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Attitudes: A Brief History of the Concept

The end of the nineteenth century and the beginning of the twentieth century marked a huge interest in psychology as it was trying to become autonomous and gain full recognition among sciences, thus defying Kant's historical challenge, initially formulated in his *Critique of Pure Reason* (Kant [1871]1998: 597). In order to build up the objectivity argument, psychology relied more on the experimental social sciences emerging at that time: experimental psychology, psychometrics and psychophysics. More than just sensation measurement experiments, these disciplines called for quite complicated concepts of measure and measurement and enhanced a quantitative-like modelling of some basic psychology issues, like behaviour. Thus, the foundations were laid for approaching a concept which, at the end of the nineteenth century, appeared attractive though confusing and contradictory, closely tied to philosophy, psychology and sociology conceptual frameworks, hard nevertheless to place among affine concepts, to define and measure: the attitude.

Over more than one century, the research interest in attitudes has known peaks and troughs. It has served most diverse scientific and applicative goals, going from propaganda to commercial and political marketing, from child socialization to smoking or drinking behaviour control. It has been supported by almost all computational, artificial intelligence, artificial life and web technologies which have been developed in the meantime.

Attitude research was born as the kernel area of social psychology. For a long time social psychology led attitude research, including the study of political attitudes as particular cases of social attitudes. Gordon W. Allport had a major influence in the development of the field of political attitudes as a distinct area of research. In the mid-1920s, Howard Lasswell laid the foundations of political psychology as a separate

discipline at the thin border between social and political sciences, deeply influenced by both social psychology and political science theories. Political psychology was meant to be a political science field of the study of political attitudes. Overwhelmed in the past by influences from sociology, social psychology, political sociology, propaganda, leadership or conflict studies, political psychology has succeeded in becoming a science about political attitudes in the true meaning of the word (Kuklinski, 2002). However, it lacks proper technology to approach political attitude modelling research in its very complexity. Political science, in general, needs to shift its focus from traditional to advanced research technologies. The computational modelling of political attitudes, as it has been developed since the mid-1940s, seems to have contributed decisively to this shift of focus by emphasizing the ways in which such technologies could and should be employed in political attitude, political culture and ideology research.

This chapter is aimed at recalling valuable concepts, theories, approaches and research experiences that represented milestones in social and political attitude modelling research.

Attitudes in the Philosophy of Mind

The ‘Mind–Body’ Problem

The nineteenth century was a time of extraordinary advances in almost all sciences. Fundamental and experimental research advances in biology, brain and neural sciences and the anatomy of motor and sensorial structures made possible the emergence of a new view on the old ‘mind–body’ problem. Started in the Leipzig Laboratory headed by Wilhelm Maximilian Wundt at the end of the nineteenth century, experimental psychology organized the first experiments proving the organic binding between body and mind (Voinea, 2012).

The notion of ‘attitude’ is mentioned in several fundamental texts as early as the second half of the nineteenth century. Authors with classic encyclopaedic formation, like Herbert Spencer, authors in the philosophy of mind, like William James, and other classic authors at the end of the nineteenth century in sociology and psychology included the notion of attitude in their considerations on the mind–body problem.

The earliest reference to the term ‘attitude’ in the literature about the individual and the society was introduced by Herbert Spencer. In his *First Principles*, Spencer associates the term with the thinking and reasoning activity underlying human judgment (Spencer, 1867: 4). Spencer makes reference to the term by emphasizing an idea from biology; his view was that it binds together the mental and sensory processes of the human being, thus making it achieve an overall integrative condition which is characteristic for the human organism only (Spencer, 1867: 326). While Spencer does not give a proper conceptual definition, he nevertheless suggests that the term could be understood in various meanings which recall (either separately or mixed) emotions and moods (Spencer, 1867: 556), opinions and beliefs (Spencer, 1867: 4), communication by means of body expression or position (Spencer, 1867: 354), but mainly as logic and moral judgment (Spencer, 1867: 3–4). Vaguely enough, Spencer’s description and scientific foundation of the notion become nonetheless a

common term for the theories of the time which address the issue of association between sensation, behaviour and self-consciousness.

As Alexander Bain further elaborates upon it during the next years, the term gains more conceptual consistency in addressing the binding between body and mind in terms of the connection between the capacity of the human body for object perception (outer world) and the capacity of the human mind for self-consciousness (inner world) (Bain, 1868: 24–25; 102; 120–121; 198).

When Dewey (1884: 278–289) introduces the concept of the *new psychology*, the sciences concerned in one way or another with the social aspects of man's activity develop the notion of attitude into a fundamental concept. In the *Principles of Sociology*, Franklin Henry Giddings (1896) views attitude as the expression of a conscious state. As such, attitude is associated with affect, overt behaviour and kinship relations, group membership or social activity. Several other remarkable authors have elaborated on the definition of attitude as a *locus* of the multiple bindings between mind and body: inner and outer experience, the psychological attitude toward experience (Wundt, 1897, 1907). Of the American authors, the philosophical work of William James has combined concepts like functions of the brain, habits and emotions, bodily sensations and desires, behaviours, states of mind and consciousness into a unified conceptual picture of what 'attitude' might mean (James, [1890]1918: 241). His work has influenced all subsequent research work in the American philosophy of mind, experimental psychology and social psychology by making the 'attitude' a concept which addresses the essential principles of the social activity of humans and, moreover, the unity of human action.

Attitudes in Social Psychology

Measurement Theories

There is an initial phase in the history of attitude research which is completely devoted to measurement. It echoes a time when psychology itself, in its struggle to acquire the status of autonomy and scientific objectivity, was in search of a concept of measure and a theory of measurement which could account for the very special kind of psychological processes, objects or states. Dominated by the Freudian psychoanalytical paradigm, psychology was in need of a new paradigm able to support the evidence provided by the findings in the newly emerging biology, neural and brain sciences. Experimental psychology, psychometrics and psychophysics started their historical search for the proper ways to identify the means of connecting mind processes and body sensory responses to stimuli. All this needed a new concept of measure.

Like many other basic psychological concepts defined as abstract constructs, like belief, emotion, feeling, memories or human intelligence, attitude escaped the traditional theory of measurement which dominated the natural sciences from the ancient times of Euclid. The conceptual and experimental studies developed at the beginning of the twentieth century on this notion translated it into a relevant dimension of the psychology's struggle for identifying a new concept of measure and a new method of measurement. Attitude measurement research covering the first half

of the twentieth century (Symonds, 1927; Thurstone, 1928; Droba, 1932; Katz, 1937) has received theoretical and methodological support from three relevant sources: it has been substantially stimulated by the comparative studies on human intelligence (Spearman, 1904a), strongly supported by the paradigmatic shift from the stimulus-response to the mental life of the individual as the explanation of human behaviour (Thurstone, 1924) and enhanced by the advances in mathematical statistics introducing multifactorial analysis (Spearman, 1904b).

Attitude was, from the very beginning, associated with the binding between mind and body. It has been conceived as the *locus* where the action choice is made in abstract deliberative processes able to synthesize sensorial and perceptive information and send it back to the organism's motor and communication subsystems as an explicit command or as part of a brain message addressed to all the other parts of the body and mind. When Leon Thurstone claimed in 1928 that 'attitudes can be measured' (Thurstone, 1928), this was perhaps the most relevant moment in the history of attitude research: the historical promise was fulfilled. On this new background, a new science was born at the border between psychology and sociology: social psychology.

What was the attitude literature all about at that time? Remember, everything recalled here actually happened in the early days of the twentieth century. Research on individual and social attitudes looked much like a miscellanea of most diverse conceptual backgrounds from the Gestaltist tradition to the Freudian psychoanalytics. The new interdisciplinary domains, like experimental psychology, psychometrics and psychophysics, started bridging the gap between classic psychology and the experimental model in natural sciences. All of them had a fruitful time in developing experimental research and advancing theories with regard to the measurement of processes which involved connections between mental and sensorial aspects, like learning or action decision-making. A new research concern arose with regard to the measurement of abstract objects; that is, objects of mental processes. A new concept, namely the *intensive measure*, and a new measurement theory, namely the *scales of measurement*, were defined, thus completing the classic Euclidean picture of measurement based on space geometry, iterative sum (i.e. addition) and the concept of unit (Stevens, 1946).

The theoretical advances in both experimental psychology and the theory of measurement developed in the first three to four decades of the twentieth century point to a considerable support from statistics (Rice, 1928, 1930), which made possible attitude measurement research (Droba, 1932). Attitude scaling experiments and theories would not have been possible without the questionnaire concept and experiments introduced by Sir Francis Galton (1874, 1888) and exquisitely continued by his pupil, Karl Pearson ([1892]1900), who extended the correlation analysis for large bodies of empirical data. Nor would it have been possible without the contribution of sampling theory founded at the end of the nineteenth century (Kiaer, 1895–1896, 1897) and of estimation theory (Fisher, 1925). Thurstone's (1928) scale, Likert's (1932) scale, Thurstone's (1931) theory of multifactorial analysis and Spearman's (1904b) ranking theory complete the picture of a dramatic search for measure and measurement of psychological data, in general, and social attitudes, in particular.

Attitude scaling is perhaps the most important battle psychology won in its complete war against its own limitations, a war initiated as a historical response to the evaluation Immanuel Kant ([1871]1998: 597) made on the status of psychology among sciences.

A full theoretical description and explanation of attitude measurement is provided in Thurstone and Chave (1929). Scale measurement of attitude is based on the classification of empirical data collected from self-reporting answers of the respondents into classes which are appropriately associated with degrees of intensity underlying valenced evaluations of the attitudinal object, be it real or abstract. The classes thus defined correspond to units on the attitude scale.

In Search of Definition

Between the early 1920s and mid-1930s, the notion of attitude identified a fundamental research target in classic and interdisciplinary social sciences: everybody sought the proper term, the appropriate description, the adequate concept. Putting it in just one word, everybody was looking for the definition. No other notion before has been so widely approached in psychology and no other definition attempt has been so deeply assumed by so many scholars in as many diverse social classic and experimental sciences. This generalized interest, facilitated by the studies of human behaviour, memory and intelligence at that time, finally resulted in a huge amount of attitude research literature: in a very short while, it included a considerable number of papers, books and handbooks, general reviews and an impressive volume of research bibliography. The differences of conceptual perspective and the wide variations in the range of meanings and roles associated with this notion made the whole picture ambiguous through too much diversity. Mental state and consciousness, feeling and belief, moral judgment and action deliberation, motor and neural, language, gesture and body posture, almost every psychological, sociological, even physiological basic term and mechanism could be retrieved in the early original attempts to find the definition of attitude.

At some point, one has a strong feeling that, initially, the notion of attitude 'swept' almost everything which could be either strongly or just weakly tied to soul and reason: from a simple gesture like a frown of disapproval to a moral judgment, from a common behaviour like talking to a neighbour to action choice, everything seems naturally associated or identified with attitude. No matter if it is about facial gesture, body language, mental state or language utterance, everything is viewed, in one way or another, as a dimension or aspect of attitude.

So, the question of the age is: *What actually is an attitude?* Everybody involved in the philosophy of mind and social science studies asked. What is more interesting is that everybody answered. And no answer seemed less justified than another. It is amazing and, perhaps, most confusing. It nevertheless makes sense if, looking back to that age from our position today, we admit that the extreme diversity and ambiguity of the initial definitional attempts were the very effect of the assumed idea that behaviour expression and action deliberation involve almost all known and imagined processes

and structural components of the human being. And, as a generally accepted position, attitude is this very *locus* (in the early 1920s as well as today, nobody really knows exactly where!) somewhere inside the human being where all of this is actually getting shaped, that is, behaviour and action, judgment and feeling, spelling and intonation, gesture and body posture.

At the beginning of the 1920s, in the domain of psychology and philosophy of mind in both Europe and the USA, the specific interest and the contributions of many traditional schools of thought converged, at a certain moment, to a single point: the attitude. And each of the contributors brought their own view. This initial diversity in meanings, definitions and explanations is meant to afford much later for the incredible flexibility of the attitude concept and for its open character. The notion of attitude accumulated almost everything classic theoretical psychology and sociology put together at the birth of social psychology. Its essential diversity was the substance which provided for the seemingly never-ending process of getting defined by every newly emerging discipline about individuals and societies, politics and polities.

We should notice and keep in mind this interesting characteristic of the age because it will later prove useful in making us understand what actually happened when Gordon W. Allport finally succeeded in adjusting this enormous conceptual work into one single, unitary, profound conceptual definition. The notion's original and, by all means, essential diversity was the substance of its almost unbounded flexibility proved much later.

Everything seemed to get shaped when, in the late 1910s, William Thomas and Florian Znaniecki defined attitude as the fundamental concept of social psychology (Thomas and Znaniecki, 1918: 27). Their definition strongly emphasized the social perspective over the new concept. They defined attitude as the variable outcome of a process of interaction between the individual and the social environment. The attitude is always toward something, thus supporting the Aristotelian concept of intentionality of mental states, exquisitely reminded later by Franz Brentano (1862). It is reflected by the individual consciousness. It is the product of social activity, and has social value (Thomas and Znaniecki, 1918: 22–23). Thomas and Znaniecki emphasized from the very beginning, in their either joint or separate studies, that social psychology and, in particular, attitude research are not meant to sustain the individual–collectivity dichotomy, but, on the contrary, to study both the individual and the social group from the perspective of their capacity for social action and interaction able to induce variation and change on each other. Analysing the background in the social action and its dynamic character, Znaniecki (1925: 63–69) described the relevant role attitudes play in social change. He underlies the fundamental aspect which the science of social psychology aims to study: social influence as effect of social interaction, at both individual and group level (Znaniecki, 1925: 57). The social influence already appears as a major research dimension and, from both theoretical and experimental perspectives, the most relevant context in which attitudes have been studied from the very beginning up to present times. Thomas and Znaniecki's challenge provided an impetus to a considerable amount of attitude research literature which was dominated markedly for almost two decades by the search for a proper definition.

Starting with the impressive work of Florian Znaniecki and William Thomas (1918–1920) about the Polish peasant, the 1920s abounded with hundreds of valuable papers searching for the proper way to define the new concept and the new science of social psychology. Searching for a definition involved unexpectedly large domains of relationships with other basic concepts from traditional psychology and sociology. By the mid-1930s, the literature about attitudes and the authors had been repeatedly synthesized by several relevant reviews with impressive reference lists (Bain, 1930; Droba, 1934; Murphy *et al.*, 1937), which provided the bibliographic background for our own brief review in this chapter.

As defined by Symonds (1927: 200), the seven meanings of attitude include almost everything from motivation, emotion, motor- and neural-set, to verbal responses expressing likes and dislikes. Some authors define attitude as similar to feeling or motivated by desire (Russell, 1921) or wish (Holt, 1915). Some authors approach it from a behavioural perspective (Bernard, 1926, 1931; Symonds, 1927, 1928; Bain, 1928), while others view it as a predisposition to social action (Bogardus, 1923, 1931; Faris, 1925, 1928; Young, 1925; Znaniecki, 1925). Attitude is described as a unifying capacity of both mind and body synthesized by the system comprising both neural and muscular components to prepare appropriate social behavioural response to the stimuli (Allport, 1924: 320). Thurstone defines the attitude as an overall cumulative capacity of the human affective, belief-involving and rationality-based responses to objects (Thurstone, 1928: 531). The approach which achieves more agreement and which has finally prevailed is that of viewing attitude as mainly representing a capacity of the human being to prepare for taking an action with regard to particular objects of interest (Murphy and Murphy, 1931). This preparatory capacity takes into account both the object and the subjectivity of the human actor (Droba, 1933: 447), and connects a state of the mind with object experience so that any (deliberate) action with respect to the object is the outcome of some appropriate mental-based actualization of the experience (Baldwin, 1901–1905; Murphy and Murphy, 1931; Warren, 1934). To become effective, the action-preparatory state needs to be appropriately sustained by certain cognitive and affective capacities of the individual and, at the same time, to get contextually stimulated by situations in the social environment. However, the action seems to depend to a much greater extent on the disposition than stimulus, thus marking a departure from the traditional behaviourist theory based on the stimulus–response paradigm. This particular idea was pursued by Gordon W. Allport and represents the essence of the definition he gives to attitude. His definition seems to actually dismiss Freudian interpretations and favour neuro-biologically and socially inspired views on attitudes. After almost two decades of intensive research work on both conceptual and measurement dimensions, in his 1935 remarkable definition, Gordon W. Allport succeeded in combining various perspectives into a unified concept (Allport, 1935: 798).

In his definition, Gordon W. Allport makes explicit references to authors and their definitions as involving either explicitly or implicitly the concepts of mental state (Allport, 1924; Droba, 1933; Cantril, 1934), disposition (Warren, 1934), affect-based state of readiness (Chave, 1928; Ewer, 1929), psychological stress between parts of the nervous system viewed as an organic whole (Kohler, 1970), tendency to

action as a valenced reaction or response to a social context situation (Bogardus, 1931), action-aimed binding between individual consciousness and social value (Thomas and Znaniecki, 1918), acquired social experience which conditions and controls the individual's activity (Krueger and Reckless, 1931) and verbalized disposition for the future (Murphy and Murphy, 1931). This definition unites conceptual aspects coming from the most relevant theories in psychology, experimental psychology, sociology or philosophy of mind (Clarke, 1911). As Gordon W. Allport himself emphasizes, his definition explicitly eliminates the mind–body dichotomy by avoiding the explicit distinction between motor and neural sets. It also explicitly excludes the innate forms of readiness, habit-like views, rigid behaviourist schemas, and emphasizes that what we should call 'attitude' is concerned more with the intentionality of the action than with the environmental stimulus.

There are several powerful ideas which make the substance of this definition, which explain why it has prevailed in comparison with the previous ones, and which also justify why later attitude modelling theories have found it inspiring. One relevant idea, as the author himself explains, is the polarity of attitudes, an ancient Greek philosophy concept about contraries as the source of motion which can be found in Empedocle's, Plato's or Aristotle's writings. The dynamic nature of attitude is another idea which foreshadows the future system dynamics theories, and which has permanently provided insight for both theoretical and experimental modelling approaches based on all dynamic paradigms and dynamic modelling methodologies (system dynamics, process flow, cellular automata and agent-based systems). Finally, there is the idea about the intentionality of mental states, an Aristotelian concept packed in a new formula. The idea that the attitude is based on the individual's response to an environmental situation has inspired both behaviourist and non-behaviourist interpretations, going from S–R and schema theory to methodological individualism. The directionality of attitude concerns the idea that attitude is always about an object, be it a physical object (like a chair, a person or an environmental situation) or an abstract one (like an idea, a feeling, an emotion or a belief). Moreover, by means of attitudes, object appraisal is explained at both individual and social levels, from both substantial and abstract perspectives. However, the idea of directionality in attitude definition remains the subject of hot philosophic debate, as an attitude might still exist when no external object is actually involved. Perhaps, one should accept that directionality is but one conceptual dimension of attitude, although not an absolute one.

There are two fundamental aspects in Allport's definition of attitude: one is that the attitude is organized through experience, and the other is that attitude has its own dynamics. The former addresses a fundamental characteristic of attitudes: their acquired nature. The latter addresses the temporary reorganization of knowledge as learning occurs, and in this case it points to the role memory plays in the conceptual economy of the attitude term. The dynamic view of the attitude also addresses a typical variation, fluctuation or modification of the influence attitude exerts on its actual object, and in this case it points to the timely unfolding of the processes which constitute attitude's functions or functional roles in relation to the outer world (objects) or inner world (behaviour). For these reasons, Allport's definition was and still is the most appreciated in social psychology (Murphy, Murphy

and Newcomb, 1937: 889; Sherif and Cantril, 1945: 295–296). It has influenced all subsequent social attitude research for it opens up attitude research to modelling approaches and lays the foundations of several types of approaches in attitude conceptual and paradigmatic research: functional, structural and attributional.

Also relevant to our approach in this volume, attitudes were investigated and defined with respect to political opinions, parties and war (Rice, 1928; Allport, 1929; Vetter, 1930; Droba, 1934; Lasswell, 1936). We will briefly review the main attitude definitional approaches in the subsequent sections of the present chapter.

Functional Theories

For the decade following Allport's remarkable synthesis, attitude research focused on the functional approach explaining attitude formation, expression and change (Katz, 1989: xii).

As Sherif and Cantril (1945) explain the rationale of this new trend, the action-preparatory capacity in Allport's definition is itself described in a functional key: it models the subject's preparedness as an internal state depending on the degree of activation of appropriate subsystems of the human organism (i.e. the motor and mental sets). From a functional point of view, the characteristics of attitudes in Allport's definition are: (i) directionality; that is, attitude is always toward an object; (ii) it is not innate, but formed (acquired, learned); (iii) attitudes have affective components and therefore are sensitive to variable affective moods; (iv) attitude proves stability when it has a cognitive component at the basis of the formation process; and (v) attitudes cover a huge number of stimuli, including those which were not present during their formation process (Sherif and Cantril, 1945). Daniel Katz describes attitudes as serving individual needs mainly based on individual value expression (Katz, 1960; 1989: xi–xii). Their functions might be classified according to (i) functional capacity to adapt to the variability of the social context, (ii) object appraisal and knowledge acquisition, (iii) expressive function, covering self-realizing and value expression and (iv) ego-defence (Katz, 1960). William McGuire describes four functions attitude might have: (1) the adaptive (utilitarian) function, (2) economic or knowledge function, (3) expressive function covering self-realizing purposes and (4) ego-defensive function (McGuire, 1969).

Notwithstanding the interest in the functional paradigm in the late 1940s, it lacked the support of an appropriate research methodology for approaching the complexity of the functional modelling of the attitude formation and change processes. Research interest diminished and, moreover, shifted toward political attitudes, which passed through their first flourishing era (McGuire, 1993). There were multiple reasons for these paradigmatic shifts.

As Daniel Katz describes the decline of the functional approach, it seemed too advanced a research issue compared with the performance level of the available research methodology of the time. Functional approaches emphasized the workings of mechanisms of human personality and behaviour without the means to measure and evaluate their complex attitudinal effects.

Another reason concerns the new area of research which stimulated a shift in focus in sociology during the 1940s and late 1950s toward group dynamics theories. This shadowed for a while the research on the attitude issue.

Finally and, perhaps even more relevant, there is this reason and explanation which concerns the cognitive revolution, a time of explosive development of the cognitive theories in social sciences which completely changed the overall picture in attitude research (Katz, 1989: xii). Information-processing theories made this change complete. The effect was that the functional theories were soon replaced by theories based on social cognitive processes, which assumed almost invariably the contribution of information processing, memory and knowledge representation processes. The study of individual attitudes made room for the advanced study of the social context role in the attitude formation and change processes.

In the late 1970s, functional approaches re-emerged, but only after absorbing some of the fundamental issues emphasized by the cognitive theories (Fazio, 1990; Zanna, 1990) combining them with social psychological theories on social motivation of individual behaviour (Fazio, 1990; Zanna, 1990; Ajzen, 1991).

It would be worth noticing that, during the same period, the scientific context changes in significant ways, influencing and enhancing the predictive views on attitudes and their relationship to behaviour. During the 1950s and 1960s, in parallel with attitude research, some other issues captured the attention of the research community: dynamic system theories and their apprehension for forecasting (Forrester, 1968) had a strong impact on the dynamic orientation of attitude research.

Structural Theories

The functional approach to attitudes was aimed at identifying the functions of attitude and the causal explanations of its formation and role. However, causality in functional terms is a hard issue as long as attitudes are highly sensitive to context. Applying deterministic principles to a high variation of such context sensitivity would make the task of measuring and evaluating it extremely complex.

Besides, there is this view that attitudes, as latent constructs, could only be inferred from the observation of behaviours, opinions and affect and emotional phenomenology which might contribute to the formation of an attitude. This view is sustained by the cognitive approach which considers that the attitude has a structure, and the empirical research of these structural components could offer a complete definition and understanding of what an attitude actually is, how it works and, most important of all, how it exerts its directive (control) influence over behaviour.

Starting with the late 1940s, new theories like balance theory (Heider, 1946), congruity theory (Osgood and Tannenbaum, 1955) and cognitive dissonance theory (Festinger, 1957) addressed the cognitive background of the processes underlying attitude change. Though not quite immediately, but soon afterwards, the classic Freudian and behaviourist paradigms made room for the new approach. Explanations for behaviour and attitude were sought more in the area of thought processes than in stimulation, conditioning and reinforcing processes.

Attitudes have been studied ever since with an increased focus on the social context and on the processes of deliberation and evaluation. The cognitive basis in attitude research was addressed by social influence theory, developed by the preceding group dynamics research orientation in social sciences. To this classic trend, a new one added: force field theory (Lewin, 1947a,b), which provided support to a first positivist modelling approach on attitude change phenomena.

Thurstone's (1931: 261) initial structural model included one dimension only: the affect. The bipartite model advocated by Katz and Stotland (1959) described attitude structure as including cognitive and affective components. The tripartite model, introduced by Rosenberg and Hovland's (1960: 3) definition and also by Krech *et al.*'s (1962: 139) definition, included affective, behavioural and cognitive components. These structural models were developed on the background of intensive development of propaganda and communication theories. The Yale model of social influence (Rosenberg and Hovland, 1960) shaped a new research paradigm: attitude change under social persuasion.

The definitional approach initiated by Gordon W. Allport in 1935 has never been completed. Cognitive theories have provided support for the study of the directive role of attitudes in their relations to behaviours, and also for the study of their dynamic character. Also, the attitudinal object approach has been based on a cognitive basis. The definitional approach has continued, and several authors have introduced modifications to the original definition, emphasizing their latest findings. All this emphasized a strong comeback of the definitional theories, this time on a cognitive conceptual background which favoured a modelling view and enhanced the development of conceptual modelling theories. Attitude formation and change processes and phenomena have become the targets of sophisticated modelling views which have increasingly employed cognitive complexity aspects.

One might distinguish two main types of approaches: dispositional and cognitive. Ajzen and Fishbein (1980: 78) and Ajzen (1991) provided dispositional definitions which emphasized the evaluative characteristic of attitude: it is based on affective (valenced) positions and enhances the behavioural response.

Eagly and Chaiken (1993: 1) provided the definition which achieved largest agreement by assuming that the attitude has three structural components: (1) one component which concerns the attitudinal object appraisal and affect, (2) a second component which involves beliefs (cognitive) and (3) a third component which addresses the behavioural, motivational (conative) component.

McGuire (1989) distinguished two perspectives in the attitude structural conceptualization: definitional and dimensional. From the various combinations between the number of topics (or attitudinal objects) and the number of dimensions on which the topic(s) were projected, he identified three classes of approaches: (1) one-to-many, in which one relevant model is that based on information processing; (2) the many-to-one, in which one relevant model is that based on the rationality of behaviour and action deliberation; and (3) many-to-many, in which ideology models are relevant.

Constructivist Theories

The cognitive orientation of attitude research was announced in the early 1930s by the laboratory experiments developed by Frederic Charles Bartlett (1932) on the relationship between attitudes, recall and memory. Bartlett's research emphasized a constructive orientation in explaining attitude formation and change. However, by the late 1930s these findings were arriving too early. His research seems to be at odds with the main trend represented by the attitude measurement theory and experiments led by Leon Thurstone, and attitude conceptual defining attempts, undoubtedly led by Gordon W. Allport.

Bartlett's conclusions on the constructive nature of attitudes and on the role of memory in attitude maintenance foreshadowed the later trend on social and political cognition in social and political psychology. Later approaches (Wilson and Hodges, 1992; Wilson *et al.*, 2000) mention Bartlett's work as inspiring attitude change modelling by taking into account the combined effect of memory-stored information and the dynamic recall of past perceptual experience.

Inspired by the research on the role of emotional phenomenology in attitudinal spontaneous expression, another relevant approach in the constructivist paradigm emphasizes the constructive nature of attitudes by underlying the context-dependent accessibility of attitudes and attitudinal objects in the memory (Schwarz and Bohner, 2001).

Attribution-Based Theories

Strength is defined by Krosnick and Petty (1995: 3) as a structural attribute of attitude with compound effects or effects which are considered appropriate in emphasizing the dynamic evolution of attitudes in certain contexts. One such effect is the attitude's resistance to change and its persistence in time. Another relevant effect is the impact on (political) information processing, like, for example, the selection of sources such as an individual's issue positions and beliefs could be confirmed and eventually reinforced. Finally, there is the effect of behaviour guiding and control (Miller and Peterson, 2004: 848).

In order to be employed in empirical evaluative studies of attitude variability and change, the strength needs to be measured. Measurement of strength is based on several classes of attributes: (i) attitude's attributes, (ii) cognitive structure underlying the memory representation, storage and accessibility of attitudes and attitudinal objects, (iii) associated and/or underlying beliefs and (iv) the type of cognitive process of attitude formation (Krosnick and Petty, 1995: 5).

Notable approaches to attitude strength modelling have been developed on an empirical basis. The conceptual modelling of attitude strength has been mainly concerned with the definition and measurement of attitudes' strength attribute. As a latent construct itself, the attribute of strength has been addressed in the structural modelling of attitude change. Some approaches view the construct of attitude strength as most appropriate in explaining resistance to change (Pomerantz *et al.*, 1995: 409) by the resistance outcomes, like polarization. Other approaches employ strength in consistency studies of attitudes' variability (Chaiken *et al.*, 1995).

However, as an attribute, strength is described by means of attributes of its own, which complicates the picture quite a lot (Krosnick *et al.*, 1993). Strength's measures could be defined on some relevant dimensions: (i) political interest and political involvement, (ii) certainty of position toward an object and the ways in which it could be influenced by affective aspects and (iii) knowledge (Pomerantz *et al.*, 1995: 409–410).

The empirical models of attitude strength employ a complicated mathematical formalism as they use factorial analysis (both exploratory and confirmatory) to identify the structural components of attitudes and the relationships among them (Visser *et al.*, 2006). These approaches provide both the list of attributes and their measures. Such measures have been designed to be used in the empirical modelling of attitude formation and change.

Krosnick and Abelson (1991) indicate three main measures of attitude strength: importance, accessibility and extremity.

Fazio and Olson (2003: 143–145) describe three primary indices of attitude strength: accessibility, ambivalence and evaluative-cognitive consistency.

Krosnick and Smith (1994) define 10 attributes of attitude strength: extremity, certainty, importance, intensity, latitudes of rejection and noncommitment, interest, knowledge, accessibility, direct experience and affective-cognitive consistency.

Visser *et al.* (2006) and Bizer and Krosnick (2001) describe the following studies of latent structure of attitude strength-related elementary attributes: importance, knowledge, accessibility, certainty, ambivalence, structural consistency, extremity, elaboration and intensity. Each such measure is considered itself as a latent construct. In their extensive papers, the authors make reference to attitudes' characteristic properties and processes based on studies of composite (index of) attributes defined by other authors: (a) attitude strength, defined as a composite index obtained by different authors by averaging measures of importance, certainty and intensity (Haddock *et al.*, 1996, 1999), measures of extremity, certainty and accessibility (Bassili and Roy, 1998), measures of importance and certainty (and other measures; Holland *et al.*, 2002); (b) embeddedness, defined as a composite index obtained by averaging measures of (mainly) importance and knowledge (Pomerantz *et al.*, 1995) and by averaging measures of (mainly) importance and elaboration (Kokkinaki, 1998); (c) commitment by averaging extremity and certainty (Pomerantz *et al.*, 1995) and by averaging measures of importance, certainty and personal relevance (Hodson, *et al.*, 2001); (d) conviction as an index obtained by averaging measures of knowledge, certainty, ambivalence and extremity (Kokkinaki, 1998) and (e) ego-preoccupation, a composite index obtained by averaging measures of importance and elaboration (Abelson, 1988).

Cognitive Modelling of Attitude Change

Cognitive models of attitude change are addressed by all subsequent chapters, so that this section briefly introduces the models which are basic references for the political attitude computational models presented in this volume. Cognitive modelling of attitude formation and change includes several classes of conceptual models. The

models are based on the structural definition of attitude and are aimed at explaining the formation and change in structural terms.

One such class includes models in which the rationality principle prevails: the relationship between attitude and behaviour employs reasoning, planning and control components (Fishbein, 1963; Fishbein *et al.*, 1975; Ajzen, 1985, 1991).

A second class includes the consistency-based models, which assume a basic hypothesis: attitudes are formed on the basis of consistent beliefs, values, knowledge and behaviour. Any contradiction amongst structural components of attitudes is tackled by mechanisms of identifying or restoring the balance, congruence or consistency between them (Heider, 1946; Osgood and Tannenbaum, 1955; Festinger, 1957).

The role of communication in political attitude formation and change has been emphasized by the theories concerned with the social and political persuasion mechanisms and processes. This research area has been successfully exploited by the cognitive modelling of attitude change in persuasive communication and contexts, usually electoral campaigns. This has resulted in a class of models of attitude formation, attitude spread and attitude change under persuasive communication dominated for a long time by the Yale model (Rosenberg and Hovland, 1960). The advances in the psychological and social psychological theories of information processing and their strong impact on the attitude theories (Anderson, 1981, 1982, 1991) provided the background for a class of cognitive models of attitude change which are based on cognitive mechanisms.

The constructivism in cognitive modelling of attitude change is illustrated by the class of so-called dual processes in both social psychology (Wilson and Hodges, 1992; Wilson *et al.*, 2000) and political ideology modelling research (Duckitt *et al.*, 2002; Duckitt and Sibley, 2010). The dual-process models are based on the hypotheses that the individual might hold contradictory beliefs and could engage in behaviours which apparently contradict their beliefs, attitudes or values, and that this is possible due to the different activation, accessibility and association of the various structural elements stored in the memory and/or acquired contingently. Combined with the theories of motivated reasoning, for example, such models have provided for approaches on political attitude formation and change which explain political attitude instability in terms of political information processing and political cognition (Lodge *et al.*, 1995). In ideology cognitive modelling, the dual-process models introduce the idea that the ideological attitude could be defined and also formed and changed on multiple dimensions and not only on a single left–right dimension.

Finally, there is a class of models which are based on dual processes and are mainly focused on the role of affect in attitude formation and change and in the ways in which attitudes guide behaviour (Zaller, 1987, 1992, 1996; Fazio, 1990; Fazio and Olson, 2014).

Consistency-Based Models

Early models of attitude are based on psychology theories. The *theory of congruity* (Osgood and Tannenbaum, 1955) is an enhanced model of Heider's (1946) theory concerning the attitudes' cognitive organization. It works on the hypothesis that

contradictory information, knowledge or conceptual frameworks used in making judgments make people engaged in such judgments feel the pressure to choose either one or the other side of the contradictory background. Heider was the first to use a kind of psychological algebra of attitudes as a formalism of representation. The representation of the attitude change in *congruity theory* is rather logical and philosophical. Congruity theory does not explain *why* people change their minds, but only *how* they change their minds. The theory, nevertheless, offers a prediction model of how a third party would react when two main parties are arguing with each other. The prediction model is based on the idea of social change as an effect of social persuasion.

The *theory of cognitive dissonance* (Festinger, 1957) is a theory about attitude change. In Festinger's theory, the change is determined by the inconsistent background of beliefs or cognitions with respect to an attitudinal object. Different degrees of such inconsistency, going from concept incoherence and ambiguity to contradiction between opinion and behaviour with respect to one and the same attitudinal object, is called dissonance. *Cognitive dissonance theory* is based on the social influence model. The theory does not use a formalism of representation for the attitude or a specific formula for the evaluation of attitude change.

Attitude change modelling based on the cognitive dissonance mechanism includes (i) semantic networks and (ii) neural networks models (Voinea, 2013).

Expectancy–Value Models

The consistency-based model of attitude change was soon replaced by a structural modelling approach based on the attributes of objects. The attributes of attitudinal objects are associated with subjective expectations and subjective values. The *expectancy–value model* (Fishbein, 1963) is based on the idea that an attitude with respect to a certain object associates a pair of components: one is the subjective expectation, and the other is the subjective value of the attribute. Fishbein and Ajzen (1975) calculate the attitude as the sum of the expected value for each of the attributes of an attitudinal object. As one examines the attributes of a certain object, one develops an expectation (i.e., measure of belief) as a probability that the particular attribute of that object makes it useful for one's goal or desire. This *expectancy–value model* is an operational model in which the subjective belief and the subjective desirability with respect to certain value can be calculated with mathematical statistics formulae. This model has been further developed by the *theory of reasoned action* (Fishbein and Ajzen, 1975) and by the *theory of planned behaviour* (Ajzen, 1985, 1991).

Information Integration Theory and Model

Starting in the 1970s, attitude research diversified in order to aggregate research in two distant areas: (1) cognitive psychology, and neuro and brain sciences; (2) machine learning and artificial intelligence. There has proved huge interest in using the computer as a virtual medium for experimental behaviour and attitude research based on knowledge processing models.

The advances in computer theory and applications made possible the use of an information-based paradigm in modelling attitude change. In this area, the most

relevant theory is Norman Anderson's (1981, 1982, 1991) *theory of information integration* (IIT), which is based on the information processing paradigm. It models the human mind's capacity to integrate information from several sources in order to make a judgment or to form an attitude with respect to a certain object. The model assumes that the human mind looks like an information processing system, which has several functions of information processing: valuation, integration and response.

The information processing paradigm has been the most relevant paradigm in computational and simulation modelling for quite a long time, for many scientific domains, social sciences research included. In psychology and social psychology, this paradigm, notwithstanding wide scepticism and severe difficulty of gaining acceptance in quantitative research, has succeeded (even if late enough!) in gaining the attention of modelling researchers: IIT is true proof of this significant advance on the interdisciplinary orientation of social sciences modelling research.

A class of models take as their basic assumption the idea that attitudes are formed with respect to one's beliefs about an attitudinal object. Such beliefs are then involved in the evaluation of the utility of particular attributes of the object. An overall evaluation sums up all these attributes' evaluations and finally an attitude is formed. The models have strong mathematical support in employing the subjective probability calculations.

Attitude is formed by combining various beliefs and the results of evaluations based on such beliefs with respect to the object's attributes.

Affect in Attitude Formation and Change

Since the early interest in explaining reactions to objects and situations, affect or affective states called dispositions have been considered as dominating such reactions (Wundt, 1897, 1902). Further developed, especially after the cognitive revolution, affect has been shown to play a relevant role in social interaction, judgment and preference formation, to get associated with pieces of information in information processing and stored in the memory structures as valence associated with attitudes and attitudinal objects. Moreover, affect could induce instant choices even before proper deliberative processes might take place (Zajonc, 1980).

The primacy of affect along with the motivated reasoning mechanisms and theories has been employed in political information processing, political judgment and in political cognition theories and models (Lodge and Taber, 2005).

The following cognitive models of attitude change are repeatedly evoked by several modelling approaches in the subsequent chapters. They are briefly presented in this chapter for both experts and non-expert readers with the aim of synthetically aggregating a huge amount of exquisite conceptual modelling research which has been developed over the past half century.

MODE Model (Fazio, 1990)

The model was elaborated by Russell Fazio in the 1990s (Fazio, 1990) and extended afterwards by Fazio and Olson (2014). The MODE model is based on dual processes (Fazio and Towles-Schwen, 1999) and addresses the processes of the mind which

mediate the relationship between attitudes and behaviours. The attitudes are shown to guide behaviours by means of two types of processes: deliberative and context dependent (Fazio, 1995). The spontaneous processes regard the automatic activation of memory structure of attitudes and attitudinal objects, which could guide behaviour even without conscious processes underlying rational inferences and choices. The deliberative processes concern the choices between alternatives on utility-based evaluations. Motivational processes depend on the resources an individual has or could employ in controlling behaviours. Behaviours could be guided by combinations of such processes (Fazio and Olson, 2003).

RAS Model

The model is based on the idea that attitude structure has both memory-stored and online components which get different degrees of accessibility as they become associated with affect values (valences) and therefore impact the information processing and the individual's response to the social and political communication messages (Zaller, 1987, 1992). From a political attitude theoretical perspective, the dual-process background and the four axioms of the model (reception, resistance, accessibility and response axioms) address the issues of political awareness and political involvement as basic requisites for the individual's political judgment and choice (Zaller, 1996). Along with other dual-process, affect-oriented models like the impression-driven model (Lodge *et al.*, 1989), the RAS model provides insight into political cognition and political information processing issues.

Persuasion Models of Attitude Change

Yale Model

The Hovland–Yale model of persuasive communication (Hovland *et al.*, 1953; Hovland *et al.*, 1957; Hovland, 1972) is based on the 'source–message–receiver' scheme in modelling the individual actor (receiver), the source of messages and the political attitude formation and change in both individual voters and a large population of voters. The receiver is a potential voter in an electoral campaign or in a propaganda campaign, which receives messages from external sources, like the campaign media. Attitudes as well as beliefs are subjected to persuasion processes. Persuasion is successful, meaning that the receiver is persuaded to adopt a particular issue position or political attitude, if both the messages and the sources have their attributes of credibility, competence and authority highly-evaluated by the receiver.

Cognitive Response Model

Cognitive response theory and models are based on the idea that people involve cognitive efforts in information processing of the (persuasive) messages they receive. They are based instead on empirical evidence in persuasion scenarios and address attitude formation and change processes induced by persuasion situations and processes (Greenwald, 1981, 1989; Petty *et al.*, 1981).

Elaboration Likelihood Model

In this model, the attitudes are approached as evaluative judgments (Petty and Cacioppo, 1986a). The model is based on the concept of the *elaboration continuum*; any point on this continuum is a characterization of the motivation and the cognitive abilities of a person to elaborate on the relevant qualities/merits of the attitudinal object (i.e. person, event, issue).

In making evaluative judgments with respect to an object, people actually evaluate the object with the goal of determining how good or bad an object is. In making evaluative judgments of the likelihood, people actually determine how likely (or unlikely) it is for the object to prove good or bad to them. In doing so, motivated people would involve an effortful evaluation judgment in which they would use the knowledge they already have (if any) and the new information they get about the object and its attributes. The elaboration continuum can thus be described as follows: at the high end, a point will describe an attitude change which has been achieved by analysing the object-relevant information and by involving personal knowledge and reasoning. This kind of attitude will be resistant to counterarguments, and will prove to be of a higher degree of stability and strength.

At the low end of the elaboration continuum, a point will describe an attitude change which has been achieved with a low effort of evaluation of the available information. Such attitudes could be achieved by processes which do not involve high cognitive abilities or resources, like classical conditioning, self-perception or heuristics.

The elaboration likelihood model postulates are as follows:

- Postulates 1 and 2 regard the (subjective) correctness of attitude.
- Postulate 3 regards the amount and direction of attitude change, which depend on variables which produce persuasion by involving one or more mechanisms.
- Postulates 4 and 5 regard the objective evaluation and biased (valenced) elaboration.
- Postulate 6 regards a trade-off between the central and peripheral processes.
- Postulate 7 concerns the attitude strength as produced by central (high strength, more resistant attitude, higher stability) or peripheral processes (low strength, unstable attitude).

Central and Peripheral Routes for Persuasion

The elaboration likelihood model describes two fundamental processes (dual processes) which underlie the attitude change in persuasive communication, and how the strength of these attitudes is modified: central and peripheral processes (Petty and Cacioppo, 1986b). The central processes are those which involve extensive cognitive effort in the information processing of messages, in evaluating the attributes of

the object or issue, whereas the peripheral processes require less cognitive effort. The two kinds of processes differ both quantitatively and qualitatively.

Dual Processes (Wilson and Hodges, 1992)

The idea that attitudes are constructions which vary in time and context was initially introduced by Bartlett (1932) in his experiments on memory and reminding.

Research literature on attitudes shows interest in the idea that attitudes are constructions based on the available schemas' (Tesser, 1978) preponderant structural component, that is, cognitive, affective or behavioural components (Zanna and Rempel, 1988; Fazio, 1990).

Attitudes are constructed and not reports on the memory content. Construction is based on large databases of beliefs, behaviours and other components. Attitudes could be contradictory: they are not consistent since they use only subsets of this database (knowledge, beliefs, behaviours and other elements).

One relevant source of influence is represented by context (situational factors): accessibility of attitudes and moods. Another relevant source is represented by the thoughts involved in attitude construction about the attitudinal object, and reasons.

Attitudes vary in their (1) latitude of acceptance, (2) strength and (3) structure. Strong attitudes are more stable, whereas weak attitudes are unstable.

Argument

The conceptual aspects of political attitudes appeared as a modelling research issue in the early social psychology papers, which initially addressed the measurement issue. As the theories of social influence gained terrain, and the theories of computational and simulation modelling penetrated social psychology research, political attitudes attracted more and more research interest. The first computational and simulation modelling approaches on political attitudes were elaborated in social psychology research. It is in this area that political attitudes first appear as a modelling issue, and it is also this area which has provided for the further development of political attitude modelling research as a distinct area. The brief history of the attitude concept and models is, therefore, essential for the understanding of the development of the political attitudes modelling area and its impact on political science research.

Political science research has been traditionally interested in voting behaviour studies. Distinctly approached in the Columbia model, and especially in the seminal work of Philip Converse, political attitudes have been a computational and simulation modelling research issue in political science since the 1960s.

Web Resources

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