is now a fundamental issue, and both metaphysicians and philosophers of physics actively take part on it. This could not hold unless shared basic linguistic and logical devices disclose connections that were previously hard to notice. In this case, also the autonomous growth of the philosophy of physics and of analytic metaphysics has played a key role: a convergence on the topics of time would have been impossible if the two disciplines had not developed specialist and refined research on the different topics.

The studies in the history of philosophy have connected to this general situation. Different views about time abounded since the very beginning of philosophy, and the flourishing we are experiencing today is a formal renaissance, not the inception of a new set of subjects. Yet the new frameworks have contributed to fresh perspectives on many earlier theories of time. Such studies have often the merit to connect those theories to the present debate or to show suitable formal rendering of them. The philosophy and the logic of time are already rediscovering their past, with an attitude that is far from “museology” and that aims at contributing to the current state of the art.

The situation I have depicted is lively and complex. In many cases, a synopsis of these different areas of research lacks: though interdisciplinary research is the rule, the output of such research is often confined to very specific and separate publication. In particular, there is today a great gap between the logic of time, as developed in the past twenty years, and the



philosophy of time. Some sporadic attempts to reduce this gap are done by researchers of both field, but separation is still the rule. This can hardly be considered desirable, because it brings philosophy far from the incredible development of techniques that has made the logic of time great, and prevents the logic of time from getting in touch with valuable pre-formal insights on time.

In the present issue, *Humana.mente* wants to witness the great importance of the present situation and to break the lack of a synoptic presentation. The papers here presented investigate different topics concerning time in many fields of research: logic, history of philosophy and history of logic, metaphysics and the phenomenology of time, the philosophy of physics. Connections between formal machineries and main philosophical topics (as agency, choices, determinism) clearly emerge. The debate between threedimensionalism and its rival is discussed at length in one of the papers, while a perspective on physics and time-realism is offered in another one. The links between change and contradictions are present also in an investigation on Leibniz's theory of time, while connections between the metaphysics of time and our experience of time are highlighted in one of the works you find in the volume.

Time is not the only topic appearing in the present volume, though. It is an attitude of this journal to provide a review of some major conferences, since they are the best chance to be acquainted with the works in progress and the researches in their making. In this volume, two international conference of great significance have been reviewed. For reasons that are easy to understand, this part of the issue is not strictly connected with the main theme. In any case, it constitutes an interesting insight on recent, important events.

The title *Models of Time* aims at stressing a feature that puts together all the different fields above: they all build up models of time, representations of how time is, being them metaphysical, physical, logical or through the analysis of previous theories. The researches in the logic of agency or in indeterminism represent a certain way in which it is suitable to conceive time, the physicians embarked a given view on how to think about it in the physical realm, the metaphysicians try to tell us if time really flow, if it is a construction of us, or if it is "statically" there, if non-instantaneous objects are all given at any instant of their existence, or just temporal parts of them are given in such a way. In other words, they aim at telling us what the nature of time is (how it *really* is), and how objects interact with it (how they find their way through time).

By stressing this aspects, we do not want to attribute to our authors a model or instrumental perspective on time. In other words, we do not want to ascribe them the idea that physics, logics or metaphysics just draw representations of reality, rather than they tell us what reality is. Their position about this point is left unprejudiced by our choice. Its only aim is pointing at a fact that seems to be inseparable from our reflection on time, even as a by-product: when we theorise about time, we build a number of different, sometimes incompatible models of time. Probably a sign of the fact that time is a really puzzling topic, and not just an assortment of pseudo-problems.



Beside the papers, other works ensure that synoptic view I have advocated above.

Some *Reviews* are presented in connection with the main theme, since they are a tool that helps to easily cross over different disciplines time is related to. Volumes on logic (the logic of agency) and metaphysics of time (presentism, realism, the experience of time flow) are here analysed and discussed.

The *Commentaries* focus on classical volumes or papers in the logic and ontology of time and help to understand not only the history and the development of those subjects, but their theoretical connections with current research and their stimulating nature.

An *Interview* to a prominent specialist closes the volume, as usual. The rationale of the interview is to propose valuable insights in a number of topics, and to do it a way that, may provide the reader with a number of suggestions and ideas. In addition, interviews are good chance to break the usual scheme of scientific communication through papers, and to reconnect our philosophical exchanges to one of the most direct and important ways of doing philosophy: by questions and answers.

A value that should not underestimated, especially in a field (the philosophy of time) where interdisciplinary discussions play a central role.

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