The Language of Time: A Reader

Inderjeet Mani, James Pustejovsky, and Rob Gaizauskas (editors)
(Georgetown University, Brandeis University, and University of Sheffield)

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Edited collections of papers are something of a tradition in fields such as computational linguistics and knowledge representation; probably most readers of this journal are familiar with the classic *Readings in Natural Language Processing* (Grosz, Spärck Jones, and Webber 1986). Such collections play a valuable role in assembling the (often scattered) primary texts that define swiftly evolving research areas. At first glance, the present collection seems to belong to this genre. A closer look reveals that its editors are attempting something rather more ambitious: They want to simultaneously define a research area and to provide it with a reference tool that can help shape further research. To put it another way, this is a reader with its eyes firmly on the future, not the past.

Not that the past is neglected. Part I of the book ("Tense, aspect and event structure") includes older material, some of it drawn from the philosophical tradition; the voices of Zeno Vendler on verb classification, Arthur Prior on hybrid logic, and Hans Reichenbach on temporal reference can all be heard here. But the historical perspective takes second place. The major concern is to explicate, as clearly as possible, the themes that have shaped research on temporal language, and following the publication timeline is not the best way to do this. Thus, although the collection opens in 1967 (with Vendler), the second paper fast-forwards the reader to 1991 (James Pustejovsky on event structure), the third takes us to 1986 (Emmon Bach on the algebra of events), and the fourth catapults us all the way back to 1947 (Reichenbach), after which we wend our way forward (with the occasional temporal bounce) toward more recent work.

Sound confusing? It's not. On the contrary, this is one of the best-structured collections I've ever had the pleasure of reading. Indeed, to call it a collection is to diminish it: This is an *edited* volume, with *edit* being used in a strong sense of the word. The editors are not passive contributors to this volume: They provide background, structure the material, and (in two useful places) supply newer material that enables the reader to evaluate (and in some cases, perhaps, to reevaluate) the significance of the various contributions. A great deal of effort has gone into the preparation of this volume, and it shows.

The volume, which contains 29 articles, has a four-part structure. As mentioned above, Part I deals with tense, aspect, and event structure, and contains the oldest material in the volume. Part II is entitled "Temporal reasoning," and for the most part contains material from the 1980s (such as the classic papers on temporal logic by James Allen and Drew McDermott). Part III, "Temporal structure and discourse," straddles the 1980s and 1990s, and all of the articles in Part IV, "Temporal annotation," are from 2001 or later.

Moreover, the editors are at pains to provide a coherent intellectual context within which to interpret the collected material. For a start, each of the four parts has an

introduction written by the editors. These introduce, and to some extent evaluate, the main ideas and tools on which the following articles build. For example, the introduction to Part III contains a succinct (and highly readable) introduction to Discourse Representation Theory, and the introduction to Part IV discusses the underlying techniques, tools, and methodological problems associated with temporal annotation tasks. These introductions are not wholly neutral (it is clear that the editors have firm ideas about the relative importance of various proposals), but the issues are discussed in an even-handed way; the editors' predilections simply provide sufficient spice to ensure that the introductions don't descend into blandness.

Furthermore, on two occasions the editors intervene (in collaboration with others) to provide new articles that fill serious gaps. The first such intervention occurs at the end of Part II on temporal reasoning. While it is in principle useful to have available various temporal logics for performing reasoning, the potential of such logics is enhanced if their key concepts can be embodied in temporal annotation schemas. Accordingly, James Pustejovsky, in collaboration with Jerry Hobbs, supplies an essentially new article describing the TimeML annotation schema and how it can be interpreted in the OWL-Time ontology of temporal concepts; this provides an important link between the classic AI-based work of Part II and the more recent empirically oriented NLP work described in Part IV of the volume. The second such intervention occurs in Part IV where Pustejovsky et al. provide an updated introduction to TimeML.

I can't think of any articles that really should be here but aren't. Perhaps the most obvious omission is Davidson (1967) on events, but while this (widely anthologized) paper could have been included, I think the editors were right not to; its key idea has long been assimilated and is more than adequately reflected in other papers in the collection. And the editors show impeccable taste in the papers they do select. For example, not only do they include James Allen's classic paper on temporal representation and reasoning, they also include Antony Galton's clear and thoughtful critique of his work. And there were (for me at any rate) some pleasant surprises. For example, I had never previously encountered Allan Bell's intriguing work on news stories as narrative, and I found his contribution a real eye-opener.

Summing up, this is a superb collection of primary material on how we talk about, reason about, and represent, temporal information. But it's far more than the sum of its parts. Thanks to the editorial work that has gone into it, this book is a genuinely useful resource, one that will guide work in this domain over the next decade and more. It belongs on the bookshelf of any linguist, computer scientist, or logician interested in temporal reasoning. But most of all, it belongs on the shelf of any reader of this journal interested in the role that temporal information has to play in natural language processing.

References

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