PRELIMINARY TRANSLATION

A terminology note on the use of some expressions regarding cognitive activities and processes in social psychology[1]

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The phenomena known as "cognitive" do not belong exclusively to any specific field of psychology. One only has to browse in the analytical index of books or scientific journals the references proposed for the term "cognition" to convince oneself. References about cognition come from all areas of psychology, and none of them seems to have a monopoly over this term. Between the Subject and Response of the S-R paradigm are involved a series of complex processes where the subject's experience, the components of their personality, their motivations, their perceptual activities, etc. are all included into a set of phenomena summed up by the word "cognition".

Van de Geer and Jaspars (1966), however, have clearly shown that one of the current uses of the term cognition refers to a specific way of considering the problems of psychology: that is how people "see" or "represent" their environment and themselves.

This use is found in many strands of contemporary social psychology. A major difficulty comes, however, within cognitive theories in social psychology themselves, from the vagueness of terms derived from the word "cognition". The terms "cognitive element", "cognitive organization", "cognitive structure", "cognitive world", "representation",

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"cognitive complexity, or even "cognition" and "cognitive theories" have had, depending on the authors, different, even at times contradictory, meanings.

Given the current state of the art, one should neither be surprised nor complain that differences occur in the content covered by such expressions, as this is a phenomenon that cannot be avoided. Such a confrontation of views is indeed a key mechanism by which research can progress. But the fact that various authors use different expressions to designate the same content is more embarassing. The characteristics attributed, for example, by Zajonc (1968) to what he calls "cognitive organization" are very similar to those that Moscovici (196l) or Kaës (1968) attribute in France to the word "representation". On the other hand, Scott (1963) prefers "cognitive structure" to designate, so it seems, something very similar.

Therefore, the identification of a unifying principle seems necessary. Our goal here is to propose, very sketchily, a simple and clear system to unify the vocabulary, starting from the way some of these expressions are used in theories considered to belong traditionally to social psychology. We shall limit this attempt to the American or French literature, which currently seems most significant in this regard. We will use, more specifically, the theoretical foundations of the theory of structural balance, proposed for the first time by Heider (1946), the principle of congruence, developed by Osgood and Tannenbaum (1955), the theory of cognitive dissonance (Festinger, 1957), various studies on the formation of impressions (Asch, 1946, 1952, 1957, Heider, 1958; Allport, 1951; Vernon, 1964; Wishner, 1960, etc.) and the implicit theory of personality (see Bruner and Tagiuri, 1954). The significance in terms of experimental or empirical developments each of these theories has contributed to contemporary social psychology compels us to examine them.

One might question, however - we will not do that here - the validity of the assimilation by social psychology of such cognitive theories. That assimilation seems to have arisen more from historical accidents to do with the development of research in this area of psychology than from a fundamental theoretical necessity. Indeed, most of these theories claim to describe intra-individual cognitive processes while ignoring the social nature of their content and origin.

Such is not the case, though, of the theoretical analysis that some French writers have made of the notion of representation, and to which we also refer in this article (Moscovici, 1961; Kaës, 1968). Their understandings of this notion characterize explicitly it as social, and show how its laws crucially depend upon inter-individual processes.

That being said, and to remain within the scope of tradition, it is not our intention here to present the content of these theories and their implications. We aim simply to review some

of the fundamental expressions used in these theories, and their relationships to each other. At times, however, we will identify very briefly the content encompassed by these expressions in the theoretical constructs in order to show their commonality. Indeed, this commonality is the condition that allows us to propose alternative expressions that subsume these different meanings.

PROPOSALS FOR THE DEFINITION OF SELECTED TERMS

1. Cognitive elements

All cognitive theories, even if they ignore them in the conduct of research, assert the existence of cognitive elements. These elements are often connected with one another and can combine to form sets. This idea, common today, originated in Gestalt theory. In most cases, the elements are not specified. The hope of Gestalt theorists, shared by many social psychologists, was that if we managed to describe the organization of these sets, the exact knowledge of the elements was not necessary.

Contemporary authors, however, sometimes try to specify, as part of their theories, what these elements are. Abelson and Rosenberg (1960), developing their "principle of congruity", defined cognitive elements as "things", concrete or abstract. In their view, the cognitive elements include individuals, institutions, traits, etc. For Festinger (1957), the elements (which he calls "cognitions"), which are in consonance or dissonance, consist of "any knowledge, opinion, or belief about the environment, about oneself, or about one's behaviour" (p.3). Brehm and Cohen (1962, p.3) add, "The knowledge of one's own feelings, behaviour, opinions, as well as knowledge of goals, how to reach them, what others think, etc., are examples of cognitive elements". The terms "opinion" and "belief" are also used, for example by Kaës (1968, pp.31-32).

Elsewhere, Brehm and Cohen (1962, p.3) and Lawrence and Festinger (1962, p.33), prefer to speak of "information items". Moscovici (1961) and Kaës (1968) clarify alittle what these items are: they are information that the subject receives through his/her senses, information gathered throughout the subject's history which remains in his/her memory, and information that come from relationships with others, individuals or groups. Asch (1946), Kelley (1950), Zajonc (1968), etc., define the elements as "traits" or "attributes" (qualities given to an object). For Scott (1963), the elements are composed of "ideas". For Abelson and Rosenberg (1958), these are "concepts". Elsewhere, Abelson and Rosenberg (1958) provide a

list of examples of cognitive elements. In this list, there are proposals such as: "the prohibition by the State Department reporters to go to Communist China" or "President Nasser", "students at Yale", etc.

In the congruity principle (Osgood and Tannenbaum, 1955), one simply speaks of "objects".

We will observe that the terms "thing", "knowledge", "opinion", "belief", "information item", "trait", "attribute", "idea", "objects", etc. are at least as obscure as the term "cognitive element".

Fuzzy as they are, differences in definitions are legitimate within the framework of different theoretical constructs. Nevertheless, there remains the important fact that these authors claim the existence of "cognitive elements" understood as the smallest units of their theoretical elaborations.

In order to unify the vocabulary, we propose to use the neologism **"*cogneme*"** (in French: "cognème") to designate these elements, whatever their nature or the specific definitions given. The use of this neologism appears justified in that the cognitive element seems to designate a specific reality that has yet to receive a name. In that sense, a "cogneme" would be the smallest, most basic unit of any theoretical construction in the domain of cognition.

That being said, and whatever they may be, all theories put forward the idea that cognemes fit into sets and can develop forms of inter-dependency with one another.

2. The cognitive universe

We propose to call **"*cognitive universe"*** of a given individual the set of all cognemes of that individual. Zajonc (1968) also proposes a similar definition of the cognitive universe (p. 328).

The use of the term "cognitive universe" does not appear to be a problem: in fact, only a few authors have examined the set of all the cognemes of individuals. Neither empirical observation nor experimental manipulation will enable to capture at once, and systematically, the entirety of person's cognemes as a unique set. The study of the cognitive universe of individuals is beyond the scope of specific theories and would require the combined efforts of researchers from all areas of psychology. To our knowledge, this synthesis does not exist. No precise definition of the cognitive universe is given in literature, nor is its content proposed. In most cases, the term "cognitive universe" seems to be used implicitly to refer to the totality

of "knowledge" (in the most general sense) of an individual. This seems to mean that the cognitive universe depends, among other things, upon the personal characteristics of the individual, his/her past and present experience in relation to his/her environment (and thus of his/her belonging to a culture and a network of subcultures), his/her anticipation of future events, etc. The approach of the concept of "representation" that follows should enable us to further clarify what is meant by the term "cognitive universe".

3. Representation

The term "representation", commonly used in France, is virtually unknown amongst Anglo-Saxon authors of the cognitive tradition, who often confuse it with the terms "cognitive organization" and "cognitive structure". The phenomenological connotations of this term go some way towards explaining this confusion: it is a fact that phenomenology did not have in American psychology the same influence as here (in France). However, we believe that the word "representation" has a distinct meaning that cannot be reduced to any other concept.

We call "representation" any form of interdependence between the cognemes of an individual in connection with a given object (or object class). Therefore, there cannot be a representation *per se*; for an individual, a representation can only exist in reference to an object. From this perspective, a representation is thus a subset of the cognitive universe that draws attention to the cognemes that are mobilized when considering a specific object. This is the very definition that Zajonc (1968) gives of "cognitive structure": "organized subset of the given cognitive universe in terms of which the individual identifies and discriminates a particular object or event" (p.328).

Following Moscovici (1961), Kaës (1968) defines a representation as a product and a process of mental construction activity of the real by the human psyche. This construction of the real is based on information received by an individual, his/her senses, his/her experience, and his/her relationship with the environment (p.15). Kaës adds that a representation is both a universe of opinions (organized set of value judgments upon some object) and a universe of beliefs (p.31). More generally, for Kaës, a representation is what individuals or groups think of a significant object (p.31).

By "cognitive organization" or "cognitive structure" (expressions he uses interchangeably), Zajonc (1968) means, so it seems, something very similar: for him also, the cognitive organization depends upon information received by an individual in the past and present, the way the subject has received this information and the results that ensue for him or

her. Zajonc also adds that the acquisition and results of information are mediated by social processes and channels and that this affects future behaviour.

At a different level, the definition Kelly (1955) gives of its "constructs" is very similar: what he calls "construct" is both what a subject builds upon an object and the way he builds it.

Scott (1962a) defines "cognitive structure" as a "phenomenological representation that the individual has of him/herself and of the world "(p.87), that is, the ideas that the individual has acquired and kept in his/her history and which his/her consciousness considers still valid.

The use of the word "representation" in the titles of some French works is often closer to a strictly operational definition. In this regard, B. Zazzo (1966) defines representation as the response of a subject, when asked about a significant object through the use of appropriate investigation techniques. It is therefore a convenient term to describe the organization of a subject's reactions when asked to describe or define an object in a given situation (p.22).

We find similar ideas in Asch's studies of impression formation (see Asch, 1957).

The characteristics assigned by the various authors to representation, to the "formation of impressions, to "cognitive organization" or "cognitive structure" are essentially the same. They also depend on general characteristics attributed to any perception: selection, simplification, rigidity, egocentricity, etc. (Secord, 1958; Allport, 1961; Moscovici, 1961; Vernon, 1964; Kaës, 1968, etc.).

At one level or another, most authors insist to say that the representation transfers and integrates the information at semiotic level and organizes behaviour in a corresponding manner (see Codol, 1968, 1969b). Kaës, for example, assigns representations a function of sense-making of the environment and objects for an individual (op. cit., p.25). Sense-making is indeed at the core of cognitive processes and activities. Only through sense-making can the individual understand his/her environment, adapt to it and act on it.

Even though they are subsets of the cognitive universe, representations are not closed domains. When one represents something, it is always in reference to something else. To give meaning to a particular object is at the same time to change the meaning that is attributed to other objects close to this object. Moscovici (1961, p.323), borrowing a term from the psychology of perception, refers to this phenomenon as anchoring. This means that representations do not form disjoint subsets within the cognitive universe: any change in the representation that an individual has of a specific object triggers more or less deep changes in

the rest of his/her cognitive universe (see Codol, 1969, a and b). All authors agree that cognemes are not isolated elements, neither in the cognitive universe nor in the representation, but rather they are in some form of relation to one another.

4. Cognitive Structure

Structure of the representation

Most authors use the terms "cognitive structure" or "cognitive organization" to describe patterns of relationships between cognemes in the cognitive universe or in the representation. We see here the problem that lies in equating these terms with the term "representation": the representation is an organized set of cognemes; the structure is what explains the organization of this set.

We therefore propose to call ***"cognitive structure"*** the set of rules of interdependence and organization of cognemes within the cognitive universe, and ***"structure of the representation"*** the set of the rules of interdependence and organization of cognemes within the representation. The structure of the representation is to the representation what that the cognitive structure is the cognitive universe. (It seems that the term "cognitive organization" can simply be abandoned since it is redundant with "cognitive structure".)

Most theories developed in social psychology regarding cognitive activities and processes tend to focus specifically and almost exclusively on the study of relationships between cognemes:

A) The basic claim of almost all theoretical developments in this area is that the cognitive structure of individuals, as well as the structures of their representations, display, with different levels, some balance, some consistency, some stability, some constancy. These are key issues in the theory of structural equilibrium of Heider (1946), in the congruity principle (Osgood and Tannenbaum, 1955), in the theory of Newcomb (1958) regarding the "strain toward symmetry", in the theory of cognitive dissonance (Festinger, 1957), and in the theory of reactance (Brehm, 1966), among others.

All these theories claim that relations between cognemes generally tend towards a state of equilibrium. This state of equilibrium can be achieved by changing the relationships, purifying or isolating the elements or by stopping the reasoning. A hypothesis common to all these theories is that the path chosen by a subject to restore a balance will always be the one

that involves the minimal number of changes (the most economical way). This hypothesis has been confirmed in numerous experiments.

A similar statement is made by Bruner and Tagiuri (1954) as part of the "implicit theory of personality". They assume that each person has a relatively stable cognitive structure (called a "scheme of attributes"), which that person uses to classify and structure his/her environment. Many authors have also posited such patterns: Bartlett (1932), Tolman (cognitive maps, 1951), Hayek ("systems of connections", 1952), Vernon (1955), Bruner et al. (1956), Miller, Galanter and Priban (1960), Coombs (1964), etc.

The Theory of Impression Formation posits, for its part, the dual assumption of object constancy and consistency of the individual. What the individual expects from an object depends on his/her perception that this object has invariant underlying characteristics (constancy of the object). (If the object is a person, that is precisely what allows the individual to predict the behaviour of the other.) The constancy of the object refers back to the constancy of the subject: the individual does not accept unexpected or contradictory facts about the object. A number of experiments have verified these assumptions. Vastenhouw (1961), among others, showed that the perceived relations between cognemes (consisting of "traits") are rather stable.

Kelly's Theory of Constructs (1955) also posits the assumption of coherence and consistency. In one experiment, Pedersen (1958) shows that individuals produce the same "constructs" about given people at a week's interval. In addition, he finds that each individual generally uses the same type of "constructs" in his/her representations of different people. These results seem to have been confirmed by Fjeld and Landfield (1961), who establish a strong correlation between the nature of the constructs used on two different occasions by the same subjects to describe the same group or different groups. Jones (1961), seeking an explanation for this, thinks this is because each individual only represents others in the context of the representation he/she has of him/herself. He identifies a strong correlation between the type of description that individuals make of themselves and the type of description that these same individuals make of others.

The assertion of stability and constancy is also shared by many other authors such as Scott (1962), Moscovici (1961), or Kaës (1968) who states that information is "categorized in a cognitive system, global and coherent to varying degrees, which allows the subject to make of the world or some of its aspects an organization such that he/she can understand, act on it, adapt to it" (p.15).

B) The general hypothesis of consistency and stability of cognitive structures is associated in the literature with more specific research on the form of interdependence between cognemes in these structures. Two main types of research have been conducted in this area:

1 Some authors are interested in the relative importance of cognemes in the cognitive structure.

2 - Others investigate more specifically the type of relations between cognemes within a structure.

Space does not allow this note to review all this literature. Let us recall, however, for the record, some works.

1. - The very classic experiment by Asch (1946) on "hot-cold" has launched a stream of research on the relative importance of cognemes within a structure. In an enumerative list of traits, by changing one of them, the word "hot" into "cold", Asch has shown that in the final representation not all traits were involved in the same way. In many experiments (e.g. Kelley, 1950) it was found that some traits are more central than others. Asch has therefore defined a "principle of centrality" of cognemes. The centrality of a cogneme is not an intrinsic quality of this cogneme, but depends on its relations with other cognemes of the cognitive universe or of the representation. Wishner (1960) shows that the important cognemes are those that are highly correlated with other cognemes. Hays (1958) makes a mathematical analysis of the grouping of "attributes": he discovers that the principle of centrality derives from a study of the implications between cognemes. Anderson (1965) finds that in a list of "traits" characterizing an object, the influence of these traits for the representation of the object decreases linearly with the ordinal position of these features in the set.

2. - These few results hint at the existence of substantial methodological problems in the study of cognitive structures. Talking, for example, of implications between cognemes necessarily raises the problem of the relationship between logic and psychology. It seems that this question, as old as psychology itself has never been resolved in a satisfactory and final way. Cognitive theories have not shed any new light on the subject: the embryos of solutions proposed differ widely from one theory to another and do not resolve the issue. However, it is interesting to note that, even though they stay at the level of mere assertions, most cognitive theories in social psychology feel the need to address again the problem again and again. Thus, the definitions Festinger (1957) gives of consonance or dissonance (see p.13) suggest that they are a matter of logical implication. For his part, Heider (1958) prefers the term

"emotional logic", while Abelson and Rosenberg (1958), adopting a cautious approach, just stick to the term "psycho logical". Jaspars (1966), following Brown (1965), thinks it is not so much a matter of implication but rather of psychological expectation. However, according to him, the fact remains that some explanatory factors behind this expectation are ultimately logical. He gives as an example of a psychological, but not logical, expectation, the proposition: "Intelligent people always act responsibly", a proposition that no logician would accept as true. Jaspars states that this proposition becomes logical if we call for elements that are not expressed, since logically "intelligent" is the opposite of "stupid", and a stupid person never acts responsibly. Hence, even if perceived relations are a matter of psychological expectation, the organization of these relations in a consistent manner is a matter of logical implication. He concludes that the tendency to make a coherent representation of the world represents a tendency to logical consistency.

But it is in the mathematical approach of cognitive structures that the authors actually raise the issues of the modalities of interdependence between cognemes. Whilst, we cannot consider here all the works discussing possible methods for a mathematical analysis of cognitive structures (see, for example, Manis, Gleason and Dawes, 1966; Jaspars, 1966; or Zajonc 1968), it may be useful to recall the main directions adopted by most mathematical approaches.

Among the first, Abelson and Rosenberg (1958) have highlighted the ***implicative and inferential*** nature of the cognitive structure. A whole inferential theory was then constituted, as shown, for example, in an essay proposed by Sarbin, Taft and Bailey (1960), essay that has been severely criticized by Meelh (1963) for having confused logic and psychology. The renewed interest (see Jones and Davis, 1965; Kelley, 1967) recently brought to Attribution Theory (Heider, 1944) highlights the importance attached to the idea of ***causality*** in contemporary cognitive theories. Moscovici (1961) and Kaës (1968), for example, consider causality a key characteristic of the style of organization of a representation: "If two events are perceived together, one is assumed, for various reasons (...) to be the cause and the other the effect" (Kaës, p.38).

More than of causality, others speak of ***transitivity***. For example, in an experiment about the Implicit Theory of Personality, Vastenhouv (1961) examines the relationship between cognemes made of judgments. He finds that 69% of the judgments made by his subjects are transitive. In 94% of cases, only one minor change would be required for the judgments to be fully transitive. Vastenhouw concludes that the Implicit Theory of Personality is consistent.

For others, the mode of relationship between cognemes is not strictly implicative, but instead is made on the basis of some similarity between the cognemes. To capture his "constructs", Kelly (1955) offers his subjects a series of three words; he then asks them to put together two of those words from a perspective that excludes the third. Hereby, he defines a specific similarity in a set of objects and, simultaneously, defines the way in which these objects differ from one another. The "Own-Category procedure" described by Sherif and Sherif (1964) also seeks to establish such relations: subjects are given a list of items that they must distribute in a number of categories, as many as they deem necessary, so that within each category the items seem to belong together.

In the same vein is Zajonc's approach (see 1968, p.328) where he asks subjects to describe a given stimulus-object, leaving them free to list any qualities and traits that characterize the object. He then asks subjects to compare and to link the themes they have identified. Zajonc deducts from these data an organization which describes, according to him, the formation of the impression about the object. In the same vein, under the name of "Similarity Analysis" ("Analyse de Similitude"), Flament (1962) describes a technique (used, among others, by Codol, 1966), which appears very promising for the study of cognitive structures.

The phenomena described by Moscovici (1961) as "anchoring", the importance he gives to an "analogy", or again to "association of ideas" in the construction of representations are much closer to this kind of similarity relation between cognemes than to a strictly implicative and inferential theory. These different methods of approach, while they highlight divergent views on the type of relationship between cognemes in cognitive structures, indicate precisely because of this, the very importance that cognitive theories attribute to these structures. This is so because, ultimately, the fundamental unity between cognitive theories in social psychology is not based on the use of similar methods to achieve the same results nor even on the similarity (sometimes very real: see Zajonc, 1960 b) of their theoretical elaborations. The fundamental unity of these theories seems to reside primarily in the common way with which they approach psychological issues (see above, p.1).

If we have highlighted some differences between the theories, it is to highlight more clearly the deep convergence in the attitudes they imply for researchers. Indeed, the justification for our proposals for a unification of vocabulary depended on the existence of such a convergence. We can thus summarize the gist of our proposals:

- The *"cogneme"* is the smallest unit of cognition; it is the basic unit of any theoretical development;

-   The set of organized cognemes of a given individual is a *"cognitive universe"*;
-   By *"cognitive structure",* we designate all the rules of interdependence and organization of cognemes within the cognitive universe
-   A *"representation"* is a subset of the cognitive universe that refers to any form of interdependence between cognemes of a given individual vis-à-vis a given object;
-   The rules of interdependence and organization of cognemes in a representation is the ***structure of the representation***.

This summary, finally, enables us quickly to specify a few more expressions:

•   We restrict the use of the phrase *"cognitive theories"* for theories that account for the constitution and processes regarding:

-   Representations and their structure,

-   The cognitive universes and their structures.

•   The word "cognition" sometimes also lends to confusion.

-   Some authors use it to refer to both the cognitive component (cogneme) and to refer to all cognitive activities. We suggest using the word "cognition" in this second sense only.

•   Finally, what is known in the literature as "cognitive complexity" (see Scott, 1962b; Bonarius, 1965; Jaspars, 1966) refers to either the cognitive universe, or the representation. To assess this complexity, one can, among other things, consider:

-   either the number and type of cognemes involved,

-   their differentiation,

-   or the type of structure governing the interdependence of these cognemes.

Let us conclude by highlighting two points:

First, it is likely that some of the authors cited in this note will (and rightly) cry treason. It is clear, for instance, that the notion of representation, as used by Moscovici (1961) or by Kaës (1968) is much richer than what we have described here. We did not indeed aim to define in a systematic and comprehensive way the notion of representation, but rather to locate this notion within a set of expressions. Our priority was to define the concept of representation vis-à-vis the ideas of cognemes or cognitive universe rather than to define the representation *per se*.

A final question remains: are all our statements acceptable in the context of all the theories we have mentioned? We will discuss this question in the context of a single example.

We have already said that all cognitive theories assert the existence of relations between cognemes. This is obvious, for example, of [Heider's] Balance Theory, which explicitly refers to relations between the cognemes, described as positive (+), negative (-) or null. Precisely, it is only because there are relationships between elements that one can speak of "balanced" or "unbalanced" structure. Each element, in itself, is neither balanced nor unbalanced.

The same cannot be said of Dissonance Theory, which does not explicitly refer to relations between the elements. In the framework of this theory, in fact, a set of elements to which nothing else is added can by itself be consonant or dissonant (or "irrelevant"). Brown (1965) suggests one example. The two elements: "A do not like B" and "C likes B" can be considered as dissonant without any relation external to these elements being invoked (except that which precisely puts these two elements in the presence of each other).

Nevertheless, it is important to note that relations really exist here: they are located *within* the propositions constituting each element. For, ultimately, to set a positive (+) relation between C and B in Balance Theory is exactly equivalent to the proposition "C loves B" in Dissonance Theory; to set a negative relation (-) between A and B in Balance Theory is exactly equivalent to the proposition "A does not love B" in Dissonance Theory. In other words, it is often possible to reduce the analysis of dissonance in terms of propositions, that is, to reduce it to an analysis of balance in terms of objects or people. The difficulty simply comes from the fact that the elements used in each of these two theories are different. Nevertheless, at a level or another it is always possible to find relationships. The difference only comes from a difference in the level at which the elements are considered.

We thus believe our statements can apply to all the theories mentioned in this note, although this may require a search for the actual components behind the theoretical constructs...

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