Preliminaries to Speech Analysis

The Distinctive Features and their Correlates

Roman Jakobson

C. Gunnar M. Fant

Morris Halle



Sixth Printing, September, 1965





Printed In The United States of America

CONTENTS

Preface

- I The Concept of the Distinctive Feature
 - 1.1 Resolving Speech into Ultimate Units
 - 1.2 Invariance and Redundant Variations
 - 1.3 Identification of Distinctive Features
 - 1.4 Inherent and Prosodic Distinctive Features
 - 1.5 The Distinctive Features Compared to Other Sound Features
- II A Tentative Survey of the Distinctive Features
 - 2.1 Prefatory Acoustical Remarks
 - 2.11 Properties of the Source Function Utilized in Language
 - 2.111 Type of Source
 - 2.112 Number of Sources
 - 2.113 Transient Effects
 - 2.12 Transfer Functions Utilized in Language
 - 2.121 General Properties
 - 2.122 Location of Source
 - 2.123 Shape of the Vocal Tract
 - 2.13 Neutral Position of the Vocal Tract
 - 2.14 Phoneme Boundaries
 - 2.2 Fundamental Source Features
 - 2.21 Vocalic vs. Non-Vocalic
 - 2.22 Consonantal vs. Non-Consonantal
 - 2.221 Vowels and Consonants
 - 2.222 Liquids
 - 2.223 Glides
 - 2.224 Production
 - 2.225 Perception
 - 2.226 Occurrence
 - 2.3 Secondary Consonantal Features
 - 2.31 Envelope Features
 - 2.311 Interrupted vs. Continuant
 - 2.3111 Stimulus
 - 2.3112 Production
 - 2.3113 Perception
 - 2.3114 Occurrence
 - 2.3115 Double Stops
 - 2.312 Checked vs. Unchecked
 - 2.3121 Stimulus
 - 2.3122 Production
 - 2.3123 Occurrence
 - 2.32 Strident vs. Mellow
 - 2.321 Stimulus
 - 2.322 Production
 - 2.323 Perception
 - 2.324 Occurrence

```
2.33 Supplementary Source: Voiced vs. Unvoiced
```

2.331 Stimulus

2.332 Production

2.333 Occurrence

2.4 Resonance Features

2.41 Compact vs. Diffuse

2.411 Stimulus

2.412 Production

2.413 Perception

2.414 Occurrence

2.42 Tonality Features

2.421 Grave vs. Acute

2.4211 Stimulus

2.4212 Production

2.422 Flat vs. Plain

2.4221 Stimulus

2.4222 Production

2.423 Sharp vs. Plain

2.4231 Stimulus

2.4232 Production

2.4233 Perception of Tonality Features

2.4234 Occurrence of Tonality Features

2.4235 The Primary Tonality Feature

2.4236 The Secondary Tonality Features

2.43 Tense vs. Lax

2.431 Stimulus

2.432 Production

2.433 Perception

2.434 Occurrence

2.44 Supplementary Resonator: Nasal vs. Oral

2.441 Stimulus

2.442 Production

2.443 Occurrence

2.5 Conclusion

Appendix: Analytic Transcription

Addenda et Corrigenda

Figures

References

Supplement: "Tenseness and Laxness"

by Roman Jakobson and Morris Halle

Index of Languages

Index of Terms

PREFACE

This report proposes some questions to be discussed by specialists working on various aspects of speech communication. These questions concern the ultimate discrete components of language, their specific structure, their inventory in the languages of the world, their identification on the acoustical and perceptual levels and their articulatory prerequisites.

We regard the present list of distinctive features, and particularly their definitions on different levels, as a provisional sketch which is open to discussion and which requires experimental verification and further elaboration. The nature of these problems calls for coordinated research by linguists, psychologists, experts in the physiology of speech and hearing, physicists, communications and electronics engineers, mathematicians, students in symbolic logic and semiotics, and neurologists dealing with language disturbances, as well as the investigators of the poetic use of speech sounds.

The occasional remarks on auditory experience with respect to single distinctive features are meant merely as clues to future experiments in this domain. The articulatory data have deliberately been made brief and their only justification is a desire to outline the connection between the motor means and the acoustic effect; for a more complete treatment of articulatory movements see handbooks of general phonetics (1).

Since this study is addressed to workers in several fields, it was considered appropriate in places, to include certain data even though it might appear elementary to the specialist in any one domain. We have done our utmost to avoid the ambiguity and misunderstanding resulting from the unfortunate diversity of the terminology used in the different disciplines relating to communication.

The names of the distinctive features are meant to denote linguistic discriminations: in other words, the significant discriminations utilized in the code common to the members of a speech community. The stage of the speech event to which a given term is etymologically connected is much less important. Thus a term which alludes to the articulation may at times be used if the articulatory fact in question is common to all the manifestations of the given feature, e.g., the nasalization feature. Similarly, it is not important whether the term refers primarily to the physical or perceptual level, as long as the feature is definable on both levels. In cases where no generally accepted term was available, we have used names for certain distinctive features which may later be supplanted by more suitable ones. Nevertheless, a discussion of the features themselves seems to us more pertinent than an argument over their labels.

Wherever suitable English examples were available, they have been used. Unless otherwise indicated the specimens are from the stabilized and unified British Standard which has been exhaustively described under the label RP (Received Pronunciation) coined by Daniel Jones (2). When languages other than