

# DECODING OF THE MARTIAN LANGUAGE

W. P. LEHMANN

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**W**HEN increasing amounts of audio data from space were gathered on Earth in the early twenty-first century, it seemed apparent that even the smallest orb sings like an angel. Harmonies of all kinds were recorded, many of them from Martians. The most complex machines were given over to their analysis, but with little success, even for the recordings of Martians, on whose decipherment the highest priority was placed. The patterns which the analytic machines disclosed in the music of the spheres, as it was widely called, varied greatly from emitter to emitter; each separate melody was labeled a "music." Moreover, each emitter seemed to have the versatility of a Stravinsky. Though musicologists were delighted, Earth Space Authority (ESA) became increasingly testy to representatives of the Inter-planetary Leisure Unit (ILU) and of the Audio Documentation Association (ADA), but particularly to the increasingly powerful World Assembly of Student Presidents (WASP) when the latest of these to take his Ph.D. at the age of nine argued in his dissertation that the patterns of communication of other bodies in space would never be comprehensible to Earthlings in their muddy vesture of decay. In spite of such pessimistic comment from the academic community, the problem of communication with neighbors of Earth was increasingly debated in the World Governing Whole (WGW), successor to the UN.

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A perfract finally came when two members of the ILU were shaking down their new Plustang on a cruise around the Moon. There they recorded a Martian who had been ejected from his space layak and left floating in space. He was sending out music upon music to his companions. Before he was picked up again, he had provided an uninterrupted series of musics, the first to be recorded which were not part of a medley. All resources of the ILU, assisted by large sums from WGW, were turned to their decipherment.

In the recording, one set of musics recurred again and again. It consisted of two chords followed by five broken chords and concluded by one chord, each of five tones. The chords themselves varied only slightly, little more than would the distress signals of an Earthling. A first attempt at decipherment interpreted the music to mean: "Come back. I've been ejected. Quick." Yet this interpretation met little general acceptance among linguists because of a perplexing welter of apparent speech sounds accompanying the music. In the fifteen repetitions recorded, the first chord approximated American English *run* five times, *ram* three other times; there were two each like *leave, live, love*; and one of *know*. Data that had promised to be the key to a solution of Martian speech only compounded the confusion, for Martians seemed to jumble their consonants and vowels without pattern. Earth was in despair. The annual convention of the ILU attracted fewer members than manufacturers of computer equipment. The prestigious Yeabeau Prize in Non-terrestrial Study was withheld by the Purundi Parliament for the first time. Earth seemed indeed a low-grade planet, severed from communication with its neighbors forever.

The only clue to a pattern was detected in the final chord. Though this was accompanied by a variety of approximate speech syllables, it always ended in a dental-alveolar fricative, with seven recordings like *tooth*, three like *fuss*, two like *hush*, and one each of *hiss, hash, bosh*. The uncovering of this pattern kept the grant of the ILU Language Reduction Center from total elimination, although it was so severely reduced that the Center could no longer maintain its own computer. In despair its director took leave for an extended vacation in the mountains of southern Mexico, fearing that the debacle would prevent his acceptance into the Leisure Research and Contemplation Citizenry at twenty, the age beyond which only mediocrities were required to work.

After several weeks of complete dejection he regained enough intellectual interest to attend a meeting of the ILU Chapter in the municipi-

pio of Huautla de Jiménez, Oaxaca, Mexico. During the meeting a lecture was given on Mazateco whistle speech, a type of communication used earlier in the century before Earth-tongue displaced indigenous languages. During the lecture Director Sensai grew more and more excited as he learned that in their mountainous area Mazatecos had communicated accurately through whistled melodies alone, with no use of consonants or vowels. Leaving the meeting as soon as he had a list of previous studies of whistle speech, Sensai rushed to his Marjara and dashed back to the Center, in constant touch with its staff. Of greatest interest was a report on Mazateco Whistle Speech, produced when scientific reports were still printed but fortunately transferred at some earlier time to the Center's nanofiles. While listening to the Center's Sonolect reading of this report (by G. M. Cowan, in *LANGUAGE* 24: 280-286, 1948), Sensai became so ecstatic that he shot to the limits of the prescribed course when he heard sequences like the following: "The Mazatecos frequently converse by whistling to one another. The whistles are not merely signals with limited semantic value arrived at by common agreement, but are parallel to spoken conversations as a means of communication." (p. 280) "A large proportion of Mazateco whistled conversations begin with one of a rather limited number of topics. An easily identifiable cultural context is thus quickly established, and the possibility of ambiguities is at once reduced." (p. 284) "The key is established by the first speaker." (p. 285) Before Sensai had maneuvered his Marjara back to its sheath at the Center, its computerized Sonosearch had reanalyzed several thousand Martian musics in accordance with Sensai's directions:

1. Disregarding the segments that approximated the consonants and vowels of Earth-tongue, concentrate on the analysis of the tones and pitch.
2. Disregarding absolute tones, seek out the relationships, first among the opening chords, then those between these and the subsequent parts of a music.
3. Apart from the recordings gathered from the ejected Martian, concentrate on musics which were emitted from Mars with special splendor on accurately identifiable occasions, such as periods of unusually prominent sunspots.
4. In analyzing the musics, rely on machine analysis, not on perception of pitch by the ear.

A brief examination of the Sonolect's sortings in accordance with these directions led to the decipherment of Martian, almost without further participation of Director Sensai. Corresponding to the several dozen consonants and vowels of the speech of Earthlings were thirty tones. In representing complex ideas as many as twenty-five such tones could be emitted, either in unison or as broken chords; on one occasion—as was later known, after a particularly successful communication with a planet in another galaxy—broken chords made up of all thirty tones were recorded. But for Plain-talk, which was used also for public pronouncements, though primarily in everyday exchanges of the young and un-gifted, the chords were limited to five tones. Newly generated Martians for some time used this simple form of their language; fortunately, the Martian recorded by the Plustang pair was recently generated in a program to provide replacements for a colony sent to the galaxy with which relations had been established.

A full description of Martian requires considerable space, even on nanotape. Here, besides the decipherment procedures, only a few remarks are given comparing it with the communication systems of Earth on which Earth-tongue had been based.

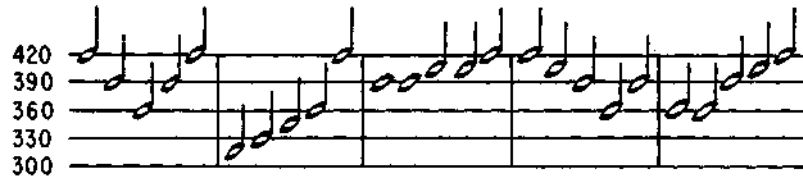
Except among intimates, all conversations begin with relatively fixed chords, somewhat like the Earthling's habits of exchanging greetings or other fixed phrases on meeting. These enable the hearer to tune in on the speaker—to determine the fundamental tone on which a music is based, roughly, the key. In the simple five-tone code, the first chord can be equated to "state and situation of emitter"; by it the emitter often characterizes his emotional set, preparing the hearer for the general tenor of the message as well as the melodic key he will use. There are only ten such chords in Plain-talk, fortunately for the decipherment. The second chord identifies the state. When ultimately deciphered, the first two chords of the ejected Martian—somewhat in contrast with the earliest crude decipherment attempts—were found to mean: "Sensation lyrical."

Having established the key, a Martian proceeds with his message. This is usually given in the form of arpeggios or broken chords. To simplify the teaching of Martian on Earth a primal tone of one hundred cycles per second is generally selected. Nonetheless Earthlings find Martian difficult, particularly because they must learn to perceive pitch differences in absolute values. The citations here follow this convention, re-

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producing the base tones of the chords and broken chords in Plain-talk within a range of 300 to 420 cps. It is noteworthy that Martians can distinguish differences of 10 cps.

Following this convention, the five broken chords of the ejected Martian were:



When deciphered, this music was found to mean: "Highly delightful floating in space." This music gives an insight into Martian Plain-talk. Nouns and their modifiers are, in general, characterized by upward movement, verbs by downward movement. In broken chords nouns are marked by repetition of the same initial tone. Adjectives resemble them by rising, but lack the repetition. Adverbs, even those modifying adjectives, descend to the third tone of five and then ascend. Prepositions have four descending tones. Verbs have five.

Adjectives are derived from nouns by lowering the first tone by ten cycles per second. The illustration below demonstrates the derivation of *spacial* from *space*. This characteristic provided one of the important leads in the decipherment. Another was given by the form of pronouns, for in these the first tone is repeated three times. (In becoming better acquainted with the culture of Earth, Martians were greatly delighted by Beethoven's Fifth Symphony, for it seemed to them a toying talk in praise of the ego.) In the solemn pronouncements, many of the second chords were like that given in the following illustration followed by the illustrated arpeggio.



Because these coincided with favorable conditions in the solar system, the chords were tentatively deciphered — later confirmed — to mean “joy”; the arpeggios, “joyful.” The decipherment was supported by analysis of other patterns; when “joyful” was the last element of five broken chords on unfavorable occasions, it was often preceded by an adverb identified as “not.” Such proclamations turned out to be comments on the lack of happiness.

These details, besides illustrating the procedures of decipherment, may be adequate to indicate that Martian was an intimately structured language. After Sensai demonstrated that the tones of Martian, like the vowels and consonants of Earth-tongue, owed their values to relationships rather than to absolute character, the tightly knit structure of the language permitted plotting on grids; computer-based pattern recognition procedures quickly determined the characteristic chords and arpeggios. Decipherment was further assisted by the practice of concluding all Plain-talk musics with a chord reflecting the speaker’s mood. Like the two-introductory chords, and like the vocabulary of Plain-talk itself, these were limited in number and soon identified. That of the expelled Martian meant “ecstasy.”

The problems resulting from the early attempts to relate Martian vowels and consonants to those of Earth-tongue were dispelled when it was noted that these corresponded to variations of pitch in languages like English, and were signals of sentence structure. Alveolar fricatives, *s z*, for example, signalled finality; resonants, *r l m* and so on, indicated lack of finality, continuation of the music.

The results on Earth were tremendous. For a time every dissertation in *The Sounds*—which had replaced *The Letters* as a central academic concern—dealt with some problem in analyzing the language of the Martians. Learned society meetings in *The Sounds* were choked with papers seeking to show that a true understanding of Martian could be achieved only by adherence to a given method; conflicts between the Hyperschematists and the Kosmemicists were particularly intense, virtually splitting WASP in two. Ultimately, in spite of these conflicts, the intricacies, beauty and flexibility of Martian became clear.

First Plain-talk was deciphered. Eventually there were grammars even for the twenty-five tone Music, used when Martians produced language games—somewhat like Earthling literature—and for the twelve tone music used for scientific discussion. In none of the musics was there

provision for redundancy. Accordingly unregulated change was impossible. If one strain of Martian came to be inadequate, it was revised by the Martian Authoritative Parliament (MAP). When, for example, the twelve tone music needed revising to accommodate new scientific disciplines required in describing the ways of the Earthlings, there was strong sentiment in MAP for leaving the twelve tones unmodified and placing instead more restrictions on the occurrence of vowels and consonants, as is done in Earth-tongue. Yet the resources of Martian are tremendous, both for exact statement and for individual play, through duration of tones, toyful modification by cycles per second when a tone is produced, modification of tone color through varied resonance and the like. Martians who were brought to Earth succeeded in exhilarating audiences simply by telling the plainest of stories.

Such visits upset the literary world, for experiments were undertaken to introduce some of the literary forms of Martian into Earth-tongue. Literary societies, Tape of the Day Clubs, bearded professors, *arrière garde* members of WASP excoriated the new forms. An impassioned article by the caustic critic of the New Coker called for adherence to the tried literary conventions, such as the delicate manipulation of consonants and vowels found in James Joyce.

The Contemporary Language Organization undertook a large-scale campaign to keep the teaching of English alive in elementary schools, warning the WGW of the cataclysmic consequences which might result if the elite were no longer equipped with immediate access to the important works of our heritage. Its more sprightly members established translation centers, to issue ever new versions of the standard works of the past.

With less publicity but equal energy the WGW Committee to Update Earth-tongue (CUE) began revising its schedule for making Earth-tongue more flexible for scientific communication and more capable of aesthetic variety. All hesitation to introduce a sixth pitch level at the next updating was abandoned, even though the Anthropoid Medical Association and the Daughters of the Astronaut Revolution were still objecting violently to the fifth. Some members of CUE even suggested that elementary schools might begin to teach students to discriminate between as many as ten tones at intervals of ninety cycles per second, with a view to even finer discrimination as the educational system of Earth was improved.



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With similar organizations the Language Reduction Center turned its attention to recordings that had been assembled from five thousand other stellar orbs. Awarded an early retirement after the decipherment, its former director Sensai devoted himself to the production of a fundamental text on the use of quanta for communication in the languages of the universe. (The esteem accorded him, even by a rejuvenated WASP, was not diminished by the discovery two days after his decipherment that a linguist in the Azores was about to publish a similar study, using as an example the whistle language once prominent in his native islands, nor by the subsequent discovery in a footnote of a renowned Congolese linguist, suggesting that study of African drum calls might provide an insight into the music of the spheres.) While the Governing-Whole-sponsored centers were granted support only for research into sono communication systems making use of the air waves, in his leisure Sensai was able to study communication systems which seemed to rely on light rays. Committees evaluating proposals, as well as the staff members of granting agencies, still were wary of supporting such work, on the grounds that it was difficult to conceive of beings who could manipulate energy quanta of this order.

Yet Sensai was given grants for attending Earth-Mars Congresses. Cumbersome at first because of the inadequate facilities for simultaneous interpretation, these permitted some encouragement for the study of alien tongues. An indication of the degree of collaboration may be apparent in the joint resolution of the last Congress, urging the governments of both planets to increase the grants for communication research on the grounds of the tremendous ignorance of varieties of language.