VINTAGE

THE ESSENTIAL CHOMSKY

NOAM CHOMSKY

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About the Book

Noam Chomsky's writings on politics and language have established him as a pre-eminent public intellectual and as one of the most original and wide-ranging political and social critics of our time. Among the seminal figures in linguistic theory over the past century, since the 1960s Chomsky has also secured a place as perhaps the leading dissident voice in the United States.

Chomsky's many bestselling works – including *Manufacturing Consent*, *Hegemony or Survival*, *Understanding Power*, and *Failed States* – have served as essential touchstones for dissidents, activists, scholars, and concerned citizens on subjects ranging from the media to human rights to intellectual freedom. In particular, Chomsky's scathing critiques of the U.S. wars in Vietnam, Central America, and the Middle East have furnished a widely accepted intellectual inspiration for anti-war movements over nearly five decades.

The Essential Chomsky assembles the core of his most important writings and allows us to appreciate both the range of his interests and the scale of his achievement. Here is an unprecedented, comprehensive overview of Chomsky's thought.

About the Author

Noam Chomsky is Institute Professor Emeritus of Linguistics and Philosophy at MIT and the author of numerous seminal books, including *Manufacturing Consent*, *Deterring Democracy* and *Hegemony or Survival*. He was voted the world's leading public intellectual in the 2005 Prospect/Foreign Policy poll. He lives in Cambridge, Massachusetts.

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The Essential Chomsky

NOAM CHOMSKY

Edited by ANTHONY ARNOVE

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Foreword

From his early essays in the liberal intellectual journal the *New York Review of Books* to his most recent books *Hegemony or Survival, Failed States*, and *Interventions*, Noam Chomsky has produced a singular body of political criticism.[1] *American Power and the New Mandarins* (1969), his first published collection of political writing (dedicated "To the brave young men who refuse to serve in a criminal war"), contains essays that still stand out for their insight and biting wit nearly four decades later. "It is easy to be carried away by the sheer horror of what the daily press reveals and to lose sight of the fact that this is merely the brutal exterior of a deeper crime, of commitment to a social order that guarantees endless suffering and humiliation and denial of elementary human rights," Chomsky wrote in that book, setting himself apart from the vast majority of the war's critics who saw it as a "tragic mistake," rather than as part of a long history of U.S. imperialism.[2]

Since 1969, Chomsky has produced a series of books on U.S. foreign policy in Asia, Latin America, and the Middle East, all while maintaining his commitments to linguistics research, philosophy, and to teaching. And throughout, he has consistently lent his support to movements and organizations involved in efforts for social change, continuing a tradition of intellectual and active social engagement he developed early in his youth.

Avram Noam Chomsky was born in Philadelphia on December 7, 1928, and raised among Jewish immigrants from Eastern Europe. His father, William Chomsky, fled from Russia in 1913 to escape conscription into the Tsarist

army. His mother, Elsie Simonofsky, left Eastern Europe when she was one. Chomsky grew up during the Depression and the international rise of the fascist threat. As he later recalled, “Some of my earliest memories, which are very vivid, are of people selling rags at our door, of violent police strikebreaking, and other Depression scenes.” [3] Chomsky was imbued at an early age with a sense of class solidarity and struggle. While his parents were, as he puts it, “normal Roosevelt Democrats,” he had aunts and uncles who were garment workers in the International Ladies’ Garment Workers’ Union, communists, Trotskyists, and anarchists. As a child, Chomsky was influenced by the radical Jewish intellectual culture in New York City, where he regularly visited newsstands and bookstores with anarchist literature. According to Chomsky, this was a “working class culture with working class values, solidarity, socialist values.”[4]

After having almost dropped out of the University of Pennsylvania, where he had enrolled as an undergraduate when he was sixteen, Chomsky found intellectual and political stimulation from linguist Zellig Harris. Chomsky gravitated toward the unusual intellectual milieu around Harris. Harris taught seminars on linguistics that involved philosophical debates, reading, and independent research outside the standard constraints of the university structure. Chomsky began graduate work with Harris and, in 1951, joined Harvard’s Society of Fellows, where he continued his research into linguistics. By 1953, Chomsky had broken “almost entirely from the field as it existed,” and set down a path that would lead him to reexamine the rich insights of the seventeenth-century linguistics of the Port-Royal school and the French philosopher René Descartes, and the later work of the Prussian philosopher Wilhelm von Humboldt, on the “creative aspect of language use.”[5] Though Chomsky would at times downplay or deny the connection, his political and linguistic work have both built on the

philosophical tradition that he has traced back from contemporary strains of anarchism through “classical liberalism” to the Enlightenment and the early rationalists of the seventeenth century.

While Chomsky, who joined the faculty of the Massachusetts Institute of Technology in 1955 at the age of twenty-six, received tremendous early recognition for his linguistic work, he began to make a wider political mark when he started writing long, detailed essays denouncing the war and the role of mainstream intellectuals who supported it for the *New York Review of Books* and then for left journals such as *Liberation, Ramparts, New Politics*, and *Socialist Revolution* (later *Socialist Review*). These essays brilliantly documented and condemned the actions of the U.S. government in Indochina and connected the war effort to the history of U.S. imperialism more generally. Chomsky became one of the most important and respected critics of the U.S. war effort, earning a place on President Nixon’s infamous “enemies list.” From this point on, he was the subject of intense vilification by various apologists for the system, much as he would later be subjected to repeated attacks for his critical writings on Israel. In these early essays, we see Chomsky developing the basic themes of his best work: rigorously detailed analyses of U.S. planning documents, declassified records, official statements, and hard-to-find sources; merciless critique of liberals, establishment intellectuals, and media commentators who provided a cover for U.S. imperialism; and an analysis that showed that the war in Vietnam was not the result of “mistakes,” “honest misunderstanding,” “attempts to do good gone awry,” or of incompetent officials who could just be replaced by better ones. Rather, the war against Indochina was a product of systematic, deeply rooted features of the capitalist state.

Not just an intellectual critic of the war against the people of Indochina, he participated in direct action to back

up his beliefs. Chomsky took part in early tax resistance efforts in early 1965 and one of the first public protests against the war, in Boston in October 1965, at which protesters were outnumbered by counterdemonstrators and police, and became an important day-to-day organizer in the movement. These commitments extended well beyond Vietnam to involvement in the Central American solidarity movement, protest against the 1991 and 2003 U.S. interventions in Iraq, and much more. Chomsky has continued to speak out, write, give interviews, sign petitions, and reach out individually wherever he has felt he might be able to make a difference. And yet, he has also maintained his passionate engagement with his students and others in the field of linguistics, an area where he has continued to challenge and revise his own theories and work.[6]

People around the world take inspiration from Chomsky's example, and rightly so. He reminds a world that sees the United States through the lens of Fox News or that primarily knows the United States through its blunt instruments of foreign control that the people of the country have far different values and ideals than its political elite. He speaks within a vital but often neglected tradition of dissent and from a standpoint of solidarity with people around the world who are engaged in struggles for justice and social change. On his trips to countries such as Colombia and Nicaragua, usually with his lifetime partner Carol Chomsky, he travels more to learn from the struggles of others than to teach or instruct, but his words still carry the immense power that criticism and analysis at its best can exemplify: the power of people to understand the world in order to better understand how to change it.

Anthony Arnove

1.

A Review of B. F. Skinner's *Verbal Behavior*

Verbal Behavior. By B. F. SKINNER. (The Century Psychology Series.) Pp. viii, 478. New York: Appleton-Century-Crofts, Inc., 1957.

1. A great many linguists and philosophers concerned with language have expressed the hope that their studies might ultimately be embedded in a framework provided by behaviorist psychology, and that refractory areas of investigation, particularly those in which meaning is involved, will in this way be opened up to fruitful exploration. Since this volume is the first large-scale attempt to incorporate the major aspects of linguistic behavior within a behaviorist framework, it merits and will undoubtedly receive careful attention. Skinner is noted for his contributions to the study of animal behavior. The book under review is the product of study of linguistic behavior extending over more than twenty years. Earlier versions of it have been fairly widely circulated, and there are quite a few references in the psychological literature to its major ideas.

The problem to which this book is addressed is that of giving a "functional analysis" of verbal behavior. By functional analysis, Skinner means identification of the variables that control this behavior and specification of how they interact to determine a particular verbal response. Furthermore, the controlling variables are to be described

completely in terms of such notions as stimulus, reinforcement, deprivation, which have been given a reasonably clear meaning in animal experimentation. In other words, the goal of the book is to provide a way to predict and control verbal behavior by observing and manipulating the physical environment of the speaker.

Skinner feels that recent advances in the laboratory study of animal behavior permit us to approach this problem with a certain optimism, since "the basic processes and relations which give verbal behavior its special characteristics are now fairly well understood . . . the results [of this experimental work] have been surprisingly free of species restrictions. Recent work has shown that the methods can be extended to human behavior without serious modification" (3).[1]

It is important to see clearly just what it is in Skinner's program and claims that makes them appear so bold and remarkable. It is not primarily the fact that he has set functional analysis as his problem, or that he limits himself to study of "observables," i.e., input-output relations. What is so surprising is the particular limitations he has imposed on the way in which the observables of behavior are to be studied, and, above all, the particularly simple nature of the "function" which, he claims, describes the causation of behavior. One would naturally expect that prediction of the behavior of a complex organism (or machine) would require, in addition to information about external stimulation, knowledge of the internal structure of the organism, the ways in which it processes input information and organizes its own behavior. These characteristics of the organism are in general a complicated product of inborn structure, the genetically determined course of maturation, and past experience. Insofar as independent neurophysiological evidence is not available, it is obvious that inferences concerning the structure of the organism are based on observation of behavior and outside events.

Nevertheless, one's estimate of the relative importance of external factors and internal structure in the determination of behavior will have an important effect on the direction of research on linguistic (or any other) behavior, and on the kinds of analogies from animal behavior studies that will be considered relevant or suggestive.

Putting it differently, anyone who sets himself the problem of analyzing the causation of behavior will (in the absence of independent neurophysiological evidence) concern himself with the only data available, namely the record of inputs to the organism and the organism's present response, and will try to describe the function specifying the response in terms of the history of inputs. This is nothing more than the definition of his problem. There are no possible grounds for argument here, if one accepts the problem as legitimate, though Skinner has often advanced and defended this definition of a problem as if it were a thesis which other investigators reject. The differences that arise between those who affirm and those who deny the importance of the specific "contribution of the organism" to learning and performance concern the particular character and complexity of this function, and the kinds of observations and research necessary for arriving at a precise specification of it. If the contribution of the organism is complex, the only hope of predicting behavior even in a gross way will be through a very indirect program of research that begins by studying the detailed character of the behavior itself and the particular capacities of the organism involved.

Skinner's thesis is that external factors consisting of present stimulation and the history of reinforcement (in particular the frequency, arrangement, and withholding of reinforcing stimuli) are of overwhelming importance, and that the general principles revealed in laboratory studies of these phenomena provide the basis for understanding the complexities of verbal behavior. He confidently and

repeatedly voices his claim to have demonstrated that the contribution of the speaker is quite trivial and elementary, and that precise prediction of verbal behavior involves only specification of the few external factors that he has isolated experimentally with lower organisms.

Careful study of this book (and of the research on which it draws) reveals, however, that these astonishing claims are far from justified. It indicates, furthermore, that the insights that have been achieved in the laboratories of the reinforcement theorist, though quite genuine, can be applied to complex human behavior only in the most gross and superficial way, and that speculative attempts to discuss linguistic behavior in these terms alone omit from consideration factors of fundamental importance that are, no doubt, amenable to scientific study, although their specific character cannot at present be precisely formulated. Since Skinner's work is the most extensive attempt to accommodate human behavior involving higher mental faculties within a strict behaviorist schema of the type that has attracted many linguists and philosophers, as well as psychologists, a detailed documentation is of independent interest. The magnitude of the failure of this attempt to account for verbal behavior serves as a kind of measure of the importance of the factors omitted from consideration, and an indication of how little is really known about this remarkably complex phenomenon.

The force of Skinner's argument lies in the enormous wealth and range of examples for which he proposes a functional analysis. The only way to evaluate the success of his program and the correctness of his basic assumptions about verbal behavior is to review these examples in detail and to determine the precise character of the concepts in terms of which the functional analysis is presented. §2 of this review describes the experimental context with respect to which these concepts are originally defined, §§3–4 deal with the basic concepts "stimulus," "response," and

"reinforcement," §§6–10 with the new descriptive machinery developed specifically for the description of verbal behavior. In §5 we consider the status of the fundamental claim, drawn from the laboratory, which serves as the basis for the analogic guesses about human behavior that have been proposed by many psychologists. The final section (§11) will consider some ways in which further linguistic work may play a part in clarifying some of these problems.

2. Although this book makes no direct reference to experimental work, it can be understood only in terms of the general framework that Skinner has developed for the description of behavior. Skinner divides the responses of the animal into two main categories. *Respondents* are purely reflex responses elicited by particular stimuli. *Operants* are emitted responses, for which no obvious stimulus can be discovered. Skinner has been concerned primarily with operant behavior. The experimental arrangement that he introduced consists basically of a box with a bar attached to one wall in such a way that when the bar is pressed, a food pellet is dropped into a tray (and the bar press is recorded). A rat placed in the box will soon press the bar, releasing a pellet into the tray. This state of affairs, resulting from the bar press, increases the *strength* of the bar pressing operant. The food pellet is called a *reinforcer*; the event, a reinforcing event. The strength of an operant is defined by Skinner in terms of the rate of response during extinction (i.e., after the last reinforcement and before return to the preconditioning rate).

Suppose that release of the pellet is conditional on the flashing of a light. Then the rat will come to press the bar only when the light flashes. This is called *stimulus discrimination*. The response is called a *discriminated operant* and the light is called the *occasion* for its emission; this is to be distinguished from elicitation of a response by

a stimulus in the case of the respondent.[2] Suppose that the apparatus is so arranged that bar-pressing of only a certain character (e.g., duration) will release the pellet. The rat will then come to press the bar in the required way. This process is called *response differentiation*. By successive slight changes in the conditions under which the response will be reinforced it is possible to shape the response of a rat or a pigeon in very surprising ways in a very short time, so that rather complex behavior can be produced by a process of successive approximation.

A stimulus can become reinforcing by repeated association with an already reinforcing stimulus. Such a stimulus is called a *secondary reinforcer*. Like many contemporary behaviorists, Skinner considers money, approval, and the like to be secondary reinforcers which have become reinforcing because of their association with food etc.[3] Secondary reinforces can be *generalized* by associating them with a variety of different primary reinforcers.

Another variable that can affect the rate of the bar-pressing operant is drive, which Skinner defines operationally in terms of hours of deprivation. His major scientific book, *Behavior of organisms*, is a study of the effects of food-deprivation and conditioning on the strength of the bar-pressing response of healthy mature rats. Probably Skinner's most original contribution to animal behavior studies has been his investigation of the effects of intermittent reinforcement, arranged in various different ways, presented in *Behavior of organisms* and extended (with pecking of pigeons as the operant under investigation) in the recent *Schedules of Reinforcement* by Ferster and Skinner (1957). It is apparently these studies that Skinner has in mind when he refers to the recent advances in the study of animal behavior.[4]

The notions "stimulus," "response," "reinforcement" are relatively well defined with respect to the bar-pressing

experiments and others similarly restricted. Before we can extend them to real-life behavior, however, certain difficulties must be faced. We must decide, first of all, whether any physical event to which the organism is capable of reacting is to be called a stimulus on a given occasion, or only one to which the organism in fact reacts; and correspondingly, we must decide whether any part of behavior is to be called a response, or only one connected with stimuli in lawful ways. Questions of this sort pose something of a dilemma for the experimental psychologist. If he accepts the broad definitions, characterising any physical event impinging on the organism as a stimulus and any part of the organism's behavior as a response, he must conclude that behavior has not been demonstrated to be lawful. In the present state of our knowledge, we must attribute an overwhelming influence on actual behavior to ill-defined factors of attention, set, volition, and caprice. If we accept the narrower definitions, then behavior is lawful by definition (if it consists of responses); but this fact is of limited significance, since most of what the animal does will simply not be considered behavior. Hence the psychologist either must admit that behavior is not lawful (or that he cannot at present show that it is—not at all a damaging admission for a developing science), or must restrict his attention to those highly limited areas in which it is lawful (e.g., with adequate controls, bar-pressing in rats; lawfulness of the observed behavior provides, for Skinner, an implicit definition of a good experiment).

Skinner does not consistently adopt either course. He utilizes the experimental results as evidence for the scientific character of his system of behavior, and analogic guesses (formulated in terms of a metaphoric extension of the technical vocabulary of the laboratory) as evidence for its scope. This creates the illusion of a rigorous scientific theory with a very broad scope, although in fact the terms used in the description of real-life and of laboratory

behavior may be mere homonyms, with at most a vague similarity of meaning. To substantiate this evaluation, a critical account of his book must show that with a literal reading (where the terms of the descriptive system have something like the technical meanings given in Skinner's definitions) the book covers almost no aspect of linguistic behavior, and that with a metaphoric reading, it is no more scientific than the traditional approaches to this subject matter, and rarely as clear and careful.[5]

3. Consider first Skinner's use of the notions "stimulus" and "response." In *Behavior of organisms* (9) he commits himself to the narrow definitions for these terms. A part of the environment and a part of behavior are called stimulus (eliciting, discriminated, or reinforcing) and response, respectively, only if they are lawfully related; that is, if the "dynamic laws" relating them show smooth and reproducible curves. Evidently stimuli and responses, so defined, have not been shown to figure very widely in ordinary human behavior.[6] We can, in the face of presently available evidence, continue to maintain the lawfulness of the relation between stimulus and response only by depriving them of their objective character. A typical example of "stimulus control" for Skinner would be the response to a piece of music with the utterance *Mozart* or to a painting with the response *Dutch*. These responses are asserted to be "under the control of extremely subtle properties" of the physical object or event (108). Suppose instead of saying *Dutch* we had said *Clashes with the wallpaper, I thought you liked abstract work, Never saw it before, Tilted, Hanging too low, Beautiful, Hideous, Remember our camping trip last summer?*, or whatever else might come into our minds when looking at a picture (in Skinnerian translation, whatever other responses exist in sufficient strength). Skinner could only say that each of these responses is under the control of some other stimulus property of the physical object. If we look at a red chair and

say *red*, the response is under the control of the stimulus "redness," if we say *chair*, it is under the control of the collection of properties (for Skinner, the object) "chairness" (110), and similarly for any other response. This device is as simple as it is empty. Since properties are free for the asking (we have as many of them as we have nonsynonymous descriptive expressions in our language, whatever this means exactly), we can account for a wide class of responses in terms of Skinnerian functional analysis by identifying the "controlling stimuli." But the word "stimulus" has lost all objectivity in this usage. Stimuli are no longer part of the outside physical world; they are driven back into the organism. We identify the stimulus when we hear the response. It is clear from such examples, which abound, that the talk of "stimulus control" simply disguises a complete retreat to mentalistic psychology. We cannot predict verbal behavior in terms of the stimuli in the speaker's environment, since we do not know what the current stimuli are until he responds. Furthermore, since we cannot control the property of a physical object to which an individual will respond, except in highly artificial cases, Skinner's claim that his system, as opposed to the traditional one, permits the practical control of verbal behavior[7] is quite false.

Other examples of "stimulus control" merely add to the general mystification. Thus a proper noun is held to be a response "under the control of a specific person or thing" (as controlling stimulus, 113). I have often used the words *Eisenhower* and *Moscow*, which I presume are proper nouns if anything is, but have never been "stimulated" by the corresponding objects. How can this fact be made compatible with this definition? Suppose that I use the name of a friend who is not present. Is this an instance of a proper noun under the control of the friend as stimulus? Elsewhere it is asserted that a stimulus controls a response in the sense that presence of the stimulus increases the

probability of the response. But it is obviously untrue that the probability that a speaker will produce a full name is increased when its bearer faces the speaker. Furthermore, how can one's own name be a proper noun in this sense? A multitude of similar questions arise immediately. It appears that the word "control" here is merely a misleading paraphrase for the traditional "denote" or "refer." The assertion (115) that so far as the speaker is concerned, the relation of reference is "simply the probability that the speaker will emit a response of a given form in the presence of a stimulus having specified properties" is surely incorrect if we take the words "presence," "stimulus," and "probability" in their literal sense. That they are not intended to be taken literally is indicated by many examples, as when a response is said to be "controlled" by a situation or state of affairs as "stimulus." Thus, the expression *a needle in a haystack* "may be controlled as a unit by a particular type of situation" (116); the words in a single part of speech, e.g., all adjectives, are under the control of a single set of subtle properties of stimuli (121); "the sentence *The boy runs a store* is under the control of an extremely complex stimulus situation" (335); "*He is not at all well* may function as a standard response under the control of a state of affairs which might also control *He is ailing*" (325); when an envoy observes events in a foreign country and reports upon his return, his report is under "remote stimulus control" (416); the statement *This is war* may be a response to a "confusing international situation" (441); the suffix *-ed* is controlled by that "subtle property of stimuli which we speak of as action-in-the-past" (121) just as the *-s* in *The boy runs* is under the control of such specific features of the situation as its "currency" (332). No characterization of the notion "stimulus control" that is remotely related to the bar-pressing experiment (or that preserves the faintest objectivity) can be made to cover a set of examples like

these, in which, for example, the “controlling stimulus” need not even impinge on the responding organism.

Consider now Skinner’s use of the notion “response.” The problem of identifying units in verbal behavior has of course been a primary concern of linguists, and it seems very likely that experimental psychologists should be able to provide much-needed assistance in clearing up the many remaining difficulties in systematic identification. Skinner recognizes (20) the fundamental character of the problem of identification of a unit of verbal behavior, but is satisfied with an answer so vague and subjective that it does not really contribute to its solution. The unit of verbal behavior —the verbal operant— is defined as a class of responses of identifiable form functionally related to one or more controlling variables. No method is suggested for determining in a particular instance what are the controlling variables, how many such units have occurred, or where their boundaries are in the total response. Nor is any attempt made to specify how much or what kind of similarity in form or “control” is required for two physical events to be considered instances of the same operant. In short, no answers are suggested for the most elementary questions that must be asked of anyone proposing a method for description of behavior. Skinner is content with what he calls an “extrapolation” of the concept of operant developed in the laboratory to the verbal field. In the typical Skinnerian experiment, the problem of identifying the unit of behavior is not too crucial. It is defined, by fiat, as a recorded peck or bar-press, and systematic variations in the rate of this operant and its resistance to extinction are studied as a function of deprivation and scheduling of reinforcement (pellets). The operant is thus defined with respect to a particular experimental procedure. This is perfectly reasonable, and has led to many interesting results. It is, however, completely meaningless to speak of extrapolating this concept of operant to ordinary verbal

behavior. Such “extrapolation” leaves us with no way of justifying one or another decision about the units in the “verbal repertoire.”

Skinner specifies “response strength” as the basic datum, the basic dependent variable in his functional analysis. In the bar-pressing experiment, response strength is defined in terms of rate of emission during extinction. Skinner has argued[8] that this is “the only datum that varies significantly and in the expected direction under conditions which are relevant to the “learning process.” In the book under review, response strength is defined as “probability of emission” (22). This definition provides a comforting impression of objectivity, which, however, is quickly dispelled when we look into the matter more closely. The term “probability” has some rather obscure meaning for Skinner in this book.[9] We are told, on the one hand, that “our evidence for the contribution of each variable [to response strength] is based on observation of frequencies alone” (28). At the same time, it appears that frequency is a very misleading measure of strength, since, for example, the frequency of a response may be “primarily attributable to the frequency of occurrence of controlling variables” (27). It is not clear how the frequency of a response can be attributable to anything BUT the frequency of occurrence of its controlling variables if we accept Skinner’s view that the behavior occurring in a given situation is “fully determined” by the relevant controlling variables (175, 228). Furthermore, although the evidence for the contribution of each variable to response strength is based on observation of frequencies alone, it turns out that “we base the notion of strength upon several kinds of evidence” (22), in particular (22–8): emission of the response (particularly in unusual circumstances), energy level (stress), pitch level, speed and delay of emission, size of letters, etc, in writing, immediate repetition, and—a final factor, relevant but misleading—overall frequency.

Of course, Skinner recognizes that these measures do not co-vary, because (among other reasons) pitch, stress, quantity, and reduplication may have internal linguistic functions.[10] However, he does not hold these conflicts to be very important, since the proposed factors indicative of strength are "fully understood by everyone" in the culture (27). For example, "if we are shown a prized work of art and exclaim *Beautiful!*, the speed and energy of the response will not be lost on the owner." It does not appear totally obvious that in this case the way to impress the owner is to shriek *Beautiful* in a loud, high-pitched voice, repeatedly, and with no delay (high response strength). It may be equally effective to look at the picture silently (long delay), and then to murmur *Beautiful* in a soft, low-pitched voice (by definition, very low response strength).

It is not unfair, I believe, to conclude from Skinner's discussion of response strength, the "basic datum" in functional analysis, that his "extrapolation" of the notion of probability can best be interpreted as, in effect, nothing more than a decision to use the word "probability," with its favorable connotations of objectivity, as a cover term to paraphrase such low-status words as "interest," "intention," "belief," and the like. This interpretation is fully justified by the way in which Skinner uses the terms "probability" and "strength." To cite just one example, Skinner defines the process of confirming an assertion in science as one of "generating additional variables to increase its probability" (425), and more generally, its strength (425–9). If we take this suggestion quite literally, the degree of confirmation of a scientific assertion can be measured as a simple function of the loudness, pitch, and frequency with which it is proclaimed, and a general procedure for increasing its degree of confirmation would be, for instance, to train machine guns on large crowds of people who have been instructed to shout it. A better indication of what Skinner probably has in mind here is

given by his description of how the theory of evolution, as an example, is confirmed. This "single set of verbal responses . . . is made more plausible—is strengthened—by several types of construction based upon verbal responses in geology, paleontology, genetics, and so on" (427). We are no doubt to interpret the terms "strength" and "probability" in this context as paraphrases of more familiar locutions such as "justified belief" or "warranted assertability," or something of the sort. Similar latitude of interpretation is presumably expected when we read that "frequency of effective action accounts in turn for what we may call the listener's 'belief'" (88) or that "our belief in what someone tells us is similarly a function of, or identical with, our tendency to act upon the verbal stimuli which he provides" (160).[11]

I think it is evident, then, that Skinner's use of the terms "stimulus," "control," "response," and "strength," justify the general conclusion stated in the last paragraph of 12 above. The way in which these terms are brought to bear on the actual data indicates that we must interpret them as mere paraphrases for the popular vocabulary commonly used to describe behavior, and as having no particular connection with the homonymous expressions used in the description of laboratory experiments. Naturally, this terminological revision adds no objectivity to the familiar "mentalistic" mode of description.

4. The other fundamental notion borrowed from the description of bar-pressing experiments is "reinforcement." It raises problems which are similar, and even more serious. In *Behavior of organisms*, "the operation of reinforcement is defined as the presentation of a certain kind of stimulus in a temporal relation with either a stimulus or response. A reinforcing stimulus is defined as such by its power to produce the resulting change [in strength]. There is no circularity about this: some stimuli are found to produce the change, others not, and they are

classified as reinforcing and non-reinforcing accordingly" (62). This is a perfectly appropriate definition[12] for the study of schedules of reinforcement. It is perfectly useless, however, in the discussion of real-life behavior, unless we can somehow characterize the stimuli which are reinforcing (and the situations and conditions under which they are reinforcing). Consider first of all the status of the basic principle that Skinner calls the "law of conditioning" (law of effect). It reads: "if the occurrence of an operant is followed by presence of a reinforcing stimulus, the strength is increased" (*Behavior of organisms* 21). As "reinforcement" was defined, this law becomes a tautology.[13] For Skinner, learning is just change in response strength.[14] Although the statement that presence of reinforcement is a sufficient condition for learning and maintenance of behavior is vacuous, the claim that it is a necessary condition may have some content, depending on how the class of reinforcers (and appropriate situations) is characterized. Skinner does make it very clear that in his view reinforcement is a necessary condition for language learning and for the continued availability of linguistic responses in the adult.[15] However, the looseness of the term "reinforcement" as Skinner uses it in the book under review makes it entirely pointless to inquire into the truth or falsity of this claim. Examining the instances of what Skinner calls "reinforcement," we find that not even the requirement that a reinforcer be an identifiable stimulus is taken seriously. In fact, the term is used in such a way that the assertion that reinforcement is necessary for learning and continued availability of behavior is likewise empty.

To show this, we consider some examples of "reinforcement." First of all, we find a heavy appeal to automatic self-reinforcement. Thus, "a man talks to himself . . . because of the reinforcement he receives" (163); "the child is reinforced automatically when he duplicates the sounds of airplanes, streetcars . . ." (164); "the young child

alone in the nursery may automatically reinforce his own exploratory verbal behavior when he produces sounds which he has heard "in the speech of others" (58); "the speaker who is also an accomplished listener 'knows when he has correctly echoed a response' and is reinforced thereby" (68); thinking is "behaving which automatically affects the behaver and is reinforcing because it does so" (438; cutting one's finger should thus be reinforcing, and an example of thinking); "the verbal fantasy whether overt or covert, is automatically reinforcing to the speaker as listener. Just as the musician plays or composes what he is reinforced by hearing, or as the artist paints what reinforces him visually, so the speaker engaged in verbal fantasy says what he is reinforced by hearing or writes what he is reinforced by reading" (439); similarly, care in problem solving, and rationalization, are automatically self-reinforcing (442–3). We can also reinforce someone by emitting verbal behavior as such (since this rules out a class of aversive stimulations, 167), by not emitting verbal behavior (keeping silent and paying attention, 199), or by acting appropriately on some future occasion (152: "the strength of [the speaker's] behavior is determined mainly by the behavior which the listener will exhibit with respect to a given state of affairs"; this Skinner considers the general case of "communication" or "letting the listener know"). In most such cases, of course, the speaker is not present at the time when the reinforcement takes place, as when "the artist . . . is reinforced by the effects his works have upon . . . others" (224), or when the writer is reinforced by the fact that his "verbal behavior may reach over centuries or to thousands of listeners or readers at the same time. The writer may not be reinforced often or immediately, but his net reinforcement may be great" (206; this accounts for the great "strength" of his behavior). An individual may also find it reinforcing to injure someone by criticism or by bringing bad news, or to publish an

experimental result which upsets the theory of a rival (154), to describe circumstances which would be reinforcing if they were to occur (165), to avoid repetition (222), to “hear” his own name though in fact it was not mentioned or to hear nonexistent words in his child’s babbling (259), to clarify or otherwise intensify the effect of a stimulus which serves an important discriminative function (416), etc.

From this sample, it can be seen that the notion of reinforcement has totally lost whatever objective meaning it may ever have had. Running through these examples, we see that a person can be reinforced though he emits no response at all, and that the reinforcing “stimulus” need not impinge on the “reinforced person” or need not even exist (it is sufficient that it be imagined or hoped for). When we read that a person plays what music he likes (165), says what he likes (165), thinks what he likes (438–9), reads what books he likes (163), etc., BECAUSE he finds it reinforcing to do so, or that we write books or inform others of facts BECAUSE we are reinforced by what we hope will be the ultimate behavior of reader or listener, we can only conclude that the term “reinforcement” has a purely ritual function. The phrase “X is reinforced by Y (stimulus, state of affairs, event, etc.)” is being used as a cover term for “X wants Y,” “X likes Y,” “X wishes that Y were the case,” etc. Invoking the term “reinforcement” has no explanatory force, and any idea that this paraphrase introduces any new clarity or objectivity into the description of wishing, liking, etc., is a serious delusion. The only effect is to obscure the important differences among the notions being paraphrased. Once we recognize the latitude with which the term “reinforcement” is being used, many rather startling comments lose their initial effect—for instance, that the behavior of the creative artist is “controlled entirely by the contingencies of reinforcement” (150). What has been hoped for from the

psychologist is some indication how the casual and informal description of everyday behavior in the popular vocabulary can be explained or clarified in terms of the notions developed in careful experiment and observation, or perhaps replaced in terms of a better scheme. A mere terminological revision, in which a term borrowed from the laboratory is used with the full vagueness of the ordinary vocabulary, is of no conceivable interest.

It seems that Skinner's claim that all verbal behavior is acquired and maintained in "strength" through reinforcement is quite empty, because his notion of reinforcement has no clear content, functioning only as a cover term for any factor, detectable or not, related to acquisition or maintenance of verbal behavior.[16] Skinner's use of the term "conditioning" suffers from a similar difficulty. Pavlovian and operant conditioning are processes about which psychologists have developed real understanding. Instruction of human beings is not. The claim that instruction and imparting of information are simply matters of conditioning (357–66) is pointless. The claim is true, if we extend the term "conditioning" to cover these processes, but we know no more about them after having revised this term in such a way as to deprive it of its relatively clear and objective character. It is, as far as we know, quite false, if we use "conditioning" in its literal sense. Similarly, when we say that "it is the function of predication to facilitate the transfer of response from one term to another or from one object to another" (361), we have said nothing of any significance. In what sense is this true of the predication *Whales are mammals?* Or, to take Skinner's example, what point is there in saying that the effect of *The telephone is out of order* on the listener is to bring behavior formerly controlled by the stimulus *out of order* under control of the stimulus *telephone* (or the telephone itself) by a process of simple conditioning (362)? What laws of conditioning hold in this case? Furthermore,

what behavior is “controlled” by the stimulus *out of order*, in the abstract? Depending on the object of which this is predicated, the present state of motivation of the listener, etc., the behavior may vary from rage to pleasure, from fixing the object to throwing it out, from simply not using it to trying to use it in the normal way (e.g., to see if it is really out of order), and so on. To speak of “conditioning” or “bringing previously available behavior under control of a new stimulus” in such a case is just a kind of play-acting at science. Cf. also note 43.

5. The claim that careful arrangement of contingencies of reinforcement by the verbal community is a necessary condition for language learning has appeared, in one form or another, in many places.[17] Since it is based not on actual observation, but on analogies to laboratory study of lower organisms, it is important to determine the status of the underlying assertion within experimental psychology proper. The most common characterization of reinforcement (one which Skinner explicitly rejects, incidentally) is in terms of drive reduction. This characterization can be given substance by defining drives in some way independently of what in fact is learned. If a drive is postulated on the basis of the fact that learning takes place, the claim that reinforcement is necessary for learning will again become as empty as it is in the Skinnerian framework. There is an extensive literature on the question of whether there can be learning without drive-reduction (latent learning). The “classical” experiment of Blodgett indicated that rats who had explored a maze without reward showed a marked drop in number of errors (as compared to a control group which had not explored the maze) upon introduction of a food reward, indicating that the rat had learned the structure of the maze without reduction of the hunger drive. Drive-reduction theorists’ countered with an exploratory drive which was reduced during the prereward learning, and