ON CONDITIONALS

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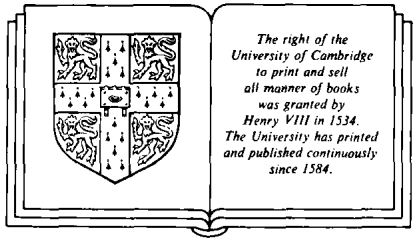

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ON CONDITIONALS

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On Conditionals provides the first major cross-disciplinary account of conditional (*if–then*) constructions. Conditional sentences directly reflect the language user's ability to reason about alternatives, uncertainties and unrealized contingencies. An understanding of the conceptual and behavioural organization involved in the construction and interpretation of these kinds of sentences therefore provides fundamental insights into the inferential strategies and the cognitive and linguistic processes of human beings. Nevertheless, conditionals have not been studied in depth until recently, and current research has tended to be compartmentalized within particular disciplines.

The present volume brings together studies from several perspectives: (i) philosophical, focusing on abstract formal systems, interpretations based on truth or information conditions and precise notions of inference and entailment; (ii) psychological, focusing on evidence about how people not trained in formal logic use and interpret conditionals in language and everyday reasoning, whether in natural or experimental situations; and (iii) linguistic, focusing on the universals of language that partly constrain the way we reason, and on the relations to other linguistic domains revealed by acquisition and historical change.

Readers of *On Conditionals* – whether their backgrounds are in cognitive science, philosophy of language, linguistics, or indeed artificial intelligence – will find in the book an original and salutary emphasis on the intrinsic connections between the issues that are addressed. The volume points to exciting new directions for interdisciplinary work on the way in which we use form, meaning, interpretation and action in reasoning and in learning from experience.

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PREFACE

Conditional (*if–then*) sentences have long been of central concern in the study of reasoning. Because modern academic practice has compartmentalized three distinct disciplines: linguistics, psychology and philosophy, a tremendous variety of different questions and angles of approach have developed, often independently, and without a common focus. The purposes of this book are: (i) to emphasize the intrinsic connections between the issues that have been addressed within the three disciplines; (ii) to show that all share similar concerns with how human beings use conditional constructions in their language to reason and to communicate their thoughts; and (iii) to point to new directions and potential areas of cross-fertilization for future studies.

The papers are arranged as follows. Part I presents a broad survey of conditionals, the ways in which they are used to reason, and the ways in which they are structured in language (the overview by the editors, and papers by Barwise, Johnson-Laird, and Comrie from the points of view of philosophy, psychology, and linguistics, respectively). Part II presents approaches to particular aspects of conditionals, starting with papers in the tradition of philosophy and formal syntax and semantics that show how the study of conditionals can lead to the refinement of syntactic and semantic theories (Reinhart, ter Meulen, and Veltman). It moves on to papers that focus on the intentions of speakers in using and understanding conditionals from the different perspectives of philosophy, linguistics and psychology (Adams, Van der Auwera, and Fillenbaum). These are followed by detailed linguistic studies of the interaction of conditionals with other categories of grammar: conjunctive and disjunctive coordinators (Haiman), concessives (Haiman and König), modals (Greenberg), tense and aspect (Harris). Three case studies focus on the development of conditional constructions in history (Harris) and in language acquisition (Bowerman, Reilly). The final papers focus on the pragmatics of conditionals used in constructed dialogues (Akatsuka) and in actual expository monologic texts (Ford and Thompson). Each of the papers in Part II is preceded by a brief introductory editorial paragraph pointing to connections with other papers in Part II. Since different terminologies are used in the different traditions and are not always exactly translatable from one tradition to another, no attempt has been made to impose one set of terminology throughout the volume; cross-references in the index should aid the reader in identifying partial equivalences.

The present volume arose out of a Symposium on Conditionals and Cognitive Processes, which was held at Stanford University in December 1983. A preparatory workshop in May 1982, summarized in a working paper by Traugott and Ferguson entitled 'Toward a checklist for conditionals', laid the groundwork for this Symposium. Most of the contributions were extensively rewritten; some were conceived only during the Symposium. We have included widely different perspectives on conditionals, which despite differences in approach and in terminology nevertheless often address the same or very similar data and phenomena, in the hope that it will inspire genuinely interdisciplinary research with an improved understanding of the current state of the art in the various disciplines.

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Elizabeth Traugott's research on conditionals was largely conducted during 1983–4 while she was a Guggenheim Fellow and a Fellow at the Center for Advanced Study in the Behavioral Sciences (supported in part by NSF Grant BNS 76–22943).

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PART I

GENERAL STUDIES

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OVERVIEW

Charles A. Ferguson,
Judy Snitzer Reilly,
Alice ter Meulen,
Elizabeth Closs Traugott

> If the organism carries a 'small-scale model' of external reality and of its own possible actions within its head, it is able to try out various alternatives, conclude which is the best of them, react to future situations before they arise, utilize the knowledge of past events in dealing with the present and the future, and in every way to react in a much fuller, safer, and more competent manner to the emergencies which face it. (Craik 1943:61)

1. INTRODUCTION

Conditional (*if–then*) constructions directly reflect the characteristically human ability to reason about alternative situations, to make inferences based on incomplete information, to imagine possible correlations between situations, and to understand how the world would change if certain correlations were different. Understanding the conceptual and behavioural organization of this ability to construct and interpret conditionals provides basic insights into the cognitive processes, linguistic competence, and inferential strategies of human beings.

The question of what a conditional construction is may be answered in many different ways, and from many different perspectives. The linguistic characterization of conditionals in different languages provides the basis for linguistic universals, which presumably at least in part constrain the way we reason. The diachronic point of view provides knowledge of the possible adaptations that a system of conditionals may undergo, and may detect dependencies on developments in other linguistic domains. Studies of language acquisition provide additional perspectives on a linguistic system, offering not only developmental data but also insights into the basic components and relationships of the adult system. Cognitive psychology presents us with empirical evidence about how people not trained in formal logic use and interpret conditionals in natural language and everyday reasoning. Philosophical logic and philosophy of language both design abstract formal systems of conditionals with interpretations based on truth conditions or information conditions, defining a precise notion of inference or entailment.

The linguistic, psychological and philosophical traditions outlined here have been, and will continue to be, developed relatively independently of each other.

This is inevitable, and even to some extent to be desired. They not only have somewhat different goals, but they use different methods and different types of data, ranging from introspection to text analysis to experimentation. It would be impossible completely to synthesize all the traditions into one research programme. On the other hand, an improved understanding of these various perspectives, their results and their limitations, is essential to the future development of a more genuinely interdisciplinary approach to conditionals in cognitive science.

The present volume is the first major attempt at combining the different perspectives and research traditions. This overview is intended to provide a guideline to the papers in the book, giving some further background to the various issues addressed in the papers, and setting the main results in a larger context. It also suggests some possible new lines of research.

2. LINGUISTIC TRADITIONS

Linguistic traditions assume that there is some principled correlation between the psychological and semantic properties of conditionals on the one hand and their form on the other. Although there may not be a strict one-to-one relation between meaning and form, the relationship is nevertheless far from arbitrary, and reflects a finite range of conceptual correlates. Insight into the mental representation of conditionals is expected from research on such questions as whether a language has a prototypical conditional construction, what other constructions can be used as conditionals, and what other semantic functions can be expressed by conditionals.

Some discussion of conditionals can be found in virtually all descriptive grammars of languages. However, linguists working in the generative tradition have until recently paid surprisingly little attention to conditionals. This may be in part because conditionals interact so extensively with other domains (e.g. causals, temporals, modals) that they pose enormous difficulties for analysis; but it is perhaps largely due to the fact that their syntactic properties tend to be less interesting than their semantic ones, and semantic theory has only within the last decade caught up with advances in syntactic theory.

Most recent linguistic work has been either from the perspective of detailed descriptive studies of certain aspects of conditionals in particular languages, or from the broad perspective of universals. In addition, some work has also been done on diachronic aspects of conditionals. We discuss these approaches in turn.

2.1 Descriptive studies

The central task of linguistic description is the analysis and presentation of aspects of the grammatical structure of a particular language or language variety, used

by a given speech community located in space and time. Several thousand such grammars or grammatical sketches have been produced, based on different theoretical models and intended for different purposes. Since all natural languages are assumed to have some kind of conditional sentences, any full-scale grammatical description is likely to include an account of conditional constructions, although some models of grammar do not make provision for them and some methods of collecting language data tend not to result in grammars that refer to conditionals.

Every human language, it may be assumed, has some way of forming conditional sentences, in which the speaker supposes that such-and-such is (was, might be, had been ...) so – the *if*-clause or 'protasis', also called the 'antecedent' – and concludes that such-and-such is (was, would have been ...) so – the *then*-clause or 'apodosis', also called the 'consequent'. Likewise, every account of human reasoning, every system of logic, has as a key notion an *if–then* relation between propositions: if p, then q. Yet neither the essential semantics nor the range of possible variation in the form of conditional constructions has been adequately established. The prime purpose of the descriptive linguistic approach is to determine the range of forms and their meanings within and across languages. Such studies show that the ways of expressing conditionals may differ substantially from English *if–then* markers. Furthermore, they show that people in different societies or different communities within the same society may have different experiences with conditionals and different uses for them (see, for example, Lavandera 1975). It has been argued that preliterate societies do not use overt syllogistic reasoning (Ong 1982: ch. III). It in no way follows from this that preliterate languages have no conditionals. On the contrary, they clearly do (see much of the data in Haiman's chapter in this volume), but they may be used in other ways and in other contexts.

Despite the wealth of descriptive studies, the question of what constitutes a conditional construction in a given language has as yet no adequate theoretical answer. Since material implication has a long history and is the most worked-over and best-known logical relation between propositions that corresponds to the conditional sentences of natural languages, linguists are often tempted to use it as the defining basis for conditionals. This is widely recognized as less than satisfactory, in the first instance because users of natural languages tend to reject the validity of false antecedent implying true consequent and often assume some kind of causal connection between the propositions (Geis and Zwicky 1971). Further, the use of material implication for linguistic definition in no way helps to explain the syntactic and etymological ties between conditionals and wish clauses, temporal and causal clauses, imperatives, and so forth. These difficulties have been repeatedly discussed by both philosophers and linguists. Comrie (this volume) accepts the defining role of material implication as a matter of convenience, although acknowledging the familiar objections. Others, such as Smith (1983), preserve the defining value by shifting the

problems to pragmatics and by modifying the usual meaning of material implication. At the present stage of research it seems likely that if conditionals are in some sense a natural class of linguistic phenomena, the formulation of a universally valid definition will be aided by the accumulation of detailed descriptions of different languages.

In practice descriptivists tend to identify conditionals first on the basis of clear semantic equivalence with *if–then* sentences in a well-known or well-described metalanguage, then by the morphological, syntactic, and lexical markers (or 'diacritics') of such sentences, and finally by extension to (a) sentences with such markers that do not agree semantically with conditionals in the metalanguage, and (b) sentences that agree semantically but lack such markers.

A language may have one favoured or 'prototype' conditional construction; it may have a small set of such constructions; or it may have no such clear-cut marking of conditionals. Also, the prototypical construction(s) may vary in degrees of use. Thus English *if* and Latin *si* unambiguously mark most conditional sentences in those languages, and it is usually possible to use them to paraphrase other sentences generally regarded semantically as conditional sentences. By contrast, conditional sentences in (Classical) Arabic are mostly marked by one of two markers, *in* 'if' (noncounterfactual) or *law* 'if' (counterfactual). In Bengali the two prototypical constructions are with *jodi* 'if' and with a conditional, nonfinite verb form *-le*, the two being generally equivalent semantically but appropriate under different pragmatic conditions. Hua has an unambiguous hypothetical 'if' marker, the compound conjunctive suffix *-mamo*, but many sentences that can be interpreted conditionally do not contain it. Finally, Chinese has no clear prototype conditional construction: although there are some particles translatable as 'if', most conditional sentences are in principle ambiguous and are interpreted as conditional only from the context.

Conditional markers are most commonly particles, clitics, or affixes, and these are most commonly placed in or next to the *if*-clause. These 'diacritics' may be semantically opaque or in varying degrees transparent (e.g. Russian *esli* 'if' is a form of 'be' plus the interrogative particle *li*, thus 'be it that . . .'). In some languages the *if* marker is related to or identical with 'when' or 'whenever' (see the chapters by ter Meulen and Reilly in this volume), or is closely related to markers of modality (Greenberg in this volume). Other markers also occur, however, most notably intonation and word order, as in the subject–verb inversion which is becoming rare in English but which is still very much alive in German. Many languages have special markers for negative conditionals, again varying from transparent (e.g. Latin *nisi*) to opaque (English *unless*).

In many languages it will be necessary to describe constructions that specify different degrees of hypotheticality. Various terminological traditions exist: irrealis (unreal), hypothetical, potential, future less vivid, counterfactual, impossible, 'indicative', and 'subjunctive'. Languages vary from almost no dif-

ferentiation, as in Chinese, to such elaborate systems as that of Classical Greek. The distinction may be made by different markers for the protasis, as in the two Arabic words already cited, by a special apodosis marker (e.g. Greek *án* marking counterfactuals), or by special patterns of tense/aspect forms (e.g. the habitual, noncontinuous Bengali past in *-t-* when used in a conditional sentence has exclusively counterfactual meaning; see also Harris's discussion of Romance in this volume). In some languages the conditional sentences in which the protasis has the meaning 'whenever' fit formally into the system of hypotheticality as the 'generic' conditional, but in other languages, such as Bengali, 'whenever' may be totally outside the system of conditional sentences, having a syntax parallel to temporal clauses, but not allowing the use of 'if'.

In languages where conditional sentences have been well-described, it is invariably found that some sentences with the formal markers of conditionality are semantically and pragmatically only marginally conditional or not conditional at all. For example, the following political advertisement for a newspaper columnist called Herb Caen: *Herb Caen for President. If he doesn't save the country, he'll certainly save your day* depends on the possible interpretation of *if* as the concessive 'although'. In this volume Van der Auwera and König address the relation of conditionals to concessives. Another example of the use of a conditional form for nonconditional purposes is provided by such phrases as *If you please*, which has a wide range of uses, many of them not obviously conditional.

To understand the full range of meanings to which conditional forms can be put requires work not only on sentences out of context but also on conditional structures in actual continuous texts, whether spoken or written, monologic or dialogic. One such study is provided in Ford and Thompson's paper (this volume) on expository monologic texts. Here conditional sentences are not used to express material implication, and only rarely to open up new possibilities. Rather, they are used to repeat earlier claims, introduce particular cases illustrating preceding generalizations, establish contrasts with what precedes (see also Akatsuka in this volume), or, when the protasis is in second position, to introduce afterthoughts.

The use of conditionals to mark the step-by-step, 'chunked', development of the exposition can also be found in rather different contexts. Marchese (1984) shows that conditionals are used in Godie, a West African Kru language, to mark units in the 'procedural genre' (directions for carrying out a task such as planting rice). She suggests that they mark places where the 'teacher' implies that the 'student' should check whether the appropriate stage in the procedure has actually been understood. To this extent the conditional protasis coheres with other devices for developing information flow, including topic development.

In Ford and Thompson's spoken texts, conditionals are also used to form