

UTILIZATION OF PSYCHOLOGICAL KNOWLEDGE  
IN SOCIOLOGICAL ANALYSIS AND THE PROBLEM  
OF UNDERDEVELOPMENT\*

PSİKOLOJİK BİLGİNİN SOSYOLOJİK ANALİZDE KULLANILMASI  
PSİKOLOJİK BİLGİNİN SOSYOLOJİK ANALİZDE  
KULLANILMASI VE AZ GELİŞMİŞLİK PROBLEMİ

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*Psikolojik arařtırmalardan elde edilen bilgiler sosyal problemlerin analizinde gittikçe artan bir hızla kullanılmaktadır. Psikoloji, davranışın beyin mekanizmalarıyla izahı gayesini güder. Beyin mekanizmaları farklı sosyal realiteler yaratma imkânlarını taşımakla beraber, sosyal realiteler beyin mekanizmalarına dair hipotezden dedüksiyonla çıkarılamaz. Bu sebepten, mücerret davranış prensiplerinin pratik sosyal kontrolda kullanılması, davranışın lâboratuvardaki kontrolünde sağlanan başarıya ulaşamaz. Bu yazıda, insan davranışının sosyal sítuasyonlarda takviye kontenjanı prensibi ile kontrolü spesifik bir sosyal-ekonomik probleme tatbiki ele alınarak kritik olarak tetkik edilmektedir.*

*In recent years psychological knowledge has been increasingly used in the analysis of social problems. Psychology aims at the explanation of be-*

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*haviour in terms of brain mechanisms. Although brain mechanisms contain the possibilities of different social realities, social realities themselves cannot be deduced from the hypothesis about brain mechanisms. For this reason, the utilization of abstract principles of behaviour in practical social control cannot parallel the success of the laboratory control of behaviour. In this paper, the control of human behaviour in social situations, by the principle of contingency of reinforcement, has been critically examined with special reference to a specific social-economical problem-economical growth of underdeveloped countries. Furthermore, the nature of economical underdevelopment has been briefly discussed in order to emphasize the insufficiency of direct application of psychological principles of individual behaviour to*

## I

Experimental psychology studies the behaviour of the individual man (and animal) considered as a biological organism and tries to discover the causal mechanism responsible for it. I have used the expression «the individual man as a biological organism» deliberately. Indeed, the behaviour of an individual is influenced by his relationships with other individuals and by social institutions. Nevertheless, a distinction should be made between cause and influence. Social influences can only become effective through perceptions occurring in the brain. Therefore, the explanation of human behaviour is to be sought not directly in social influences or other environmental factors but in the behaviour mechanism of the brain which determines the conditions under which the external agencies can be effective in one way or another. This causal mechanism belongs to the single individual, and the discovery of its ways of functioning is primarily a biological problem. The fact that man enters into quite complicated social relationships and that he creates culture and social institutions should not mislead us into thinking that the problem of psychology is other than biological. This fact only shows that the human brain has a structure which makes it possible for man to create culture, to assimilate it, and to manifest in his behaviour its influences as filtered through his perceptual mechanism. Such a view, of course, does not detract from the social character of human activities. It only limits the domain of psychology and gives to psychological methodology a distinctive orientation. Such a formulation makes the task of sociology clearer.

Indeed, the brain mechanism contains the possibilities of social reality, but the social realities cannot be deduced from the hypothesis about the brain mechanisms. However, social realities are not collections of randomly occurring behavioural events. They require special techniques of study, and their structure can only be grasped by different types of theories than those which are purely psychological. There is no doubt, however, that when psychology discovers the laws of human behaviour in the sense emphasized above, it will be possible for sociology to study social processes with more insight and precision.

At this point, it should be made clear that it is not a sound procedure to make use of certain attractive concepts in the analysis of social processes without taking an interest in causal mechanisms of behaviour. We have at present no generally valid laws of human behaviour which can without any hesitation be accepted as the basis of explanations in sociology. Therefore, the empirical data and the theoretical concepts of psychology cannot be injected into sociology without giving due regard to the experimental and theoretical contexts which give rise to them. It cannot be argued that psychology at its present state provides as sure a basis for sociology as physics does for chemistry, chemistry for physiology, and even physiology for psychology. Put simply, psychology lacks unification. By this I do not imply that there must never be theoretical disputes. What I mean is that it is not uncommon for us to be confronted with ten different theories regarding a problem, without having the least idea of what may constitute a critical experimental situation to tell us which ones are wrong. The nature of the field of psychological inquiry, or our ways of thinking about it, often cannot limit the number of possible explanations, and our experiments cannot make us select one or two of them by eliminating the others. In view of this, scientific caution should forbid us from adopting one theoretical position on the ground of its appearing reasonable and thereby making it an unquestioned tool in the analysis of social processes. Instead, a continuous critical evaluation of research areas in psychology and the determination of the significance of the main findings for sociological explanations seem to be necessary.

## II

In the last fifty years, experimental psychology has made considerable progress in elucidating behaviour mechanisms. Yet, we have no general

theories unifying the experimental knowledge about various aspects of behaviour and no behavioural laws of such a level of abstraction as to permit our knowledge to be freed from the specific situations in which it was obtained. Therefore, in order to be a good applied psychologist one still ought to be a good experimental-theoretical psychologist. When the field of application involves problems of social behaviour, it is proper to be extremely cautious in utilizing psychological knowledge. Social interaction situations have aspects which override the conditions of individual behaviour studied in the laboratory. It is of course not suggested that these aspects imply new factors, in the sense that the laws of individual behaviour can be reversed or obliterated in their effects. It is only suggested that predictions of actual behaviour in social situations are extremely difficult to make on the basis of the knowledge about the responses of the individual under laboratory conditions. That is no deprecatory comment on the value of the experimental knowledge obtained in laboratory. Indeed, I think it is nonsense to complain that laboratory conditions are artificial and dissimilar to real life. Experimental-theoretical psychologist is interested in the properties of brain function. For him artificiality of laboratory conditions means better control over the results of experiments. We do not have two brains, one for artificial and one for real life conditions. So the experimental-theoretical knowledge obtained in the laboratory is necessarily relevant to real life situations. But from this knowledge a direct application to real life-social situations does not automatically follow. Social factors are in effect analogous to the complicating factors in medicine. Complicating factors do not change the biological laws, but may well falsify the prognosis of the doctor. The main point of difficulty lies in the great number of possible combinations of the factors present in social situations. That is why, in spite of our scientific faith in the causal determination of behaviour, in practice we cannot help regarding human behaviour as the acts of free agents.

Skinner among other psychologists, however, and also some Skinnerian sociologists, believe that human behaviour can be controlled and manipulated by the principle of contingency of reinforcement. They argue that social structure of societies can be altered by the application of the same principle. If the consequences contingent to behaviour are kept under control, it is possible to shape behaviour at will. From this simple principle to the bizarre visions of future society is only a step, and Skinner takes it. Since behaviour can be manipulated by its consequences, one can make people behave ac-

ording to a design. The idea of «Design of a culture,» which to most people appears as pure utopia, is for Skinner a scientific program of action<sup>1</sup>.

Not all approaches to social problems by psychological means are so utopic. But applications of psychology to social problems is not easy, and always full of pitfalls. One should be wary of the uncertainties and limitations of psychological knowledge and also keep in mind that some aspects of the social problems may not be psychological at all.

In the following section I shall study an application of a psychological principle (contingency of reinforcement) to a social-economic problem (economic growth of underdeveloped countries) and emphasize two points: 1. Psychological knowledge must be evaluated in its technical meaning; common sense interpretations lead to confusion and defy the alleged use of the psychological knowledge. 2. Taken in its technical sense, one particular piece of psychological knowledge may turn out to be unrelated to the problem at hand.

### III

In his book *Society and Economic Growth* (1970), J.H. Kunkel wants «to integrate man and his behaviour into the analysis of economic growth». According to him, the analysis cannot be successful if it is limited to purely economic characteristics because in the end it is the behaviour of the people which induces economic growth. Kunkel wants to use the knowledge obtained from psychological investigations in order to change the behaviour of the people in underdeveloped countries so as to facilitate and speed up economic growth. He searches for «a model of man» to guide the programs of behaviour modification. He regards the differences among various behavioural theories as unimportant, and asserts that out of behavioural investigations certain firm principles have arisen which enable the sociologist interested in economic growth of underdeveloped countries to prepare programs to modify the behaviour of the individuals of those countries. Kunkel calls these principles simply «learning principles». Further on we come to understand that these learning principles are in fact not universally accepted principles, as the generality of the term implies, but are instead the operant conditioning principles of Skinner: «Behaviour (R) is established and maintained or weakened by its consequences, usually called *contingent*

*stimuli*, which may be either *reinforcing* ( $S^r$ ) or *aversive* ( $S^a$ ). More accurately, the presentation of reinforcing stimuli (loosely speaking, rewards) or the removal of aversive stimuli increases the probability that the behaviour pattern will be repeated, whereas the presentation of an aversive stimulus (loosely speaking, punishment) or the removal of an  $S^r$  decreases the probability that the activity will be repeated in the future. The absence of contingencies ( $S^o$ ) also decreases the probability that the activity will be repeated, and the extinction of behaviour is the usual result.»<sup>2</sup>

According to Kunkel, the contingent stimuli in the social context should be so altered that by means of differential reinforcement it becomes possible to maintain the behaviour which facilitates economic growth and to extinguish the behaviour which prevents it. Furthermore, using the same differential reinforcement technique, new forms of behaviour can be shaped in a procedure called successive approximations. «*Behaviour can be changed at any time*. By judiciously altering those aspects of the social environment which constitute rewarding or punishing consequences for specific activities, it is possible to alter these behaviour patterns and to initiate and accelerate social change.»<sup>3</sup> Behaviour can be directly changed in the desired direction by means of differential reinforcement: «... activities will be modified if social structure is altered so as to provide a higher rate and probability of reinforcement.»<sup>4</sup> However, Kunkel does not say anything about how social structure is to be altered. But if we stick to his definitions, the problem (modifying the behaviour of men) and the means of solution (altering social structure) appear to be one and the same thing: He says at one place that «both terms (social structure and social context) in short are methodological conveniences, no existence apart from men's actions, no dimension or other characteristic, can be ascribed to them.»<sup>5</sup>

So the whole attempt to facilitate economic development by suitably modifying the behaviour of men through differential reinforcement is based on circular reasoning. But let us take no notice of this in order to proceed with examining the procedure of behaviour modification by manipulating contingencies of reinforcement. When a technical term like contingency of reinforcement is used, one understands the following: if in a stimulus situation a response is followed by reinforcement the probability of the same response in the same stimulus situation increases. Reinforcement is contingent to response. In other words, from the very beginning, a response comes first, and then reinforcement, as is the case with the rat pressing a lever and

obtaining a pellet of food in the Skinner box. Since, upon pressing the lever, it obtains a pellet of food (technically speaking, reinforcement for the lever pressing response), the rat presses the lever with increasing frequency. It must not be forgotten that for the response to be reinforced it must first occur for some reason which has nothing to do with reinforcement. In this technical sense, reinforcement does not induce a response in the first instance, it only increases the probability of its occurring in the same situation once the response has been made and reinforced.

Kunkel uses a model of man, based on the reinforcement principle, to modify and shape the behaviour of men in underdeveloped countries towards furthering economic growth in those countries. But how is this to be done? The behaviour patterns facilitatory to economic development do not occur by themselves. Individuals in underdeveloped countries do not act so as to further economic growth and it is highly improbable for them to hit upon those acts purely by chance, unlike the rat who, in a strictly limited physical environment of the Skinner box, eventually presses the lever. Rewards may be quite effective in maintaining various types of behaviour. But in our case the problem is to find a way to make those behaviour patterns which are thought to be facilitatory to economic development appear in the first instance<sup>6</sup>. And here it is proper to add that some behaviour patterns are extremely complicated skills.

Let us assume for a moment that those behaviour patterns which are facilitatory to economic development are simple acts, but do not appear because of other stronger habits, or because of their low probability due to the existence of too many alternatives in the situation. As long as those to-be-reinforced behaviour patterns do not occur, the arranged reinforcement has to wait without any use. What ought to be done? Perhaps we might tell the individual that if he acts in the said manner he will be rewarded. But the action cannot be expected to come automatically. There are at least two prerequisites for it. Firstly, the reward must be valuable *for the individual*. Secondly, the individual must believe that if he acts in the said manner he will *really* be rewarded. If so, then the action, if it ever comes, may be regarded as initiated by purpose and conviction because here, contrary to the Skinner box situation, a response *is not reinforced after it is performed* but an individual *acts to obtain a reward*. In operant conditioning, the reward is given contingent on the response, whereas here the response is performed contingent on the reward.

One must either give up the claim that behaviour in general is shaped by its consequences, or one must admit that, technically speaking, this claim goes too far from the experimental knowledge gained in psychological laboratory.

In his abstract formulation of principles proposed to guide behaviour modification programs, Kunkel is a strict Skinnerian, but in his discussions of concrete cases in a social context he inadvertently puts forward ideas which are contrary to his formal «learning principles». Kunkel makes no distinction between experiencing the actual reinforcement after a response is made and the knowledge about reinforcement contingencies which is formed in the mind before any relevant response is made. For this reason, he is not aware that in actual fact he describes a process of behaviour alteration which contradicts his behavioural model of man. It must be admitted that there is not enough evidence to support the assertion that contingency of reinforcement -in its technical sense- plays any significant role in controlling the kinds of behaviour discussed by Kunkel. But his faith in the ultimate truth of the behavioural model leads Kunkel to apply it uncritically to every social situation.

When he considers the behaviour patterns necessary for economic development, Kunkel says: «The long-range point of view, which is implicit in all of these actions, depends on the conception of a systematic universe... men must *learn* to live with long latency periods, that men do not naturally or automatically operate in terms of long-term contingencies.»<sup>7</sup> If we have no other means than reinforcement to produce learning, shall we have to apply immediate, i.e., short-term, reinforcement to make one learn long-term contingencies? That is an effective procedure when the response is repetitive. At the beginning, immediate reinforcement is given after each response; later increasingly lower ratios of reinforcement are applied. In this way it becomes possible, for example, to maintain the lever-pressing response of a rat in a Skinner box with reinforcement only after every hundredth or two hundredth response. But when we speak of the long-term character of the reinforcements in the context of economic growth of underdeveloped countries, it is a completely different matter. The behaviour which is to facilitate economic growth is not a simple repetitive response, it is rather a pattern of behaviour consisting of various responses related to one another in a complex way in time and space. The whole pattern of behaviour is a necessary unit for reinforcement to be received. Even if it is assumed that



this behaviour pattern can be performed by the individuals in under-developed countries without any specific education and experience, a habit of living with long-term reinforcement contingencies cannot be produced by the procedure applied to the rat in Skinner box. Before the first reinforcement, a relatively long time is required during which many many meaningfully related responses have to be made. There are logical and practical impossibilities for the reinforcement principle to be applicable in the modification of behaviour in order to facilitate economic development.

For the generation of new patterns of behaviour Kunkel proposes the following method: «In order to shape behaviour most efficiently, a logical system of successive approximation should be employed. That is, the behaviour pattern which is to be established must be shaped by means of a series of *related steps*, each step consisting of activities which are either part of the final pattern or lead up to it.»<sup>8</sup> The shaping of behaviour by this method may be logical, in fact it seems a bit too logical, but it is certainly not efficient.

I cannot do better than quoting Bandura to show the irrelevance of the successive approximation method in shaping behaviour of any complexity met in real life situations: «Fortunately, for reasons of survival and efficiency, most social learning does not proceed in the manner described above. In laboratory investigations of learning processes experimenters usually arrange comparatively benign environments in which errors will not produce fatal consequences for the organism. In contrast, natural settings are loaded with potentially lethal consequences that unmercifully befall anyone who makes hazardous errors. For this reason, it would be exceedingly injudicious to rely primarily upon trial-and-error and successive approximation methods in teaching children to swim, adolescents to drive automobiles, or adults to master complex occupational and social tasks.»<sup>9</sup>

#### IV

Economic growth in underdeveloped countries cannot occur without cultural changes involving the whole fabric of society. The attempt to reduce the behavioural mechanism of this cultural change to the contingencies of reinforcement principle is a gross simplification and, of course, a falsification of a complex process which is extremely difficult to influence pre-

dictably. A new factor introduced to the social-economical system always has effects which stem from the many-sidedness of social relationships, and are unpredictable from the calculations based upon the individual reward or punishment value of it.

I agree with Röpke when he says in essence that the problem of development of backward societies is one of innovation or diffusion of innovation<sup>10</sup>. But I would emphasize that the necessary innovation in this case differs substantially in character from the innovations occurring in developed countries. In underdeveloped countries the innovation necessary for a genuine and continuous development amounts to no less than a change of civilization. In his *History of Western Philosophy* Bertrand Russell wrote: «Almost everything that distinguishes the modern world from earlier centuries is attributable to science.»<sup>11</sup> And very recently the former secretary of the Medical Research Council of Great Britain, Herold Himsworth, wrote: «During the last quarter of a century the position of science in public estimation has changed significantly. From its status in general regard as a branch of learning that could also yield results of practical importance, it has received general recognition as an essential and utilizable means for the purposive development of our civilization. It has thereby become a major concern of social policy and questions relating to its future development have become matters not only of academic but also of public interest.»<sup>12</sup> If science is so important for developed countries, one would think that it must be also important for «the purposive development» of backward societies.

Underdeveloped countries are not only economically underdeveloped; they are underdeveloped in every area in which Western civilization has been transformed through the influence of science. Today all the societies outside the scientifically oriented Western civilization have the same colossal task before them: How to make the necessary changes in order to assimilate science and to prevent total cultural dissolution? Development aid, in the form of lending capital plus experts for circumscribed projects, does not transform underdeveloped societies. It creates islands of separate industries or insulated areas of relative betterment, but the basic nature of the society remains the same.

So the task of underdeveloped countries cannot in any meaningful way be reduced to the transfer of advanced technologies, considered as a process dissociated from the transformation of the whole culture, that is, the transformation of a nonscientific culture into a scientific culture. What is needed

in the long run is not a ready-made technology, because technology evolves in a social and physical environment with definite problems. To quote R. Solo, «it is the problem solving, information-producing apparatus that must be mastered, adapted and applied. To adapt and focus the analytic concepts of science and its research method on those problems which arise at the nexus of need and circumstances in a developing society means to exploit the most dynamic component of advanced technology. It is to adapt advanced technology's very mechanism for adaptation and further advance.»<sup>18</sup> By and large, the development would be the result of a process of education which should reach to the forefront of knowledge. Psychology, of course, can play its modest, though important, role in the process.

## NOTES AND REFERENCES

- 1 B.F. Skinner. *Beyond Freedom and Dignity*. Knopf, 1971. A previous book of Skinner, *Science and Human Behaviour*. (1953) includes a chapter entitled «Designing a culture».
- 2 J.H. Kunkel. *Society and Economic Growth*. New York : Oxford, 1970, p. 28.
- 3 J.H. Kunkel. op. cit., p. 24.
- 4 J.H. Kunkel. op cit., p. 229.
- 5 J.H. Kunkel. op cit., p. 45.
- 6 Alteration of behaviour involves psychological processes which the concept of reinforcement cannot handle. Even if we leave the technical meaning of reinforcement aside, and think of it as the desire to obtain a reward, the occurrence of actual learning is not an automatic result of it. Indeed, learning is not purely a matter of motivation. A motivated individual readily enters into the learning situation. But for the actual learning process to occur, after he enters the learning situation, motivation is not enough. I can obtain the reward if I can learn, but I cannot be able to learn just because I wish to obtain the reward.
- 7 J.H. Kunkel. op. cit., pp. 238-239.
8. J.H. Kunkel. op. cit., p. 57
- 9 A. Bandura. *Principles of Behaviour Modification*. New York : Holt, 1969, p. 143.
- 10 J. Röpke. *Primitive Wirtschaft Kulturwandel und die Diffusion von Neuerungen*. Tübingen : J.C.B. Mohr (Paul Siebeck), 1970.
- 11 B. Russell. *History of Western Philosophy*. London :
- 12 H. Himsforth. *The Development and Organization of Scientific Knowledge*. London : Heinemann, 1970, p. 1.
- 13 R. Solo. The Capacity to Assimilate an Advanced Technology. In N. Rosenberg (ed.). *The Economics of Technological Change*. Harmondsworth : Penguin, 1971, p. 482.