

Pragmatics of Human Communication

A Study of Interactional Patterns,
Pathologies, and Paradoxes

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Chapter 2

Some Tentative Axioms of Communication

2.1

Introduction

The conclusions reached in the first chapter generally emphasized the inapplicability of many traditional psychiatric notions to our proposed framework and so may seem to leave very little on which the study of the pragmatics of human communication could be based. We want to show next that this is not so. However, to do this, we have to start with some simple properties of communication that have fundamental interpersonal implications. It will be seen that these properties are in the nature of axioms within our hypothetical calculus of human communication. When these have been defined we will be in a position to consider some of their possible pathologies in Chapter 3.

2.2

The Impossibility of Not Communicating

2.21

First of all, there is a property of behavior that could hardly be more basic and is, therefore, often overlooked: behavior has no opposite. In other words, there is no such thing as nonbehavior or, to put it even more simply: one cannot *not* behave. Now, if it is accepted that all behavior in an interactional situation ¹ has message

¹ It might be added that, even alone, it is possible to have dialogues in fantasy, with one's hallucinations (15), or with life (s. 8.3). Perhaps such internal "communication" follows some of the same rules which govern interpersonal com-

value, i.e., is communication, it follows that no matter how one may try, one cannot *not* communicate. Activity or inactivity, words or silence all have message value: they influence others and these others, in turn, cannot *not* respond to these communications and are thus themselves communicating. It should be clearly understood that the mere absence of talking or of taking notice of each other is no exception to what has just been asserted. The man at a crowded lunch counter who looks straight ahead, or the airplane passenger who sits with his eyes closed, are both communicating that they do not want to speak to anybody or be spoken to, and their neighbors usually "get the message" and respond appropriately by leaving them alone. This, obviously, is just as much an interchange of communication as an animated discussion.²

Neither can we say that "communication" only takes place when it is intentional, conscious, or successful, that is, when mutual understanding occurs. Whether message sent equals message received is an important but different order of analysis, as it must rest ultimately on evaluations of specific, introspective, subject-reported data, which we choose to neglect for the exposition of a behavioral-theory of communication. On the question of misunderstanding, our concern, given certain formal properties of communication, is

munication; such unobservable phenomena, however, are outside the scope of our meaning of the term.

² Very interesting research in this field has been carried out by Luft (98), who studied what he calls "social stimulus deprivation." He brought two strangers together in a room, made them sit across from each other and instructed them "not to talk or communicate in any way." Subsequent interviews revealed the highly stressful nature of this situation. To quote the author:

... he has before him the other unique individual with his ongoing, though muted, behavior. At this point, it is postulated, that true interpersonal testing takes place, and only part of this testing may be done consciously. For example, how does the other subject respond to him and to the small non-verbal cues which he sends out? Is there an attempt at understanding his enquiring glance, or is it coldly ignored? Does the other subject display postural cues of tension, indicating some distress at confronting him? Does he grow increasingly comfortable, indicating some kind of acceptance, or will the other treat him as if he were a thing, which did not exist? These and many other kinds of readily discernible behavior appear to take place. . . .

with the development of related pathologies, aside from, indeed in spite of, the motivations or intentions of the communicants.

2.22

In the foregoing, the term "communication" has been used in two ways: as the generic title of our study, and as a loosely defined unit of behavior. Let us now be more precise. We will, of course, continue to refer to the pragmatic aspect of the theory of human communication simply as "communication." For the various units of communication (behavior), we have sought to select terms which are already generally understood. A single communicational unit will be called a *message* or, where there is no possibility of confusion, a *communication*. A series of messages exchanged between persons will be called *interaction*. (For those who crave more precise quantification, we can only say that the sequence we refer to by the term "interaction" is greater than one message but not infinite.) Finally, in Chapters 4-7, we will add *patterns of interaction*, which is a still higher-level unit of human communication.

Further, in regard to even the simplest possible unit, it will be obvious that once we accept all behavior as communication, we will not be dealing with a monophonic message unit, but rather with a fluid and multifaceted compound of many behavioral modes—verbal, tonal, postural, contextual, etc.—all of which qualify the meaning of all the others. The various elements of this compound (considered as a whole) are capable of highly varied and complex permutations, ranging from the congruent to the incongruent and paradoxical. The pragmatic effect of these combinations in interpersonal situations will be our interest herein.

2.23

The impossibility of not communicating is a phenomenon of more than theoretical interest. It is, for instance, part and parcel of the schizophrenic "dilemma." If schizophrenic behavior is observed with etiological considerations in abeyance, it appears that the schizophrenic tries *not to communicate*. But since even nonsense, silence, withdrawal, immobility (postural silence), or any

other form of denial is itself a communication, the schizophrenic is faced with the impossible task of denying that he is communicating and at the same time denying that his denial is a communication. The realization of this basic dilemma in schizophrenia is a key to a good many aspects of schizophrenic communication that would otherwise remain obscure. Since any communication, as we shall see, implies commitment and thereby defines the sender's view of his relationship with the receiver, it can be hypothesized that the schizophrenic behaves as if he would avoid commitment by not communicating. Whether this is his purpose, in the causal sense, is of course impossible of proof; that this is the effect of schizophrenic behavior will be taken up in greater detail in s. 3.2.

2.24

To summarize, a metacommunicational axiom of the pragmatics of communication can be postulated: *one cannot not communicate.*

2.3

The Content and Relationship Levels of Communication

2.31

Another axiom was hinted at in the foregoing when it was suggested that any communication implies a commitment and thereby defines the relationship. This is another way of saying that a communication not only conveys information, but that at the same time it imposes behavior. Following Bateson (132, pp. 179-81), these two operations have come to be known as the "report" and the "command" aspects, respectively, of any communication. Bateson exemplifies these two aspects by means of a physiological analogy: let *A*, *B*, and *C* be a linear chain of neurons. Then the firing of neuron *B* is both a "report" that neuron *A* has fired and a "command" for neuron *C* to fire.

The report aspect of a message conveys information and is, therefore, synonymous in human communication with the *content* of the message. It may be about anything that is communicable regardless of whether the particular information is true or false, valid, invalid,

or undecidable. The command aspect, on the other hand, refers to what sort of a message it is to be taken as, and, therefore, ultimately to the *relationship* between the communicants. All such relationship statements are about one or several of the following assertions: "This is how I see myself . . . this is how I see you . . . this is how I see you seeing me . . ." and so forth in theoretically infinite regress. Thus, for instance, the messages "It is important to release the clutch gradually and smoothly" and "Just let the clutch go, it'll ruin the transmission in no time" have approximately the same information content (report aspect), but they obviously define very different relationships. To avoid any misunderstanding about the foregoing, we want to make it clear that relationships are only rarely defined deliberately or with full awareness. In fact, it seems that the more spontaneous and "healthy" a relationship, the more the relationship aspect of communication recedes into the background. Conversely, "sick" relationships are characterized by a constant struggle about the nature of the relationship, with the content aspect of communication becoming less and less important.

2.32

It is quite interesting that before behavioral scientists began to wonder about these aspects of human communication, computer engineers had come across the same problem in their work. It became clear to them that when communicating with an artificial organism, their communications had to have both report and command aspects. For instance, if a computer is to multiply two figures, it must be fed this information (the two figures) *and* information about this information: the command "multiply them."

Now, what is important for our consideration is the relation existing between the content (report) and the relationship (command) aspects of communication. In essence it has already been defined in the preceding paragraph when it was mentioned that a computer needs *information* (data) and *information about this information* (instructions). Clearly, then, the instructions are of a higher logical type than the data; they are *metainformation* since

they are information *about* information, and any confusion between the two would lead to a meaningless result.

2.33

If we now return to human communication, we see that the same relation exists between the report and the command aspects: the former conveys the "data" of the communication, the latter how this communication is to be taken. "This is an order" or "I am only joking" are verbal examples of such communications about communication. The relationship can also be expressed nonverbally by shouting or smiling or in a number of other ways. And the relationship may be clearly understood from the context in which the communication takes place, e.g., between uniformed soldiers, or in a circus ring.

The reader will have noticed that the relationship aspect of a communication, being a communication about a communication, is, of course, identical with the concept of metacommunication elaborated in the first chapter, where it was limited to the conceptual framework and to the language the communication analyst must employ when communicating about communication. Now it can be seen that not only he but everyone is faced with this problem. The ability to metacommunicate appropriately is not only the *conditio sine qua non* of successful communication, but is intimately linked with the enormous problem of awareness of self and others. This point will be explained in greater detail in s. 3.3. For the moment, and by way of illustration, we merely want to show that messages can be constructed, especially in written communication, which offer highly ambiguous metacommunicational clues. As Cherry (34, p. 120) points out, the sentence "Do you think that one will do?" can have a variety of meanings, according to which word is to be stressed—an indication that written language usually does not supply. Another example would be a sign in a restaurant reading "Customers who think our waiters are rude should see the manager," which, at least in theory, can be understood in two entirely different ways. Ambiguities of this kind are not the only possible complica-

tions arising out of the level structure of all communication; consider, for instance, a notice that reads "Disregard This Sign." As we shall see in the chapter on paradoxical communication, confusions or contaminations between these levels—communication and meta-communication—may lead to impasses identical in structure to those of the famous paradoxes in logic.

2.34

For the time being let us merely summarize the foregoing into another axiom of our tentative calculus: *Every communication has a content and a relationship aspect such that the latter classifies the former and is therefore a metacommunication.*³

2.4

The Punctuation of the Sequence of Events

2.41

The next basic characteristic of communication we wish to explore regards interaction—exchanges of messages—between communicants. To an outside observer, *a series of communications can be viewed as an uninterrupted sequence of interchanges.* However, the participants in the interaction always introduce what, following Whorf (195), Bateson and Jackson have termed the "punctuation of the sequence of events." They state:

The stimulus-response psychologist typically confines his attention to sequences of interchange so short that it is possible to label one item of input as "stimulus" and another item as "reinforcement" while labelling what the subject does between these two events as "response." Within the short sequence so excised, it is

³We have chosen, somewhat arbitrarily, to say that the relationship classifies, or subsumes, the content aspect, although it is equally accurate in logical analysis to say that the class is defined by its members and therefore the content aspect can be said to define the relationship aspect. Since our primary interest is not information exchange but the pragmatics of communication, we will use the former approach.

possible to talk about the "psychology" of the subject. In contrast, the sequences of interchange which we are here discussing are very much longer and therefore have the characteristic that every item in the sequence is simultaneously stimulus, response and reinforcement. A given item of A's behavior is a stimulus insofar as it is followed by an item contributed by B and that by another item contributed by A. But insofar as A's item is sandwiched between two items contributed by B, it is a response. Similarly A's item is a reinforcement insofar as it follows an item contributed by B. The ongoing interchanges, then, which we are here discussing, constitute a chain of overlapping triadic links, each of which is comparable to a stimulus-response-reinforcement sequence. We can take any triad of our interchange and see it as a single trial in a stimulus-response learning experiment.

If we look at the conventional learning experiments from this point of view, we observe at once that repeated trials amount to a differentiation of relationship between the two organisms concerned—the experimenter and his subject. The sequence of trials is so punctuated that it is always the experimenter who seems to provide the "stimuli" and the "reinforcements," while the subject provides the "responses." These words are here deliberately put in quotation marks because the role definitions are in fact only created by the willingness of the organisms to accept the system of punctuation. The "reality" of the role definitions is only of the same order as the reality of a bat on a Rorschach card—a more or less over-determined creation of the perceptive process. The rat who said "I have got my experimenter trained. Each time I press the lever he gives me food" was declining to accept the punctuation of the sequence which the experimenter was seeking to impose.

It is still true, however, that in a long sequence of interchange, the organisms concerned—especially if these be people—will in fact punctuate the sequence so that it will appear that one or the other has initiative, dominance, dependency or the like. That is, they will set up between them patterns of interchange (about which they may or may not be in agreement) and these patterns will in fact be rules of contingency regarding the exchange of reinforcement. While rats are too nice to re-label, some psychiatric patients are not, and provide psychological trauma for the therapist! (19, pp. 273-74)

It is not the issue here whether punctuation of communicational sequence is, in general, good or bad, as it should be immediately obvious that punctuation *organizes* behavioral events and is therefore vital to ongoing interactions. Culturally, we share many conventions of punctuation which, while no more or less accurate than other views of the same events, serve to organize common and important interactional sequences. For example, we call a person in a group behaving in one way the "leader" and another the "follower," although on reflection it is difficult to say which comes first or where one would be without the other.

2.42

Disagreement about how to punctuate the sequence of events is at the root of countless relationship struggles. Suppose a couple have a marital problem to which he contributes passive withdrawal, while her 50 per cent is nagging criticism. In explaining their frustrations, the husband will state that withdrawal is his only *defense against* her nagging, while she will label this explanation a gross and willful distortion of what "really" happens in their marriage: namely, that she is critical of him *because of* his passivity. Stripped of all ephemeral and fortuitous elements, their fights consist in a monotonous exchange of the messages "I withdraw because you nag" and "I nag because you withdraw." This

intensity of what in traditional psychotherapy would be referred to as "reality distortion" on the part of both parties. It is often hard to believe that two individuals could have such divergent views on many elements of joint experience. And yet the problem lies primarily in an area already frequently mentioned: their inability to metacommunicate about their respective patterning of their interaction. This interaction is of an oscillatory yes-no-yes-no-yes nature which theoretically can go on ad infinitum and almost invariably is accompanied, as we shall see later, by the typical charges of badness or madness.

International relations, too, are rife with analogous patterns of interaction; take for instance C. E. M. Joad's analysis of arms races:

. . . if, as they maintain, the best way to preserve peace is to prepare war, it is not altogether clear why all nations should regard the armaments of other nations as a menace to peace. However, they do so regard them, and are accordingly stimulated to increase their armaments to overtop the armaments by which they conceive themselves to be threatened. . . . These increased arms being in their turn regarded as a menace by nation A whose allegedly defensive armaments have provoked them, are used by nation A as a pretext for accumulating yet greater armaments wherewith to defend itself against the menace. Yet these greater armaments are in turn interpreted by neighbouring nations as constituting a menace to themselves and so on. . . . (79, p. 69)

Again, mathematics supplies a descriptive analogy: the concept of "infinite, oscillating series." While the term itself was introduced much later, series of this kind were studied in a logical, consistent manner for the first time by the Austrian priest Bernard Bolzano shortly before his death in 1848, when, it would appear, he was deeply involved with the meaning of infinity. His thoughts

appeared posthumously in the form of a small book entitled *The Paradoxes of the Infinite* (30), which became a classic of mathematical literature. In it Bolzano studied various kinds of series (S), of which perhaps the simplest is the following:

$$S = a - a + a - a + a - a + a - a + a - a + a - \dots$$

For our purposes this series may be taken to stand for a communicational sequence of assertions and denials of message a . Now, as Bolzano showed, this sequence can be grouped—or, as we would say, punctuated—in several different, but arithmetically correct, ways.⁴ The result is a different limit for the series depending on how one chooses to punctuate the sequence of its elements, a result which consternated many mathematicians, including Leibnitz. Unfortunately, as far as we can see, the solution of the paradox offered eventually by Bolzano is of no help in the analogous communicational dilemma. There, as Bateson (17) suggests, the dilemma arises out of the spurious punctuation of the series, namely, the pretense that it has a beginning, and this is precisely the error of the partners in such a situation.

2.44

Thus we add a third metacommunicational axiom: *The nature of a relationship is contingent upon the punctuation of the communicational sequences between the communicants.*

⁴ The three possible groupings ("punctuations") are:

$$\begin{aligned} S &= (a - a) + (a - a) + (a - a) + (a - a) + \dots \\ &= 0 + 0 + 0 + \dots \\ &= 0 \end{aligned}$$

Another way of grouping the elements of the sequence would be:

$$\begin{aligned} S &= a - (a - a) - (a - a) - (a - a) - (a - a) - \dots \\ &= a - 0 - 0 - 0 \dots \\ &= a \end{aligned}$$

Still another way would be:

$$S = a - (a - a + a - a + a - a + a - \dots)$$

and since the elements contained in the brackets are nothing but the series itself, it follows that:

$$S = a - S$$

Therefore $2S = a$, and $S = \frac{a}{2}$. (30, pp. 49-50)

2.5

Digital and Analogic Communication

2.51

In the central nervous system the functional units (neurons) receive so-called quantal packages of information through connecting elements (synapses). Upon arrival at the synapses these "packages" produce excitatory or inhibitory postsynaptic potentials that are summed up by the neuron and either cause or inhibit its firing. This specific part of neural activity, consisting in the occurrence or nonoccurrence of its firing, therefore conveys binary digital information. The humoral system, on the other hand, is not based on digitalization of information. This system communicates by releasing discrete quantities of specific substances into the bloodstream. It is further known that the neural and the humoral modes of intraorganismic communication exist not only side by side, but that they complement and are contingent upon each other, often in highly complex ways.

The same two basic modes of communication can be found at work in the field of man-made organisms:⁶ there are computers which utilize the all-or-none principle of vacuum tubes or transistors and are called *digital*, because they are basically calculators working with digits; and there is another class of machines that manipulate discrete, positive magnitudes—the analogues of the data—and hence are called *analogic*. In digital computers both

⁶ Interestingly enough, there is reason to believe that computer engineers arrived at this result quite independently from what the physiologists already knew at the time, a fact which in itself provides a beautiful illustration of von Bertalanffy's (25) postulate that complex systems have their own inherent lawfulness that can be followed throughout the various systemic levels, i.e., the atomic, molecular, cellular, organismic, individual, societal, etc. The story goes that during an interdisciplinary gathering of scientists interested in feedback phenomena (probably one of the Josiah Macy Foundation meetings), the great histologist von Bonin was shown the wiring diagram of a selective reading device and immediately said: "But this is just a diagram of the third layer of the visual cortex. . . ." We cannot vouch for the authenticity of this story, but would hold it with the Italian proverb "se non è vero, è ben trovato" (even if it is not true, it still makes a good story).

data and instructions are processed in the form of numbers so that often, especially in the case of the instructions, there is only an arbitrary correspondence between the particular piece of information and its digital expression. In other words, these numbers are arbitrarily assigned code names which have as little resemblance to actual magnitudes as do the telephone numbers assigned to the subscribers. On the other hand, as we have already seen, the analogy principle is the essence of all analogic computation. Just as in the humoral system of natural organisms the carriers of information are certain substances and their concentration in the bloodstream, in analogue computers data take the form of discrete and, therefore, always positive quantities, e.g., the intensity of electrical currents, the number of revolutions of a wheel, the degree of displacement of components, and the like. A so-called tide machine (an instrument composed of scales, cogs, and levers formerly used to compute the tides for any given time) can be considered a simple analogue computer, and, of course, Ashby's homeostat, mentioned in Chapter 1, is a paradigm of an analogue machine, even though it does not compute anything.

2.52

In human communication, objects—in the widest sense—can be referred to in two entirely different ways. They can either be represented by a likeness, such as a drawing, or they can be referred to by a name. Thus, in the written sentence "The cat has caught a mouse" the nouns could be replaced by pictures; if the sentence were spoken, the actual cat and the mouse could be pointed to. Needless to say, this would be an unusual way of communicating, and normally the written or spoken "name," that is, the word, is used. These two types of communication—the one by a self-explanatory likeness, the other by a word—are, of course, also equivalent to the concepts of the analogic and the digital respectively. Whenever a word is used to *name* something it is obvious that the relation between the name and the thing named is an arbitrarily established one. Words are arbitrary signs that are manipulated according to the logical syntax of language. There is no particular reason why the three letters "c-a-t" should denote a particular

animal. In ultimate analysis it is only a semantic convention of the English language, and outside this convention there exists no other correlation between any word and the thing it stands for, with the possible but insignificant exception of onomatopoeic words. As Bateson and Jackson point out: "There is nothing particularly five-like in the number five; there is nothing particularly table-like in the word 'table'" (19, p. 271).

In analogic communication, on the other hand, there is something particularly "thing-like" in what is used to express the thing. Analogic communication can be more readily referred to the thing it stands for. The difference between these two modes of communication may become somewhat clearer if it is realized that no amount of listening to a foreign language on the radio, for example, will yield an understanding of the language, whereas some basic information can fairly easily be derived from watching sign language and from so-called intention movements, even when used by a person of a totally different culture. Analogic communication, we suggest, has its roots in far more archaic periods of evolution and is, therefore, of much more general validity than the relatively recent, and far more abstract, digital mode of verbal communication.

What then is analogic communication? The answer is relatively simple: it is virtually all nonverbal communication. This term, however, is deceptive, because it is often restricted to body movement only, to the behavior known as kinesics. We hold that the term must comprise posture, gesture, facial expression, voice inflection, the sequence, rhythm, and cadence of the words themselves, and any other nonverbal manifestation of which the organism is capable, as well as the communicational clues unfailingly present in any *context* in which an interaction takes place.⁶

2.53

Man is the only organism known to use both the analogic and

*The paramount communicational significance of context is all too easily overlooked in the analysis of human communication, and yet anyone who brushed his teeth in a busy street rather than in his bathroom might be quickly carted off to a police station or to a lunatic asylum—to give just one example of the pragmatic effects of nonverbal communication.

the digital modes of communication.⁷ The significance of this is still very inadequately understood, but can hardly be overrated. On the one hand there can be no doubt that man communicates digitally. In fact, most, if not all, of his civilized achievements would be unthinkable without his having evolved digital language. This is particularly important for the sharing of information about *objects* and for the time-binding function of the transmission of knowledge. And yet there exists a vast area where we rely almost exclusively on analogic communication, often with very little change from the analogic inheritance handed down to us from our mammalian ancestors. This is the area of *relationship*. Based on Tinbergen (153) and Lorenz (96), as well as his own research, Bateson (8) has shown that vocalizations, intention movements, and mood signs of animals are analogic communications by which they define the nature of their relationships, rather than making denotative statements about objects. Thus, to take one of his examples, when I open the refrigerator and the cat comes, rubs against my legs, and mews, this does not mean "I want milk"—as a human being would express it—but invokes a specific relationship, "Be mother to me," because such behavior is only observed in kittens in relation to adult cats, and never between two grown-up animals. Conversely, pet lovers often are convinced that their animals "understand" their speech. What the animal does understand, needless to say, is certainly not the meaning of the words, but the wealth of analogic communication that goes with speech. Indeed, wherever relationship is the central issue of communication, we find that digital language is almost meaningless. This is not only the case between animals and between man and animal, but in many other contingencies in human life, e.g., courtship, love, succor, combat, and, of course, in all dealings with very young children or severely disturbed mental patients. Children, fools, and animals have always been credited with particular intuition regarding the sincerity or insincerity of human attitudes, for it is easy to profess something verbally, but difficult to carry a lie into the realm of the analogic.

⁷There is reason to believe that whales and dolphins may also use digital communication, but the research in this area is not yet conclusive.

In short, if we remember that every communication has a content and a relationship aspect, we can expect to find that the two modes of communication not only exist side by side but complement each other in every message. We can further expect to find that the content aspect is likely to be conveyed digitally whereas the relationship aspect will be predominantly analogic in nature.

2.54

In this correspondence lies the pragmatic importance of certain differences between the digital and analogic modes of communication which will now be considered. In order to make these differences clear, we can return to the digital and analogic modes as represented in artificial communication systems.

The performance, accuracy, and versatility of the two types of computers—digital and analogue—are vastly different. The analogues used in analogue computers in lieu of actual magnitudes can never be more than approximations of the real values, and this ever-present source of inaccuracy is further increased during the process of the computer operations themselves. Cogs, gears, and transmissions can never be built to perfection, and even when analogue machines rely entirely on discrete intensities of electrical currents, electrical resistances, rheostats, and the like, these analogues are still subject to virtually uncontrollable fluctuations. A digital machine, on the other hand, could be said to work with perfect precision if space for storing digits were not restricted, thus making it necessary to round off any results having more digits than the machine could hold. Anyone who has used a slide rule (an excellent example of an analogue computer) knows that he can only get an approximate result, while any desk calculator will supply an exact result, as long as the digits required do not exceed the maximum the calculator can handle.

Apart from its perfect precision, the digital computer has the enormous advantage of being not only an arithmetic, but also a *logical*, machine. McCulloch and Pitts (101) have shown that the sixteen truth functions of the logical calculus can be represented by combinations of all-or-none organs, so that, for instance, the

summation of two pulses will represent the logical "and," the mutual exclusiveness of two pulses represents the logical "or," a pulse which inhibits the firing of an element represents negation, etc. Nothing even remotely comparable is possible in analogue computers. Since they operate only with discrete, positive quantities they are unable to represent any negative value, including negation itself, or any of the other truth functions.

Some of the characteristics of computers also apply to human communication: digital message material is of a much higher degree of complexity, versatility, and abstraction than analogic material. Specifically, we find that analogue communication has nothing comparable to the logical syntax of digital language. This means that in analogic language there are no equivalents for such vitally important elements of discourse as "if—then," "either—or," and many others, and that the expression of abstract concepts is as difficult, if not impossible, as in primitive picture writing, where every concept can only be represented by its physical likeness. Furthermore, analogic language shares with analogic computing the lack of the simple negative, i.e., an expression for "not."

To illustrate: there are tears of sorrow and tears of joy, the clenched fist may signal aggression or constraint, a smile may convey sympathy or contempt, reticence can be interpreted as tactfulness or indifference, and we wonder if perhaps all analogic messages have this curiously ambiguous quality, reminiscent of Freud's *Gegensinn der Urworte* (antithetical sense of primal words). Analogic communication has no qualifiers to indicate which of two discrepant meanings is implied, nor any indicators that would permit a distinction between past, present, or future.⁸ These qualifiers

⁸ By now the reader will have discovered for himself how suggestive a similarity there exists between the analogic and the digital modes of communication and the psychoanalytic concepts of *primary* and *secondary processes* respectively. If transposed from the intrapsychic to the interpersonal frame of reference, Freud's description of the id becomes virtually a definition of analogic communication:

The laws of logic—above all, the law of contradiction—do not hold for processes in the id. Contradictory impulses exist side by side without neutralizing each other or drawing apart. . . . There is nothing in the id which can be compared to negation,

and indicators do, of course, exist in digital communication. But what is lacking in digital communication is an adequate vocabulary for the contingencies of relationship.

Man, in his necessity to combine these two languages, either as sender or receiver, must constantly *translate* from the one into the other, and in doing so encounters very curious dilemmas, which will be taken up in greater detail in the chapter on pathological communication (s. 3.5). For in human communication, the difficulty of translation exists both ways. Not only can there be no translation from the digital into the analogic mode without great loss of information (see s. 3.55 on hysterical symptom formation), but the opposite is also extraordinarily difficult: to *talk about* relationship requires adequate translation from the analogic into the digital mode of communication. Finally we can imagine similar problems when the two modes must coexist, as Haley has noted in his excellent chapter, "Marriage Therapy":

When a man and a woman decide their association should be legalized with a marriage ceremony, they pose themselves a problem which will continue through the marriage: now that they are married are they staying together because they wish to or because they must? (60, p. 119)

In the light of the foregoing, we would say that when to the mostly analogic part of their relationship (courtship behavior) is added a digitalization (the marriage contract) an unambiguous definition of their relationship becomes very problematic.⁹

2-55

To summarize: *Human beings communicate both digitally and analogically. Digital language has a highly complex and powerful*

and we are astonished to find in it an exception to the philosophers' assertion that space and time are necessary forms of our mental acts (49, p. 104; italics ours)

⁹ For the same reasons, it is possible to suggest that divorce would be experienced as something much more definite if the usually dry and uninspiring legal act of obtaining the final decree were implemented by some form of analogic ritual of final separation.

logical syntax but lacks adequate semantics in the field of relationship, while analogic language possesses the semantics but has no adequate syntax for the unambiguous definition of the nature of relationships.

2.6

Symmetrical and Complementary Interaction

2.61

In 1935 Bateson (6) reported on an interactional phenomenon which he observed in the Iatmul tribe in New Guinea and which, in his book *Naven* (10), published a year later, he dealt with in greater detail. He called this phenomenon *schismogenesis* and defined it as a process of differentiation in the norms of individual behavior resulting from cumulative interaction between individuals. In 1939 Richardson (125) applied this concept to his analyses of war and foreign politics; since 1952 Bateson and others have demonstrated its usefulness in the field of psychiatric research (Cf. 157, pp. 7-17; also 143). This concept, which, as we can see, has a heuristic value beyond the confines of any one discipline, was elaborated by Bateson in *Naven* as follows:

When our discipline is defined in terms of the reactions of an individual to the reactions of other individuals, it is at once apparent that we must regard the relationship between two individuals as liable to alter from time to time, even without disturbance from outside. We have to consider, not only *A*'s reactions to *B*'s behaviour, but we must go on to consider how these affect *B*'s later behaviour and the effect of this on *A*.

It is at once apparent that many systems of relationship, either between individuals or groups of individuals, contain a tendency towards progressive change. If, for example, one of the patterns of cultural behaviour, considered appropriate in individual

A, is culturally labelled as an assertive pattern, while *B* is expected to reply to this with what is culturally regarded as submission, it is likely that this submission will encourage a further assertion, and that this assertion will demand still further submission. We have thus a potentially progressive state of affairs, and unless other factors are present to restrain the excesses of assertive and submissive behavior, *A* must necessarily become more and more assertive, while *B* will become more and more submissive; and this progressive change will occur whether *A* and *B* are separate individuals or members of complementary groups.

Progressive changes of this sort we may describe as *complementary* schismogenesis. But there is another pattern of relationships between individuals or groups of individuals which equally contains the germs of progressive change. If, for example, we find boasting as the cultural pattern of behaviour in one group, and that the other group replies to this with boasting, a competitive situation may develop in which boasting leads to more boasting, and so on. This type of progressive change we may call *symmetrical* schismogenesis. (10, pp. 176-77)

The two patterns just described have come to be used without reference to the schismogenetic process and are now usually referred to simply as symmetrical and complementary interaction. They can be described as relationships based on either equality or difference. In the first case the partners tend to mirror each other's behavior, and thus their interaction can be termed *symmetrical*. Weakness or strength, goodness or badness, are not relevant here, for equality can be maintained in any of these areas. In the second case one partner's behavior complements that of the other, forming a different sort of behavioral Gestalt, and is called *complementary*. Symmetrical interaction, then, is characterized by equal-

ity and the minimization of difference, while complementary interaction is based on the maximization of difference.

There are two different positions in a complementary relationship. One partner occupies what has been variously described as the superior, primary, or "one-up" position, and the other the corresponding inferior, secondary, or "one-down" position. These terms are quite useful as long as they are not equated with "good" or "bad," "strong" or "weak." A complementary relationship may be set by the social or cultural context (as in the cases of mother and infant, doctor and patient, or teacher and student), or it may be the idiosyncratic relationship style of a particular dyad. In either case, it is important to emphasize the interlocking nature of the relationship, in which dissimilar but fitted behaviors evoke each other. One partner does not impose a complementary relationship on the other, but rather each behaves in a manner which presupposes, while at the same time providing reasons for, the behavior of the other: their definitions of the relationship (s. 2.3) fit.

2.63

A third type of relationship has been suggested—"metacomplementary," in which *A* lets or forces *B* to be in charge of him; by the same reasoning, we could also add "pseudosymmetry," in which *A* lets or forces *B* to be symmetrical. This potentially infinite regress can, however, be avoided by recalling the distinction made earlier (s. 1.4) between the observation of behavioral redundancies and their inferred explanations, in the form of mythologies; that is, we are interested in *how* the pair behave without being distracted by *why* (they believe) they so conduct themselves. If, though, the individuals involved avail themselves of the multiple levels of communication (s. 2.22) in order to express different patterns on different levels, paradoxical results of significant pragmatic importance may arise (s. 5.41; 6.42, ex. 3; 7.5, ex. 2d).

2.64

The potential pathologies (escalation in symmetry and rigidity in complementarity) of these modes of communication will be

dealt with in the next chapter. For the present, we can state simply our last tentative axiom: *All communicational interchanges are either symmetrical or complementary, depending on whether they are based on equality or difference.*

2.7

Summary

Regarding the above axioms in general, some qualifications should be re-emphasized. First, it should be clear that they are put forth tentatively, rather informally defined and certainly more preliminary than exhaustive. Second, they are, among themselves, quite heterogeneous in that they draw from widely ranging observations on communication phenomena. They are unified not by their origins but by their *pragmatic* importance, which in turn rests not so much on their particulars as on their *interpersonal* (rather than monadic) reference. Birdwhistell has even gone so far as to suggest that

an individual does not communicate; he engages in or becomes part of communication. He may move, or make noises . . . but he does not communicate. In a parallel fashion, he may see, he may hear, smell, taste, or feel—but he does not communicate. In other words, he does not originate communication; he participates in it. Communication as a system, then, is not to be understood on a simple model of action and reaction, however complexly stated. As a system, it is to be comprehended on the transactional level. (28, p. 104)

Thus, the impossibility of not communicating makes all two-or-more-person situations *interpersonal*, communicative ones; the relationship aspect of such communication further specifies this same point. The pragmatic, interpersonal importance of the digital and analogic modes lies not only in its hypothesized isomorphism with

content and relationship, but in the inevitable and significant ambiguity which both sender and receiver face in problems of translation from the one mode to the other. The description of problems of punctuation rests precisely on the underlying metamorphosis of the classic action-reaction model. Finally, the symmetry-complementarity paradigm comes perhaps closest to the mathematical concept of *function*, the individuals' positions merely being variables with an infinity of possible values whose meaning is not absolute but rather emerges only in relation to each other.

