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THE ‘RADEX’ – See ACTION SYSTEM APPLIED TO FORENSIC TOPICS

ACTION SYSTEM APPLIED TO FORENSIC TOPICS

By Professor David Canter

See also Multi-dimensional scaling, social psychological concepts applied to forensic psychology

Definition and theory development

In the search for a conceptual framework that underlies variations in criminal activity a model derived from Parson’s (cf. Parsons and Shills, 1951) exploration of sociopsychological systems is proving productive. Their work is in cybernetics and the related attempts to model social and psychological processes as systems of interactions. Parson’s work was much criticised for the abstruseness of the model and difficulties in operationalising its central concepts but Shye (1985) developed a robust, and relatively straightforward conceptualisation of b的行为系统 a) ‘open’ in that they must interact with their surroundings in order to survive;
b) organised in that they contain distinct entities that can be distinguished from each other, but that contain a recognisable relationship to each other, i.e. are ‘structured’;
c) have some stability in these components and their relationships over time.

Any system containing these properties is regarded as an ‘action system’.

Shye argues that the definition of an action system implies that any events in which the living system is engaged will have a source for its emergence and a location of the manifestation of that event. Furthermore the source may be within the system or external to it, as may be its manifestation. This gives rise to four possible forms of event:

a) Those that emerge inside the system and are actualised outside – known as the expressive mode, which often reflect individualistic ‘personality’ aspects of the system,
b) emerging outside and manifested outside – *adaptive mode*, which typically focus on shaping physical aspects of the environment,
c) emerging within and actualised within the system – *integrative mode*, relating to intrapersonal processes, and
d) emerging outside and manifested inside the system – *conservative mode*, having cultural significance.

Canter and his colleagues (e.g. cf. Fritzon et al 2001) have demonstrated the utility of such an approach when applied to criminal behavior. They have further developed the action system model by linking it to dominant theories in the explanation and differentiation of arson. They have shown its power in combining a number of different theoretical perspectives. For example, the distinction between crime as having some instrumental purpose as opposed to being ‘expressive’ (i.e. of significance in its own right), often referred to as ‘expressive’, is apparent in the division between conservative and adaptive actions, which are instrumental in the sense of being reactions to processes external to the individual, and on the other between integrative and expressive modes, which are both initiated within the person and thus fundamentally expressive in the sense of coming from the person to act on the environment.

However, theories of crime that distinguish between personal and social mechanisms relate to the action system in a way that is different to the expressive/instrumental division. The social theories relate more readily to integrative and conservative modes of actions. Whereas the more individually oriented theories of criminality are more in accord with the expressive and adaptive modes.

The relationship to broad theories of crime therefore redefines the modes of action in a criminal context such that the *integrative* mode has strong social, but expressive components. This implies interactions between the target of the crime and the criminal in ways that imply personal significance or intimacy. By contrast the *adaptive* mode is a personal but instrumental activity in which the
individual is seeking direct gain. The *conservative* mode within a criminal context reflects social processes that are instrumental in nature, most commonly the control of others as dominant objective. The *expressive* mode is personal and acting out in a way that is often referred to using the terminology of 'expressive'. Overt hostility against others would be a typical manifestation of this mode.

The action system model goes further than just being the identification of four modes of action. The basic definitions of the modes give rise to conceptual *inter* relationships between that can be represented as regions of a notional space, (Figure 1) which forms a set of hypotheses open to empirical test. Such testing is possible by identifying items that *would* correspond to each of the aspects of the mode and then representing their inter-correlations across an appropriate sample of occurrences by means of some form of multi-dimensional scaling, as illustrated in the main aspects of arson in Figure 1:

**Figure 1.** The schematic representation of the relationships between the modes of an action system and themes in arson and terrorism derived from empirical study.

This figure indicates that the integrative mode is hypothesized to contrast with the adaptive and the expressive with the conservative, so that in any study there would be
higher correlations between any variables reflecting adjacent modes than modes that are opposite each other. Furthermore, expressive and conservative can be thought of as products of the adaptive and integrative modes so that the latter two would tend to be more highly correlated that the former two, which is why the model is represented as an ellipse rather than a circle.

**Further applications of the framework**

In the context of criminal behavior, tests of this model have been carried out, building on the approach first developed by Canter and Heritage (1990). This consists of generating content dictionaries of the actions that can occur across a sample of crimes, then measuring the proportion of times over which every actions co-occurs with every other action. The patterns of co-occurrences are then represented as adjacencies in a Cartesian space such that each action is a point in the space and the more frequently any two actions occur the closer together they will tend to be in the space. In figure 1, a set of actions found in arson have been analysed and summarized. Some of these can be seen to cover attacks on buildings of significance and so have been given the label crusade. Others reflect self-destructive actions in which a suicide note has been left. A third group reflects attacks against a known individual, with the fourth being arson in which some other criminal activity, such as burglary is present.

The strength of this model is revealed in the opportunity it provides for hypothesizing characteristics of the offender that may be inferred from the dominant mode the arson indicates. This provides a scientific basis for elaborating the ‘profiling equation’ central to an investigative psychology approach to evidence-based models for deriving offender characteristics from crime scene information. So that, for example, in the case of arson it has been demonstrated that those who exhibit a strongly adaptive mode may well have a recognizable criminal background, but those whose mode is integrative are more likely to have a known history of mental illness (as demonstrated by Canter and Fritzon, 1998).
Inevitably with such an ambitious and novel approach to modeling criminal behavior there are still many aspects that require clarification, refinement and much more empirical test and development. Of particular significance is the need to integrate this model with the commonly found ‘radex’ of criminal actions reported in many studies since first being reported by Canter and Heritage (1990).

The ‘radex’ model recognizes that any action system will have a core of activities that characterize it. All the modes of which that action system can partake will share some common features. In arson, for example, this will be the act of setting fire to objects, but is also likely to include multiple points of ignition and often distinct and recognizable targets. It would be predicted that such aspects of actions would be common across many different forms of arson. It would thus also be hypothesized that such behaviours would tend to be central to any empirical representation of the co-occurrence of actions. This centrality of the conceptually core aspects of any crime type has been reported repeatedly in many empirical studies. For example, Canter et al. (2003) demonstrate that the forcing of a variety of sexual activity not only defines behaviours as rape but also has a central role in understanding the variety of rapes. Another example is stalking for which Canter and Ioannou (2004) show that phishing following and threatening are the core action which they argue are typically also the early stages of this criminal process. In addition it has been shown that moving out from the central core of the actions are increasingly distinctive aspects of the various modes. In the case of arson this is a movement from the general involvement in fire setting to actions that are more clearly focused on the target of the arson, as shown in Figure 2. The frequency with which this structure has been found has led some to mistakenly think that it is an artifact of the analysis procedure, but various studies have demonstrated this is not the case.

**Figure 2.** The radiating structure from the generic core to specific modes that is found in most forms of crimes, here illustrated for arson.
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The combination of the radiating structure with the differentiation of the actions provides a general framework, known as a 'radex' (cf. Guttman, 1954). The ‘radex’ is structural model that is independent of content. It has been found to be applicable _inter alia_ to intelligence, attitudes and quality of life, as well as crimes as varied as burglary and child abuse. Ongoing research is developing the understanding of how the four-way action system model relates to the radex structure, thereby providing a basis for considering the content of variations in criminal actions as well as the structural relationships between those contents.

The potential for such a combination of the radex and action system models can be seen from the consideration of the major model of sex offending demonstrated by Canter et al (2003). They present four themes that distinguish sex offences, revealed from their examination of 112 rapes; hostility which involves verbal and physical violence, involvement in which some form of pseudo-intimacy occurs, control which involves threats, binding and gagging and theft in which property is stolen from the rape victim. These can be identified quite directly as expressive, integrative, conservative and adaptive modes of action, respectively. They multidimensional analysis also demonstrates the predicted spatial relationship between each of these four modes, with control opposite hostility and involvement opposite theft. This connection between the
radex and the action system models will doubtless emerge further in other data sets and
types of crimes as the whole approach develops.

**Conclusion**

However, the challenge, as with any system based on content analysis is to develop
definitions of the components that are clear and as objective as possible. There is always a risk that the broad headings of these systems are interpreted rather loosely to cover any mixture of variables that happen to be available. As examples accumulate there will be the necessary debates over exactly which operational procedures do indeed reflect the underlying processes that the models hypothesise.

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Do you have a source e.g. This is an important central theme of the textbook I am writing with Donna, but I was reluctant to put in an (in preparation) citation. But if you wish you could reference Canter and Youngs (2009). I will put the full reference in the list below.