

# Self-Control in a Sociological Perspective

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## INTRODUCTION

Each of the three social scientists, whose chapters follow, has examined the general problem of “Self-control under Stressful Conditions” from a particular social or cultural perspective. Instead of attempting to list the various social and cultural perspectives from which this problem may be investigated, this introduction considers a prior step, *i.e.*, the formulation of the problem to be investigated.

The focal problem of this Symposium lies within the intersection of two domains of inquiry. One has been referred to by the terms “stress” or “stressful conditions,” the other characterized by the terms “control” or, more generally, “regulation.” To formulate the problem would require the definitions of the two domains and of their intersection, first in general terms and then in social and cultural terms. Limitations of space, however, will allow only an outline of one method of formulating the “stress” domain. The main intent is to explore the feasibility, the advantages, and the difficulties of such a formulation.

A domain of scientific inquiry is objectively defined by a fundamental substantive problem, and by the methodological and theoretical problems related to it. These paramount problems are appropriately stated in the most abstract and general basic terms available. Terms (concepts) that are peculiar to the domain of inquiry are defined subsequently, in an attempt to solve the domain-defining problems.

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## THE "STRESS" DOMAIN OF SCIENTIFIC INQUIRY

The "stress" domain of scientific inquiry is defined by the  122 same fundamental substantive, methodological, and theoretical problems, whether the systems studied are solids, organisms, or collectivities.

The two related *substantive* problems are:

- (1) Knowing the deformation of the surface (shape) of an object, what is the distribution of forces within it?
- (2) Knowing the distribution of forces acting on the surface of an object "loads," *i.e.* what is
  - a. the resultant deformation of its surface, or
  - b. the distribution of forces within it?

The three basic *methodological* problems are:

- (3) How to observe the actual forces within an intact object without interfering?
- (4) How to describe adequately the characteristics of the object that are relevant to, but independent of, its actual deformation or subjection to a load?
- (5) How to measure, independently of each other, the loads and the deformation of surface?

The basic *theoretical* problem arises because a deterministic explanation or prediction of the behavior of objects under load is often impossible. (It would require knowledge of the initial state of infinitely many variables, and the solution of an infinite set of simultaneous equations.) Instead, deductive inference from data obtained by a case-historical method of analysis becomes necessary. (A mathematical deductive system that is applicable to this problem is the integro-differential calculus.)

The *conceptual* apparatus originally developed by physicists to study the above problems in solids and fluids is also fully relevant to the study of these problems in organisms and collectives. Once their physical meaning and their logical status are fully appreciated, the concepts evoke immediate intuitive meanings and denotative instances from psychology, sociology and economics. This is not only the case for the distinctions between strain and stress, between loads as forces (vectors) and strain and stress as force-fields (tensors), and between elastic, plastic, and rupture types of behavior, but also for many other concepts, such as "softening up," "fatigue," or "work hardening."

The *criteria of classification* of bodies are based on the values of additional variables and relations, which determine or characterize their behavior under various loads. Among the criteria that appear equally suitable for the classification of organisms and collectivities in this context are:

- (1) The characteristic values of their *elastic limits*, *yield points*, and *breaking points*.
- (2) The various *coefficients* expressing their resistance to deformation and their  123 restoring tendencies as functions of type and magnitude of load, the extent of the already realized deformation, and the duration of application of load.
- (3) Description of their *anisotropy*, *i.e.*, distribution of the above characteristics relative to different directions within the body.
- (4) Description of their *heterogeneity*, *i.e.*, distribution of the above characteristics with respect to different locations within the body.

These concepts and principles of classification also seem capable of distinguishing differences between the behavior of solids and organisms under load into those that are only a matter of degree and complexity, and those that appear to be fundamental. Among the differences that seem fundamental and that can be expressed and explained precisely and elegantly within the general formulation, are:

- (1) The apparent HYPERELASTICITY of organisms under certain kinds of loads. Matter in its elastic range is only partly successful in resisting deformation, and, at most, only nearly restores original shape. Organisms, however, often appear to over-restore their form, sometimes even while the load is still being applied. This results in secondary deformations and gives rise to various cycles of successive deformations. Among the many examples that suggest themselves, perhaps the process described by Selye as “diseases of adaptation” is most striking.
- (2) The apparent HYPERPLASTICITY of organisms and collectivities. In the plastic range, matter flows only while a sufficient load is applied, and freezes into a permanent deformation once the load is removed. Organisms and collectivities, however, often continue to flow and deform even after the load has been removed. This general type of behavior receives various interpretations in the behavioral sciences, among which the ideas of internalization and institutionalization of external forces may be mentioned.
- (3) Both types of behavior are explainable by a fundamental DICHOGENEITY, which seems characteristic of organisms and collectivities. Two media with basically different elastic, plastic, and rupture properties are coupled together into one system. The first medium functions as an information-control subsystem, the other as an energy-response-amplification subsystem. The interaction of the two subsystems makes a joint over-compensating response possible. A minimal load is sufficient to deform the information-control subsystem. Its response activates the energy subsystem, which provides the amplification of the total response. In the case [124](#) of hyperplasticity, a plastic deformation of the information-control subsystem governs the hyperplastic flow of the energy-response subsystem.

Problems concerning not only mechanical, but also electrical and chemical forces can be formulated and solved in this framework. Can the same framework be more than a language for a systematic general discussion of the problem and a scheme for collation of essentially qualitative information, when it comes to “psychological” and “ecological” forces? The answer depends on our ability to define the nature of these forces, and then identify individual forces in terms required by the conceptual scheme referred to on the preceding pages. Since the scheme presents a format for the isolation, identification, and specification of forces, it should make the task easier than if it were approached as an unfocused general problem.

One approach to this task, that would appear compatible both with the general framework and with the state of conceptualization in the behavioral sciences, involves the following initial steps:

- (1) The interpretation of the behavior of the organism as a set of transactions (exchanges) with its environment.
- (2) The interpretation of exchanges as forces, whatever the items exchanged, be they objects, energies, information, relations, or anything else.
- (3) The segregation into one general class of all items of transaction that carry a peculiarly ecological, rather than chemical, mechanical, or other significance.

- (4) The allocation of the items in this class into mutually exclusive categories.
- (5) Proceeding subsequently on the hypothesis that the class exhausts the universe of ecological forces, and that each category describes a qualitatively different ecological force (transaction).

These qualitatively different ecological forces or types of transactions become the *principal frame of reference* for any further analysis of the behavior of organisms.

The next conceptual task would be to classify any environment into sectors. A *sector* of an environment is the total concrete environment described and analyzed solely as a device producing and emitting a particular kind of ecological force, or commodity. The process of abstraction is similar to the one used in sociology, when a "situation" is defined as the environment analyzed solely in terms of its relevance to a particular norm (or set of norms) held by an actor. Incidentally, a given sector becomes a "strainful situation" for a given organism if and only if the output of the sector acts as a load on the organism.

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The organism would be likewise described in terms of an ecological surface, with different *transactional planes* perpendicular to the orientation of the different ecological forces. Components of strain and stress could be then identified as forces acting perpendicularly on the different transactional planes of the organism. The components of strain experienced by the organism would be given a positive sign and called transactional surfeits, if an item were added in the transaction; a negative sign and called transactional deficits, if an item were lost in the transaction.

A conceptual scheme developed along these lines would be as suitable for a description of the sectors of environments and the transactional planes of organisms in absolute terms, as for a description of strainful situations, loads, strain, and stress relative to the transactional condition of a given organism.

The purpose of these remarks was to explore, within given limitations of knowledge and space, to what extent the use of the general formulation of a problem, common to several other sciences, could advance the understanding of the same problem in the social sciences, and what minimal requirements would have to be fulfilled by the social sciences before the potentialities of the formulation could be exploited further.

## CONCLUSION

There is neither intent nor occasion here to attempt the conceptualization that seems indicated. Yet it would be desirable to review the current state of conceptualization of the behavior of organisms under ecological loads, as it is reflected in the works of behavioral scientists, philosophers, and artists. There is scattered throughout these works an impressive amount of unevenly developed, often primitive, frequently inconsistent, but occasionally nevertheless strategic and profound meanings, distinctions, and formulations. The over-all impression is that preliminary meanings have already been established for most of the required concepts, and that a sufficient number of qualitatively different ecological forces have already been tentatively identified to provide the foundation for a systematic attempt to conceptualize the domain of behavior of organisms under ecological loads.