CONSENSUS, ATTITUDES AND GUTTMAN SCALES

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Abstract. Conventional techniques of attitude scaling, derived from Likert and Thurstone, are psychometric in approach and focus on differences of attitudes between individuals. Their procedures exclude many real attitudinal propositions including those widely or narrowly shared among people discussing a given topic. The Guttman technique is a weaker psychometric instrument, but can explore the consensual aspect of attitudes, and thus has an affinity with social representations. This is discussed both theoretically and with reference to UK public opinion data concerning consensual and minority views towards nuclear weapons in the 1980's.

In a chapter in the book 'Empirical Investigations in Social Representations' there is a brief but intriguing mention of an early correspondence from Serge Moscovici to Louis Guttman saying that 'there might be a theory lurking in the methodology' (Farr, 1993: 27). The theory in question was social representation and the methodology Guttman scaling. In this article I will pursue this suggested connection by examining the nature of Guttman scaling, its uneasy relationship with other techniques of attitude measurement, and its affinity with social representations. I will argue that most attitude measurement concentrates on attitudinal differences and is thus psychometric, whereas Guttman scaling investigates attitudinal consensus and is thus more suitable for the study of social representations. I will further argue that these points may be relevant beyond the study of attitudes and apply also, for instance, to the public understanding of science.

Social representations are socially shared ideas and evaluations which arise in communication during daily life. The notion of shared consensus is vital to understanding their formation and structure. Consensuses are patterns of agreement (and, by implication, disagreement) over various matters. They unite and divide people of converging and differing minds. The approach of social representations offers an alternative view of number of phenomena studied by social psychology such as attitudes, opinions, images and stereotypes. These phenomena have both an individual and a social aspect; individual, in that they are reflected in the minds of individuals and may be accessed through personal interview, and social in that, once created, they have an independent social reality, a presence in society beyond the individuals who create them. The notion of consensus captures this two-sided nature. The approach of social representations is different from others in psychology. It does not privilege the individual

aspect of psychology over the social as is common elsewhere, for instance, in the field of psychometrics.

Psychometrics versus Social Representations

In approaches which are individual and psychometric characteristics are investigated which distinguish individuals one from another, rather than those which are shared. Indeed this area of psychology is often called 'individual differences'. There would be no point in an intelligence test, for example, in asking questions which everyone got right. However, items which are common knowledge are of great interest in the field of social representations. Such items are, literally, commonsense. In the conventional procedures for designing attitude scales it is recommended that statements should be excluded which 'are likely to be endorsed by almost everyone or by almost no-one' (Edwards, 1957: 14). A scale composed of such consensual (or non-consensual) items would not discriminate efficiently. However, items of this kind are important in everyday attitudinal discussions which often seek, and sometimes achieve, consensus among those participating, both over matters of general agreement and disagreement.

There is no doubt that many conventional tests have achieved considerable reliability as psychometric instruments. But their validity is not so assured. They have not been entirely successful in capturing the essence of what they seek to measure. Psychologists have managed, by using sophisticated statistical techniques, to extract a number of dimensions, or factors, of personality and intelligence. Many psychometricians believe that these factors correspond to underlying physiological phenomena within individuals. However have they been unable, so far, to specify these factors with any clarity. They have not been able to agree how many personality factors there are, nor whether intelligence is better described as uni-factorial or multi-factorial. Hence the possibility remains that these factors are little more than statistical confections.

But if the purpose in not to find internal characteristics which differentiate individuals, but to study shared social reality that goes beyond individuals, then the approach should be different. For those who deny that there is any social psychological reality beyond the individual the question does not, of course, arise. But Moscovici argues that the central concern of social psychology should be with such phenomena, with the nature, form and variety of shared social realities, which he terms social representations. He recommends research into social representations along the following lines. Social psychology,

'must be pre-occupied with both the structures and dynamics of representations. For us it is summed up in the difficulty of penetrating the interior to discover the inner mechanisms of social representations in the greatest possible detail; that is in 'splitting representations' just as atoms and genes have been split' (Moscovici, 1984: 16)

To this end empirical studies of social representations have been carried out in various ways. Moscovici (1976) trawled the media in his study of the public image of psychoanalysis, Jodelet (1992) carried out interviews in her study of 'Madness and Social Representations', and Milgram (1984) asked people to draw maps of Paris to investigate the image of the city. The psychological material thus gathered has been presented and processed using a number of techniques, from simple thematic analysis, to more complex techniques of multi-dimensional scaling and smallest space analysis.

However social representations are elusive phenomena. They are manifestations of naturally occurring social consensuses, shifting patterns of agreement and disagreement that form and dissolve in daily communication. There is some difficulty in grasping the shape and substance of these social psychological phenomena despite the elegance of the theoretical outline. Fraser (1986) even questioned whether the methods used so far had adequately demonstrated the existence of social representations. To illustrate his criticism he quoted opinion poll data on the issue of unemployment.

'80% of the British electorate might say that unemployment is the single most important issue facing this country. 60% might believe that the world recession is a major determinant of high unemployment, 35% might feel that the present government policies had nothing to do with the levels of unemployment ... but ... usually we do not know what is the overlap in the distributions of positions on different items. Are most of the 35% who absolve the government of responsibility among the 60% who blame a world recession?' (Fraser, 1986: 10)

The notion of overlap helps clarify the idea of consensus and thereby helps describe the process of socialising a representation. Moreover the idea of overlap is, we shall see, central in the construction of a Guttman scalogram and to the technique of Guttman scaling. However, it is first necessary to differentiate this technique from other attitude scales, with which it has become associated, and demonstrate its social and representational nature.

Attitude Measurement and Guttman Scales

Of the psychological phenomena usually listed as being of interest in the field of social representations, such as attitudes, images and stereotypes, only attitudes have been have been the object of sustained psychometric attention. Psychometrics and social representations are therefore in direct competition in this area. Thus both the historical development and the subsequent problems of attitude scaling methods are of interest in this discussion. Attitude scaling arose with considerable vigour in the 1920's and 1930's, a time of increasing theoretical and methodological individualisation in social psychology. They represented a considerable incursion of psychometric ideas and techniques into the discipline. In this new approach attitudes were to be seen as psychological characteristics of individuals, as intervening variables capable of precise measurement, which mediated the relationship between attitudinal stimuli and verbal or behavioural responses. Earlier ideas of the social and collective nature of attitudes were set aside. The attitudes of groups were to be derived by averaging individual scores with no reference to any notion of group mind which was, by this time, largely discredited. Opinion polling methods, pioneered during the same period by psychologist George Gallup, drew on a similar critical reassessment.

Several techniques of attitude measurement were developed, principally those of Thurstone (Thurstone and Chave, 1929), and Likert (1932). They were based on psychometric ideas, in Thurstone's case even psychophysical ideas, and sought to measure attitudes accurately at the individual level. Henceforth an individual could be characterised not only by psychometric measurements of intelligence and personality, but also by those of attitude. A compendium of attitude measurements was produced by Shaw and Wright (1967), taking its place alongside other batteries of tests.

Apart from the introduction of correlational techniques in the standardising procedures, these techniques have remained little changed since their introduction. Particularly indicative are the instructions on attitude statement design. Attitude statements are verbal stimuli and should therefore be precise. According to Edwards (1957) items should be brief and clear statements of pro- or anti- positions. This tends to eliminate the complexity and ambiguity that abounds in real-life attitudes. Each item should only cover a small part of the affective continuum, and in consequence should not be endorsed by too large or too small a proportion of the population. Thus both consensual and minority attitudes are prone to exclusion. The scale should be symmetrical and items should be reversible. This mirror-image quality is often absent from real life discussions, where people tend to qualify their attitudes differently at opposite ends of the spectrum. These requirements, which continue to be used, place considerable restrictions on item design and are likely to produce narrow and unnatural selections of attitude statements.

In contrast, the Guttman (1967) technique works differently. In this approach a series of attitude statements is sought which characterises progressively larger (or smaller) proportions of the population. In addition it requires that a person who endorses the most demanding item should also endorse the most consensual. Hence it is a cumulative or interlocking scale. It suggests that attitudes are characterised by systematically widening circles of agreement within a population. This is a very different conception of attitude from that offered by the other scales.

The variation in proportions of agreement, which is meant to be avoided in other scales, now become the basis of measurement. The presence of an interlocking structure of agreement, which is the criterion of scalability, is assessed by an index. This is readily illustrated visually (see table 1). Here the first item gains a 'yes' response from all those asked. It is, therefore, a consensual proposition. Items two to five are endorsed by progressively fewer individuals, while item six is endorsed by only one person, a lone minority. The score of any individual is given by the least consensual item endorsed. That individual should then endorse all previous items and rerefuse all subsequent ones. The items are like hurdles of increasing height.

TABLE 1

A Consistent Guttman Scalogram (slightly adapted from Oppenheim, 1986, p. 147)

Person	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6
P 1	Yes	Yes	Yes	Yes	Yes	Yes
P 2	Yes	Yes	Yes	Yes	Yes	No
P 3	Yes	Yes	Yes	Yes	No	No
P 4	Yes	Yes	Yes	No	No	No
P 5	Yes	Yes	No	No	No	No
P 6	Yes	No	No	No	No	No

The hypothetical array given in table 1 shows a complete level of consistency. Although every person in this array responds differently, the differences are all inter-related. There are no 'errors', the array has an index of reproducibility of 1. Mixing the yeses and noes in the table would rapidly reduce this index.

A key difference between the Guttman scalogram and the Likert (or Thurstone) scale is that a similar Likert score may be achieved by endorsing different selections of items. Thus individuals with the same score may not actually have the same attitudes. However, two individuals scoring equally on a Guttman scale must be in complete agreement both on the items that they endorse and reject. This implies that a thorough discussion of the relevant arguments has taken place among the people concerned.

Innovative as it was in conception, the Guttman scaling technique did not become widely used. Shaw and Wright's (1967) compendium of attitude scales lists 167 scales. Only eight are Guttman scales and some of these seem to be artificially cumulative. For instance the Christiansen and Carpenter (Shaw and Wright, 1967: 103) ‘scale of intimacy permissiveness’ asks 'how far would you go on a first date?'. Similarly, the Bogardus ‘social distance scale’ asks 'would you allow immigrants into your country, town, street, or home?' (Bogardus, 1967/1925). The cumulative nature of these scales seems implicit in the kind of questions being asked. It would be hard to welcome an immigrant into your home if you had excluded him or her from your country, though interesting exceptions to this rule can be suggested. These may be called pseudo-scalograms. In the genuine Guttman scale the cumulative pattern should result from the social construction of patterns of agreement and disagreement concerning items which had no prior or intrinsic inter-relationship of a kind which could be inferred from the items alone. Of other Guttman scales, such as the Kogan and Downey (Shaw and Wright, 1967: 378) 'social situations questionnaire', it was said that a scale did exist, but that only a few items could be found which met the criteria of scalability.

In contrast Likert and Thurstone scales have been readily constructed on a multitude of topics and Likert-type scales, in particular, have proliferated to the present day. In a sense they have been too successful. They may be measuring superficial views which people can think up on the spot. Opinion pollsters have even managed to poll people about non-existent issues, such as the 'Metallic Metals' legislation (Bishop et al., 1980). The authors called these 'pseudo-opinions'. It seems that conventional attitude measurement techniques are so efficient that they can measure anything, and nothing. But for the Guttman scale a pre-existing pattern of attitudes in the real world is required. The contradiction between the conventional psychometric approach to attitudes and the consensual approach is a sharp one. In the former there is a wealth of measurement technique, but a lack of social reality, in the latter there is an orientation toward the contents of what people say and how ideas are shared, but not many scales. Genuine Guttman scales cannot be conjured out of thin air, that is one reason why so few have been constructed. An additional problem is the convention of requiring, as a criterion of scalability, a Guttman index of 0.9. This requires an almost solid framework of attitudes. The Guttman technique has had little success in conventional attitude measurement because it has attempted to compete on the same terms as the psychometric techniques. But the weakness of these is that they fail to grasp the social nature of attitudes. The

failure of the Guttman technique as a psychometric instrument is, I would argue, a point in its favour.

The Guttman scalogram is better suited for the investigation of social consensus in everyday attitudes, in other words, the extent to which social representations have been formed around any issue. These differing proportions may be described as consensual and minority attitudes. A pattern of consensus is likely to exist where a topic is thoroughly discussed in society. For other topics there are likely to be incomplete and cross-cutting consensuses. Even in such cases it is still useful to use a scalogram approach because much can be learned from partial consensuses, indicative of representations which are forming or dissolving.

A Real-life Guttman Scale

Such a scale may be indicated by overlapping attitudes present in society that seem to conform to the scalogram pattern. A possible example is given by attitudes towards nuclear weapons in Britain in the 1980's. During that period there was a renewed nuclear arms race involving major 'advances' in weapons technology, such as the Cruise and Trident missiles. There was rapidly increasing tension across the East-West divide. The ability of each side to ensure the destruction of the other was given the ironic title of 'Mutually Assured Destruction'. Around all these issues there was extensive public discussion and agitation. All political parties formulated detailed policies on nuclear issues. The ‘Campaign for Nuclear Disarmament’ grew rapidly in membership and activity. All political parties formulated policies on nuclear issues. The attitudes involved were intensively polled and their findings widely publicised in the media. The picture that emerged between 1982 and 1987 was as follows:

(i) about 65% of the public agreed with the proposition that the British government should freeze its stock of nuclear weapons,

(ii) about 60% agreed that Britain should cancel its plans to invest in a new Trident nuclear missile system,

(iii) some 55% agreed that the government should refuse to allow the Americans to base nuclear- armed Cruise missiles on British soil,

(iv) a smaller 20% felt that Britain should unilaterally renounce nuclear weapons, and

(v) only 10% believed that Britain should withdraw from the nuclear alliance, NATO.

These attitudes were intensively researched by opinion polling agencies who questioned many representative samples of some 1,500 to 2,000 people, with margins of error of about three percent. On each of these measures there was about a 10% 'don't know' response, so both the agreements and disagreements with each proposition can be readily estimated. Unfortunately, however, the polling agencies tended to ask only one or two of these questions in each survey. Thus it is not possible to check from their data whether this array of attitudes met the criteria of a Guttman scalogram. However there are several circumstantial indicators which suggest that they may have done.

Firstly, the policy statements of the political parties on nuclear issues generally conformed to scalogram requirements. The Conservative Government disagreed with all five propositions. The Liberal Democratic Alliance agreed with (i), (ii) and (iii) but disagreed with (iv) and (v), though there was some shifting on the issue of unilateralism. The Labour Party, in its conference decisions, agreed with (i), (ii), (iii) and (iv), but

disagreed with (v). The Campaign for Nuclear Disarmament and the far left agreed with all five propositions , though with some internal argument over the implications of the policy of 'nuclear freeze'.

Secondly, sections of the media seemed to recognise this propositional progression. This is most graphically illustrated in 'The Economist' magazine which offered a visual representation of the array of opinions under the heading 'The Sliding Scale of Nuclear Attitudes' (see table 2). Thus, in terms of the public debate of the time, there was a consensus about the structure of attitudes, within which there were systematic disagreements over the content of attitudes within that structure. The only exception that can be found was the far right which wanted to increase British nuclear weapons, but get rid of American ones, and wanted to withdraw Britain from NATO because of it involved foreigners. They thus produced a pattern of no to (i) and (ii), yes to (iii), no to (iv) and yes to (v). This strange attitudinal pattern made it hard for them to have a sensible discussion with other groupings and indicated their extreme isolation.

TABLE 2

Attitudes to Nuclear Weapons in UK 1983 (taken from 'The Economist' 29.10.1983)

This generally coherent array of agreements and disagreements was considerably disrupted by the events of the late 1980's when a nuclear weapons treaty between Russia and America was agreed and a nuclear disarmament programme introduced. However, with the renewed concern over nuclear testing and the dangers of a further nuclear arms race, attitudes might once more assume a more structured form. The temporary patterning, dissolution and re-structuring of attitudes is a characteristic to be expected from the theoretical discussions that have accompanied the studies of social representations.

CONCLUSIONS, EXTENSIONS AND LIMITATIONS

From this discussion emerges a model about the public structuring of attitudes and a proposal for how they may be studied using the Guttman scalogram. The discussion leans

heavily on social representation theory and hopes to contribute to continuing developments in the study of social representations. It is critical of psychometric individualism inherent in traditional methods of measuring attitudes and assessing public opinion. It seeks to re-assert the discursive nature of consensus formation in the field of attitudes and thereby to placed attitude research in the field of social representations rather than that of individual differences. By extension it is also critical of the essentialist statistical techniques which have been used to conjure dimensions and factors from batteries of data, whether in the fields of attitude, personality or intelligence. In comparison the Guttman scalogram technique is transparent. It offers a map of consensuses, a visual representation of patterns of agreements and disagreements. It is a descriptive device concerned with emerging structures rather than statistical differences or inferences. If it is indeed the case, as Farr suggests, that Guttman scaling was conceptually present at the beginnings of social representation theory, then it certainly should have a role as a research technique in this area.

This discussion has centred on attitudes because because this is the area where Guttman scaling arose and where the differences between he psychometric and social representational approaches are most obvious. But these proposals may have a relevance beyond the sphere of attitudes and opinions. They may also apply, for instance, to the way in which scientific knowledge diffuses from the laboratory into the public domain. In the developing field of 'public understanding of science' a psychometric approach has been recently applied in the form of the Oxford Scientific Knowledge Scale (Evans and Durant, 1989). This scale is scored in a conventional manner, giving points for correct answers without any regard to the pattern of responses. The public distribution of scientific knowledge should take the form of a cumulative scalogram. People who know difficult scientific facts should have no trouble with easy ones. Educational curricula are constructed on the assumption that easy knowledge is the pre-requisite for more difficult knowledge. Whether this is actually the case may not have been studied. It may be that this seemingly rigid hierarchy can be subverted by the cultural salience of particular items of scientific knowledge, which become easier in some cultures and more difficult in others.

Finally some words of caution. It is not being suggested that the Guttman scalogram offers a precise or sufficient model of the way in which consensuses develop or the way in which knowledge is socially diffused. It is not being suggeted as the magic key for unlocking the structure of social representations. What it offers is a descriptive device which appears to map some aspects of these social psychological processes at work in daily life. It captures the simultaneously individual and social nature of representations. It thereby avoids some of individualistic weaknesses of other approaches and indices. It suggests how a series of attitudinal propositions might be taken up in a thinking society. What is, of course, required is further research which will throw light on these proposals which are, currently, somewhat speculative.

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