

Chapter #4

METHODS IN THE CONSTRUCTION OF SOCIAL PSYCHOLOGY: FROM EXPERIMENTATION TO POSTMODERNISM

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ABSTRACT

From the end of the 19th century until today, social psychology (SP) has been the field of psychology which has successfully conceived the greatest number of methodological innovations. This chapter deals with the construction of social psychology from epistemological and methodological perspectives. Following a recall of some early milestones, the options that were used to establish SP analyses are presented. The first options were aimed at defining two kinds of links between the object of psychology (conduct) and the methods used to study it (experimentation). But shortly after, it became necessary to invent new “ecological” (naturalistic) methods regarding numerous social situations. Some of them were needed to assess personal values, whereas others were designed to understand the forces and dynamics within the fields surrounding the conduct itself. Recently, the paradigm of complexity together with postmodern options led to the adoption of new tools of theorizing, applicable not only to the limited scope of SP but also to the discipline of psychology as a whole.

Keywords: experimental and ecological methods, personal values, dynamic complex systems, postmodernism.

1. INTRODUCTION

This chapter deals with the construction of social psychology (SP) considered in terms of epistemology and method rather than with reference to the nature of its thematic content. This choice, which is uncommon, is justified by a straightforward observation: this sector of psychology is the one which, since the advent of modern psychology (in the late 19th century), has been the crucible of fruitful innovations. The chosen perspective seeks to reconstruct the evolution of social psychology on the basis of the different methods it has used, whether by borrowing them from other areas of psychology or from related disciplines, or, and this is where it becomes more interesting, creating its own methods that it found itself needing to deal with issues that were very specific. Social psychologists have been responsible for two major categories of innovation. Firstly, the *concepts*: these permitted the study of the influences of social components on individual behaviour, which began as a novel line of research. And *secondly*, the *methods*: having to deal with these issues, social psychologists would come to construct quite original methods of evaluation, which, beyond the strict purpose of the measurement itself, would lead them ultimately to consider new forms of modeling and of constructing theories.

After recalling some preliminary landmark works, and presenting the options used to explain the construction of SP, we shall discuss each of the characteristic choices of method that have gone into that construction, marking in particular their distinguishing specificity.

2. OPTIONS, AND PRELIMINARY LANDMARK WORKS

2.1. Time Frame

Essentially, social psychology arose in a period that the History of Science calls the "modern era" (Everdell, 1997; Lattal & Rutherford, 2014), which corresponds to a period of discovery in all fields of scientific activity. Overall, the modern era stretches from the Renaissance to the first half of the 20th century. The subsequent years constitute, in science, postmodernism (Cilliers, 1998). The distinction between these two eras is based, again, in science, on the methods of knowledge construction which, in the 1970s, underwent a partial change. The foundational epistemological options of scientific psychology, such as positivism (Comte), functionalism (Dewey & William James), and constructivism (Piaget), found themselves challenged by post-structuralist conceptions that question the previous ways of thinking by introducing disorder, chaos, and nonlinearity as potential organizing conceptual principles of the world.

2.2. The Field of Social Psychology

There is a consensus that social psychology as a scientific discipline was created in the second half of the 19th century. It takes some of its roots from the work of French sociologists (Tarde, Tocqueville, Comte) focused on objectifying the organization of society and its influence on individuals. But social psychology introduces a new and specific perspective by taking as the unit of study the conducts or behaviours (its link to psychology) that depend on (or are influenced by) social or group characteristics. Allport, in a widely accepted definition, assigns to social psychology the following objectives: "... to understand and explain how the thought, feeling and behavior of individuals are influenced by the actual, imagined or implied presence of other human beings" (Allport, 1954, p.5). Such a characterization endows social psychology with both specificity and a very broad scope.

The specificity, which distinguishes SP's objects of study from those of both sociology and political science, is that it shows how individual behaviours are constructed or modified when they take place in the presence of others or, more generally, in the presence of any social influence. The behaviours involved are many in number and different in nature, but behind this definition there is the suggestion of the existence of forces which are activated by interactions. These forces arise in both directions between the individual concerned and the "social component" (i.e., either another individual or a group, whether this latter is formal or informal, and regardless of whether it is clearly constituted).

2.3. The Adoption of the Experimental Method

Jahoda (2007) points pertinently to the influence of the ideas of the Enlightenment on the construction of social psychology. Even before it exists as a discipline in its own right, philosophers such as Locke, Condillac, Maine de Biran, and, later, Tarde, will explain the construction of knowledge by introspection applied directly to information provided by the sense organs. Tarde takes imitation to be one of the decisive social characteristics for the development of individual behaviours. Epistemologically, the position taken is to consider the data thus acquired as fully valid indicators with which mental inferences can be formed about concepts without any form of control.

To be able to claim the status of a science, social psychology needed an appropriate method to use. It would find this in neighbouring disciplines, and it is the opposite of the methods used by the "social philosophers". While the latter have total confidence in introspection, the new psychological discipline promotes a novel epistemological approach

based on doubt. In the second half of the 19th century, in the natural sciences (as they were called at the time), and especially in physics, the experimental method clearly demonstrates its effectiveness with much supporting evidence. Thanks to this, all the foregoing great "scientific" myths whose scope of application had been unlimited (which only seemed to reinforce their validity), such as phlogiston, spontaneous generation, intentions and purposes borrowed from nature, the life force, and, in psychology, human nature, etc., collapse as "explanatory" concepts. The demonstration of their emptiness effectively marks the entrance of the corresponding disciplines into the modern era.

Experiment translates a postulated view into an action of doubt, part of the notion of hypothesis itself. It involves the creation of conditions to carry out research that are quite clearly specified: a situation reducible to variables that are hypothesized as being in relation with each other (independent and dependent variables), a manipulatable arrangement designed by the experimenter (later called "experimental design"), a well-defined location (laboratory), and a purpose for the actions – lifting the initial doubt thanks to obtaining new and crucial information.

3. THE OPTIONS TAKEN TO RESTORE THE CONSTRUCTION OF SP

Presenting retrospectively the modalities of the development of SP is a less obvious undertaking than it at first might seem. One must be wary of a totally externalized vision that would consist in restoring the development of SP as if it had solely been a temporal continuum dotted with historical landmark works.

3.1. A Construction under Constraints

Any conception that sets out to be exclusively chronological runs the risk of being overly simplistic because it does not take into account the local and momentary conditions that have shaped the evolution of SP. The metaphor of a river that carves its way through limestone terrain, with the turns and curves resulting from the interaction of its own impulse and the peculiarities of its environment (the relief, the nature of the rocks encountered) is suggestive of how this present work intends to conceive the construction of SP. The conceptual itinerary that we now recognize was determined by interactions and the resulting forces in the situations encountered in the social field, and by the conceptual and methodological toolkit that was available to the discipline to address its objects of study. It is not excessive to speak of a construction under constraints, in which the deficiencies faced by the new discipline were turned into a powerful incentive to invent methods to overcome the various obstacles. This is thus the "interior" of SP, whose construction we shall endeavour to explain by valuing the dynamic components, the "evolutions" rather than revolutions (Nickles, 2014), and the forces represented therein.

3.2. Epistemology of SP: Forces in a Specific Complex System?

In this chapter, SP is conceptualized as being a complex system, i.e., according to the perfectly functional definition of von Bertalanffy (1968), as "*a set of elements interacting with each other and with their environment*". Like any system, SP has an identity, a specificity, determined by its object: the evaluation of social impacts on the development of personal or group behaviours. The line of study of how "forces" act in a given defined "field", as suggested by the commonest observations, was opened by Lewin, whose contributions we shall analyse later in this chapter. They quite directly foreshadow the latest conceptualizations in terms of systems and complexity that encompass an epistemological construct that is more general, and therefore more effective. SP constitutes

a comprehensive system with clear, although modifiable boundaries. Its functioning is based on forces and interactions (often nonlinear) which are carriers of dynamisms that cause the entire system to evolve under the influence of its internal characteristics and/or external conditions (Cilliers, 1998).

3.3. Validity and Facets

The notion of a complex system, while conceptually appealing, involves a somewhat delicate consideration: How does one evaluate the functioning of such a system? What indicators shall one use? Faced with this same difficulty of evaluating complexity, physics took the criterion of available energy, and formulated the laws of thermodynamics. Despite some attempts in this direction (Tooby, Cosmides, & Barrett, 2000), psychology does not have such a comprehensive and effective referent.

In the current state, a complex system in the human sciences cannot be characterized in terms of its predictive validity but only in terms of its content validity, by collecting evidence from indices produced by the functioning of the system. One of the most revealing of such indices is the concept of "facet". Introduced in the Radex model of the social psychologist Guttman (1954) precisely to deal with complexity, this concept has, however, been little used for this purpose because of the lack of technical means with which to measure specific effects. Its best-known uses have been those directly related to factor analysis (Cattell, 1966). More recently, the concept of facet has been taken up by contemporary information sciences (Stankov, Boyle, & Cattell, 1995; Spiteri, 1998) to determine classification indices that can be used by software tools.

We attach to the term "facet" the major property of its characterizing semantics which is: "*Any of the definable aspects that make up a subject [...] or an object [...]*".¹ A facet expresses a homogeneous and visible property of a system which, by definition, comprises several of such facets. It goes without saying that the more different facets one has then the better one can determine the potential of the system (in this case, SP). Applied to the construction of SP, the notion of facet has four advantages: (i) it allows one to address complexity (this was its primary purpose); (ii) it does so by illuminating the object being studied under different lights; (iii) it marks some particular given aspect without cutting into the whole; and (iv) it allows dynamics and interactions to be considered together in the analysis, referents that are poorly represented in structural models.

4. EXPLORING CONDUCTS IN NATURAL CONDITIONS

The most visible initial methodological options of SP lie in the choices implemented at the data level.

4.1. The Reference to Field Data

Quickly, however, the inherent limitations of the experimental approach become manifest on several fronts: too many variables, impossibility of making them operational, the existence of rapid fluctuations, importance of evolutionary aspects, ethical principles and deontological rules to follow, etc. Therefore researchers began to leave the laboratory and all of its related conceptions and procedures to instead work directly in the field. They would operate in the natural medium, or, in the words of Brunswik (1954), "*in ecological conditions*" (with the term to be taken in its etymological sense).

¹From the free Merriam-Webster Dictionary.

This option of an open and natural field of research asserted itself early on. It is found in the social distance study by Bogardus (1926), a notion evaluated in an "*in town*" sense. A few years later (Bogardus, 1933), this resulted in the construction of a social distance scale from a selection of statements corresponding to real situations. Then in a famous work, Festinger (1956) studied the psychological mechanisms developed by a small group to explain "*the failure of a prophecy*" (the end of the world). The instrument used had nothing to do with experiment. Instead, it defined a new methodological approach that has been particularly fruitful for social psychology. This process, called "field studies", spread rapidly. It implies the primacy of the object, with scrupulous respect for the way it presents itself in natural conditions. This relationship allows one to conceive of a given study using different methods to examine different aspects of the entity under study. Thus, the study by Cunningham (1989) on the strategies used by pseudo-clients (men and women) to make contact with customers in a bar in the suburbs of Chicago made use of several very different methods to address the same subject.

4.2. Statistical Control of the Situation

Operating in a natural environment means losing the control of the situation, at least at the material level, that the researcher has in the laboratory. Indeed, the laboratory is a privileged place of control, disconnected from the world. No longer used, it is necessary to define other forms of control so as to relate a set of active postulated variables. The effects of independent variables (IVs) are studied at the level of dependent variables (DVs). The effect is not provoked, it is observed and evaluated. Research in the natural environment entrusts statistical methods with the task of ensuring this mission through processes of statistical control (Gschwend, 2004).

This statistical control is performed making use of the techniques of multivariate analysis which "*consists of several methods such as principal component analysis, multiple linear regression, canonical correlation, discriminant analysis, and factor analysis. Use of each of the methods depends on the nature of the data*"² (Josaphat & Ismail, 2012, p.189). A variable is considered materially operative on the basis of a statistical criterion, usually a probability (p) of its occurrence under a null hypothesis, such as $p < 0.05$. The study conducted by Josaphat and Ismail (2012) of the determinants of the attitudes of a group of 118 people towards their own particular job and towards work in general illustrates perfectly this type of methodological approach. A factor analysis allowed the authors to conclude that there was an influence of five factors which corresponded to dimensions of variations in attitudes.

5. MEASUREMENTS OF PERSONAL VALUES

Social psychology will show its colours brilliantly in another field previously regarded with suspicion: the measurement of personal values.

5.1. New Concepts of Measurement

The study of an object that is quite specific to social psychology – attitudes regarding social "objects", such as leadership, authority, racism, forced submission, minority groups, etc., and of the situations or people supposedly representing them – led to the development of a current of research on measurement in psychology and its conception in a completely novel form.

²Underlined by the present chapter's authors.

As recently noted by psychometricians (Furr & Bacharach, 2008; Rust & Golombok, 2009), and for far longer by specialists in the construction of measurement scales in psychology (Guilford, 1954), any approach to measurement must present certain methodological guarantees (validity, reliability, etc.) and make reference to external objective indices (the most often used being completion time, or the number of correct responses) and/or global criteria that will allow a score to be determined.

However, in the measurement of attitudes, the magnitudes concerned are private, internal, and unique to each individual who has been led to express their own opinion. By definition, there is neither an objective index nor an external criterion available. (Indeed, this is stressed in the guidelines to the respondents when passing out questionnaires – that "*there are neither good nor bad responses*".)

There was thus a major challenge faced by researchers in social psychology: it was necessary to justify a stable, valid scale of opinions which varied simultaneously in both nature (diversity of opinion) and intensity.

5.2. New Methods for the Construction of Scales

Since the options selected to construct attitude measurement scales are widely known, they shall only be briefly recalled in this present study.

In chronological order, different solutions were contributed by: Bogardus (1926), using "*social distance*"; Thurstone (1928), applying the psychophysical method of equal intervals; Likert (1932), requiring the subjects to express degrees of agreement or disagreement with "*graduated*" propositions; and Guttman (1941), using the properties of hierarchical structures to situate an individual in a broader context and Osgood, Suci and Tannenbaum (1957) referring to semantics.

These methods are all intended to express the intensity of magnitudes experienced by each respondent with respect to situations of their social life. They are thus subjective values (in the etymological sense of the word: specific to a subject) determined using criteria themselves subjectively evaluated.

5.3. Introspection, Subjectivity, and Objectivity

The "subjective" qualifier that perfectly characterizes these approaches was not used at the time (instead, one spoke less precisely of internal states, personal arrangements, etc.). One probably has to see there the influence of behaviourism, which was triumphing at that time and which attaches a negative connotation to the word "subjective". By directly quantifying the magnitudes belonging to the subjective register, social psychologists managed to open up a major breach in the behaviourist construct. Their studies brought introspection out of the ghetto of non-scientificity in which it had been confined by a current in the discipline that had made its rejection a founding condition of scientific psychology.

Can introspection be a useful source of information in the study of behaviours? Early on, Floy Washburn (1922) defended against Watson the value of introspection on the basis of methodological arguments and the observation that it had been applied successfully in other "*descriptive sciences*". Much later, the cognitivists, in binding introspection to consciousness and language, would become divided in their opinions about the value of this source of information. For instance, Overgaard (2006) defended its usefulness whereas Nisbett and Wilson (1977) rejected it. Jack and Roepstorff (2002), using brain mapping, concluded that introspective data constitute a reliable source of information.

5.4. The Contributions of Personal Values

There is no doubt that the methods dealing with personal opinions and attitudes have paved the way for the subjective, instrumented, and reliable exploration of behaviours that has been extensively used in cognitive psychology from the 1960s onwards. Works on judgement, decision-making, and risk assessment would come to be supported on such concepts as subjective probability and the subjectively expected consequences of the choices of action (Edwards, Miles, & von Winterfeldt, 2007). In addition, dealing with subjective (personal) values leads to consolidating the constructivist component in the study of behaviour in the sense that a normative perspective (prescribing purposes for a behaviour) becomes less interesting than a constructive perspective (inquiring into how behaviour develops).

6. WHEN METHOD IMPOSES ITSELF ON THE OBJECT

A strategy that is the opposite of the previous one is to choose a method with proven value and capable of application to all behaviours studied, regardless of their specificities.

6.1. The Prevalence of the Method over the Object's Properties

Doubtless the outstanding success of the experimental method prompted researchers of the time to prepare its transfer to psychology. Indeed, this is evidenced years later in the "behaviourist manifesto" of Watson (1913) (Lattal & Rutherford, 2014) which contains the following well-known and radical assertion: "*Psychology as the behaviourist views it is a purely objective experimental branch of natural science*" (Watson, 1913, p.158). Method emerges as the criterion for scientificity, and the object studied should be considered, not as it exists in reality, but in such a way as to allow the application of method. The objects studied are simplified, schematized, and reduced to those variables that can be manipulated to satisfy the conditions for the application of the experimental method. The characteristic of the approach to research is that it sets the method as having prevalence over the object which has to be re-elaborated or adapted to the method. Hence, $M > O$.

6.2. The Knowledge Produced

Method (M) as the primary choice always demands operationalization on some concrete content (O). The foundational act of this association occurred very early on – in the work of Triplett (1898), an author now recognized as one of the founders of social psychology. Triplett (1898) notes that behaviours, otherwise identical in all respects, while involving the individual realization of psychomotor actions, are performed more efficiently when they are carried out in groups than when they are done individually. The group context makes it easier for each individual to execute the task (which will come to be called social facilitation). It was around this specific contribution of the group to each of its individual members that the area of psychology legitimately qualified as "social" was to develop. The experimental conception adopted by Triplett was very close to the method of "contrasted groups", the independent variable (IV) being group work, and the dependent variable (DV) the performance achieved. Triplett interpreted the results using the premonitory designation "*dynamogenic factors*", which we shall return to later.

During the 20th century, group influences on individual perceptions and behaviours are beautifully highlighted in experimental social psychology, and have now become an integral part of its "war chest".

The most famous contributions concern:

- social norms (Sherif, 1936). Social norms are constructed as the result of dynamic processes of each individual's seeking to fit in with the group.

- conformity (Asch, 1951). Asch highlights the critical importance of conformism: the values thought to characterize the group strongly condition individual assessments.

- cognitive dissonance (Festinger, 1957). Dissonance occurs when an individual is engaged in conduct that is contrary to their opinions or values. The person concerned will implement cognitive processes of reduction of such dissonance.

- submission to authority (Milgram, 1974). The Milgram experiment showed how willing most people may be to obey someone they recognize as an authority figure, even though the behaviour demanded of them goes completely against their conscience.

7. FIELDS, FORCES, AND DYNAMICS

The next stage is closely linked to the concepts of an author who has left a deep imprint in the construction of SP: Kurt Lewin. Three contemporary contributions (Lewin, 1936, 1938, 1939) came to define a conceptual framework for the study of social influences known as "*dynamic psychology*" and to connect "*the conceptual representation and [the] measurement of psychological strengths*" (Lewin, 1938). That this conception of social psychology has already been presented in the specialist literature (Mikulincer & Shaver, 2014) allows us to address just the extremely original epistemological and methodological aspects contributed by this current.

7.1. Fields, Forces, and Topology

Lewin's fundamental approach seeks to align the conceptualizations of social psychology with those of physics, aided by two notions: that of forces (represented by vectors) and that of field, divisible into subspaces. Lewin introduced a topological perspective (Lewin, 1936) in which the field is not a homogeneous surface. Instead, it is structured according to areas of high or no activity corresponding to positive or negative psychological investments (valences). The field is traversed by forces (Lewin, 1938) that produce dynamic effects which may be negative (e.g., frustration) or positive (attaining a desired goal, resolution of tensions). The forces that manifest themselves in the field are the determinants of different behaviours, as shown by the fact that modifying the data of the field modifies the behaviours and releases energy.

7.2. Methodological Innovations: The Abandonment of Experimental Variables

All the methodological concepts presented above referred to variables either selected on the basis of hypotheses or emerging from statistical processing. Lewin renounces reference to such quantities since they do not leave room for the treatment of many classes of information on behaviour because they had not been initially characterized as variables. Positing a hypothesis is to select certain dimensions while at the same time neglecting others whose possible importance one might be unaware of. To avoid this form of reductionism, Lewin chose a holistic perspective (Lewin, 1936). He rejected any selection of the sources of variation. De facto, he abandoned the notion of variable that had up to then been an absolutely necessary condition for any research process. Moreover, no longer reducing behaviour to a few dimensions, maintaining its global and integrated character, and highlighting the forces and dynamics that animate it became the major operations of its conceptualization and its measurement. "*Theoretical psychology in its present state*

[i.e., 1936] must try to develop a system of concepts which show the characteristics of a Gestalt in which any part depends upon every other parts" (Lewin, 1936, p.viii). In a review of Lewin's conceptions, Rainio (2010) points out that he revolutionized the way of thinking about psychology: "He [Lewin] found that in description of behaviour (and of cognition), the reality needs to be formed and organized in a new way: In psychology, the world needs to be differentiated to such separate states which have meaning³ to the subject, the psychological process being a locomotion in such a space, i.e., transitions from a meaningful state to another meaningful state. According to Lewin, only these states with meanings have relevance⁴ in psychological description" (Rainio, 2010, p.1).

8. COMPLEXITY AND POSTMODERNISM

Lewin's concepts largely prepared the way for the appearance of the next step – that which marked entry into the world of the postmodern "reading grid". The term used to designate this period is in itself characteristic: it in effect suggests that the advanced part of scientific knowledge (modernism) is itself surpassed by other modes of the construction of knowledge (postmodernism).

8.1. Postmodernism

The reference to postmodernity originated in architecture. But it was in philosophy that it became conceptualized (Lyotard, 1984), giving rise to criticism that was equally vehement in its support as in its rejection. Long considered to be avant-garde, postmodern conceptions are relevant in the present context in that they illustrate other modes of apprehending and representing the conceptualization of behaviour that are different from those previously taken to be canonical. Thus, in the postmodern approach there is no representation of the need for an operational method, for economy of explanation (Occam's razor), for setting up hypotheses, for verification procedures, etc., whereas everything referring to "*destabilizing forces*" (Cilliers, 1998) is extensively present. Nonetheless, this expression is not to be understood in the negative sense of destruction but in that of "deconstruction", a term used to characterize this current.

Among the many meanings attached to postmodernism, that which we shall consider will be of an epistemological nature: it reflects the expression of doubt about the ability of science to represent, through a single integrated model, the objects being studied. In its most comprehensively accepted sense, postmodernism considers the object of study (here, social behaviours) not to be bound to a single discipline but to be studied under different aspects by different disciplines. Each of these disciplines characterizes the object in terms of distinct properties and by constructing different representations of the same object. Thus, attitudes can be studied with reference to very different disciplines (sociology, social psychology, history, political science, anthropology) which may shed light on different, but complementary, conceptualizations. Cilliers (1998) called these representations "*local narratives*", they exist in large numbers, highlighting the benefits for the construction of knowledge that are provided by multidisciplinary approaches.

The lack of consensus and the attraction for "deconstructivism", the necessary abandonment of certainty, as is also understood in SP (Haslam & McGarty, 2001), that characterize postmodernism might make one feel somewhat dizzy, but fortunately its initially speculative concepts have spread throughout the "operative" human sciences by fusing themselves with the paradigm of dynamic complex systems. The work of Cilliers

³Underlined in the original.

⁴Underlined in the original.

(1998) is an opposite analysis of the forms of reciprocal support and conjoint functioning of these two notions, in which the author emphasizes their contemporary character.

9. RECENT CONTRIBUTIONS: TOWARDS NEW SOCIAL PSYCHOLOGY RESEARCH STRATEGIES

9.1. Re-Evaluation of the Scientific Status of Behaviours in SP

The adoption of the conception that social behaviours are determined by a common basis formed by the union of a number of properties – holism, and the presence of linear and nonlinear interactions, of forces, of dynamics, of several active variables, of scalability, and of adaptive self-organization – is ultimately nothing but a realistic way of characterizing these behaviours. This standpoint is merely a generalization of the straightforward and concrete observation of the diversity and richness of the human individual's positive or negative social relationships which they establish with a large number of social groups, each of which may have very different objectives.

9.2. Epistemological and Methodological Implications

Therefore it would seem appropriate to consider that, in its very structure, behaviour is a complex system that cannot be reduced to a few independent variables without seriously distorting the object being studied. Recognition of this complexity and its consequent treatment explain the "scientific revolution" – the paradigm shift, as described by Kuhn (1970) – that took place. This new viewpoint led to the exploration of two major promising lines of study – one epistemological, and the other conceptual.

- The epistemological line is to deal with systems comprehensively in natural conditions (the systemic paradigm) rather than with selected variables, isolated and operationalized in artificial conditions (the experimental paradigm) since the latter at best will only give a partial picture of the behaviour. One recalls the succession of "enigmas" that Mayo had to resolve before the discovery of the Hawthorne effect which showed that an enterprise is not a collection of variables, but a complex system that generates interactions producing significant effects. Subsequently, these epistemological options reinforced the importance of field studies which had already been revalued upwards relative to conceptions that were purely theoretical or hypothetical-deductive.

- The conceptual line has seen, since the year 2000, many innovations (Reis & Judd, 2014). The central issue is to verify the descriptive and predictive validity of the concepts that have emerged from the research, and, in this point, it is important to distinguish qualitative from quantitative methods. Among the former, triangulation is "a method of cross-checking data from multiple sources to search for regularities in the research data" (O'Donoghue & Punch, 2003, p.78). It is a natural process of the mind to seek by different methods the invariants needed for the construction of concepts (Flick, 1998). Triangulation is a very useful tool when the behaviours involve strong initial variations (e.g., in cross-cultural or health-related social psychology). It is also an extensively used method for theorizing about social representations (Moscovici, 2001).

To illustrate the latter, we cannot refrain from mentioning an iconic method based on a principle similar to that of the representative samples used in survey techniques. This is to consider all the output of a system as icons that will provide information about its modes of operation. Thus, when an education system is applied to groups of pupils who are very different in several characteristics (e.g., various ethnic groups), it produces a different icon for each group. Post hoc comparative analysis allows one to evaluate the contributions, shortcomings, and application characteristics. Among the quantitative methods, room

should also be made for simulations. The article that Palys (1973) devoted to them already highlighted their methodological advantages (validity, scalability, and insight into the processes of integration of the information underlying the dynamics of different behaviours). The development of robotics has helped to operationalize the social behaviour of non-human animals as well as humans (see the report of Fong, Nourbakhsh, & Dautenhahn, 2002), with its emphasis on the fundamental structuring role of many interactions which can only be conceived of as part of a complex system.

10. CONCLUSION: TOWARDS NEW FORMS OF THE CONSTRUCTION OF KNOWLEDGE?

In the attempt to illustrate this chapter, our restoration of the construction of social psychology with reference to its methods has gone far beyond merely establishing a chronological catalogue. Of all the notions presented, the only one that is still always present is that of behaviour regarded as an "object" produced by dimensions or variables generating certain "principal effects". Linking behaviour to the complexity paradigm modifies this conception by viewing behaviour as an observable, comprehensive, and integrated result of the forces and dynamics that drive the functioning of a system. This is no longer a case of using behaviour only when validating a formal model, but instead of using it as a productive source of information, and of analysing it in order to extract the characteristics that have permitted its development. One such enterprise has only just begun to be outlined, but SP has yet to complete its evolution. It seems that the modelling or theorizing to come will have to have a two-pronged objective: on the one hand, to enhance the part played by empirical data in constructing theories that are more substantive than formalized, and on the other, following the lines laid out by Lewin and revisited by Rainio (2010), to introduce elements restituting the evolutive dynamics and the chronology of states. Ultimately, this will lead to constructing models in which the current and circumstantial data present in the field are endowed with increasing importance because it is they which give behaviour its specific characteristics.

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