Quantified coherence of moral beliefs as a predictive factor for moral agency

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Coherence in Ethics: The Problem

Coherence in Ethics

Disagreements on moral matters can arise at home, and even within oneself. When they do, one regrets the methodological infirmity of ethics as compared with science. The empirical foothold of scientific theory is in the predicted observable event; that of a moral code is in the observable moral act. But whereas we can test a prediction against the independent course of observable nature, we can judge the morality of an act only by our moral standards themselves. Science, thanks to its links with observation, retains some title to a correspondence theory of truth; but a coherence theory is evidently the lot of ethics

(Quine 1981, 63).

Its [a conception of justice's] justification is a matter of the mutual support of many considerations, of everything fitting together into one coherent way

(Rawls 1971, 21)

Problems of Coherence in Ethics

The term 'coherence' as used by coherence theories has never been very precisely defined. The most we can say by way of a general definition is that a set of two or more beliefs are said to cohere if and only if (1) each member of the set is consistent with any subset of the others and (2) each is implied (inductively if not deductively) by all of the others taken as premises or, according to some coherence theories, each is implied by each of the others individually.

(Kirkham 1992, 104).

But even this "general definition" has its drawbacks:

-   Consistency?

-   Implication?

-   Scaling?

An Alternative Angle Towards Coherence

Coherence as a Non-Boolean Term

Coherence is a property of a …

… set of entities   (= **beliefs**)

… that are interrelated in a specific way   (= **similarity measure**)

This property can be understood as being of a Boolean type (i.e. a system is coherent or not) or as being a continuous variable, i.e. such that different degrees of coherence can be distinguished and correlated to different types of behaviors)

We propose latter interpretation, i.e.;

Is it possible to define "coherence" in a way such that different degrees of (in-)coherence can be distinguished?
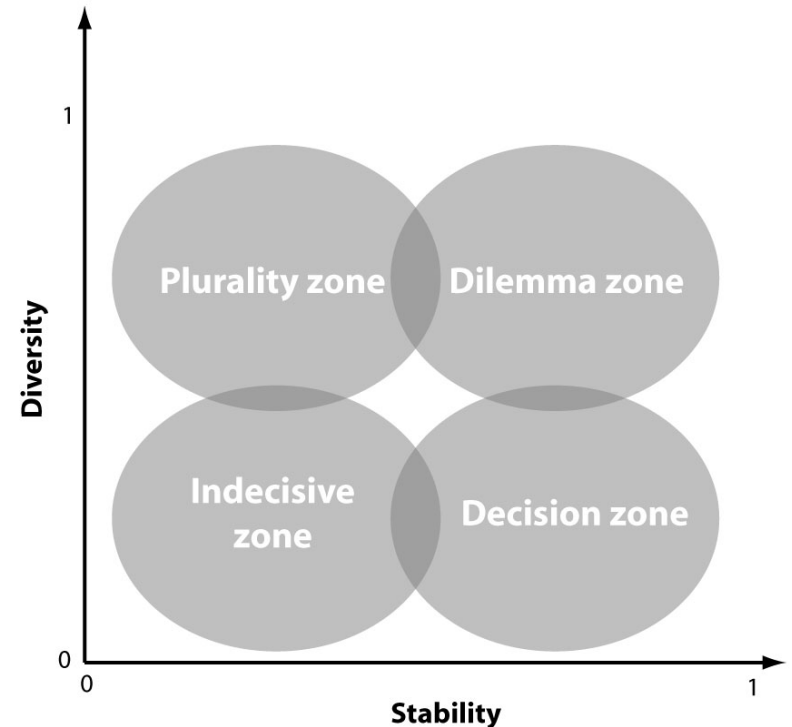
Two Dimensions of Coherence

If we understand a belief system as a network of beliefs, this network probably displays sub-structures that can be understood as clusters of beliefs with stronger mutual interrelations compared to beliefs from other clusters.

Furthermore, these structures may display some property of stability that depends on the strength of the mutual interrelations of beliefs.

Therefore, we distinguish between

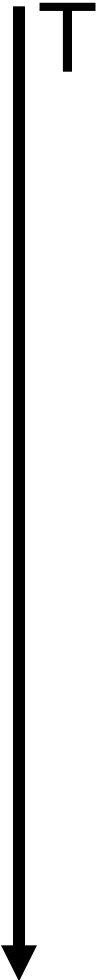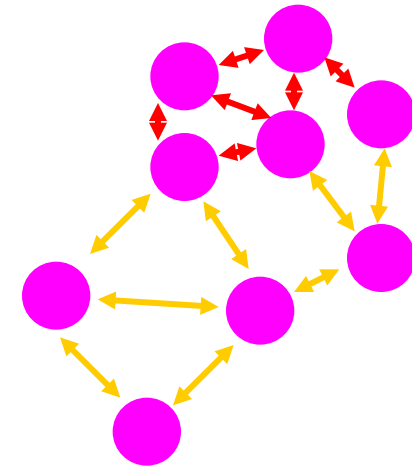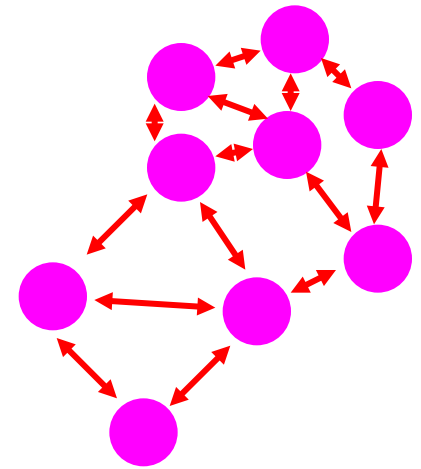- **Diversity**

- **Stability**

Quantifying the Intuition of Coherence

Superparamagnetic Clustering

Superparamagnetic clustering SPC (Blatt et al. 1996) is inspired by a self-organization phenomenon in magnetic spin-system.

It has been extended by Ott et al. (2005) to a powerful classification tool (sequential SPC) that has several advantages:
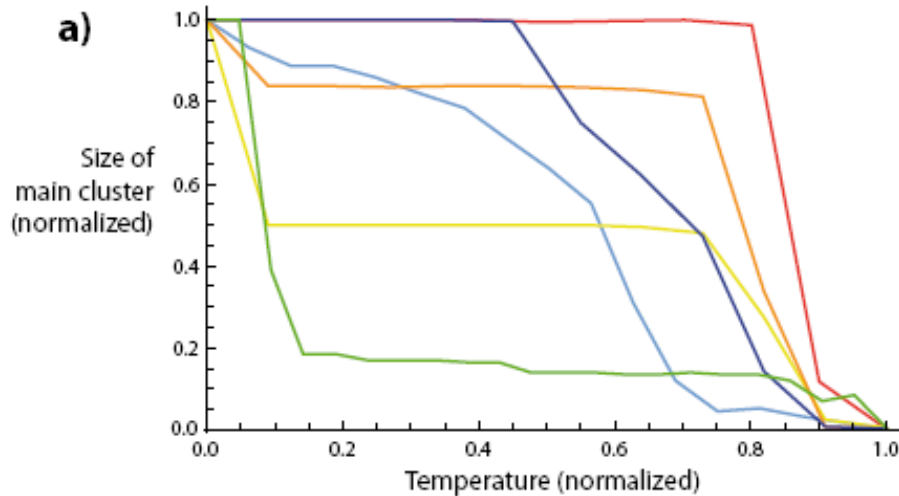
- No pre-definition of number and size of clusters required

- Temperature as "stability parameter"

- Natural hierarchy of sub-groups

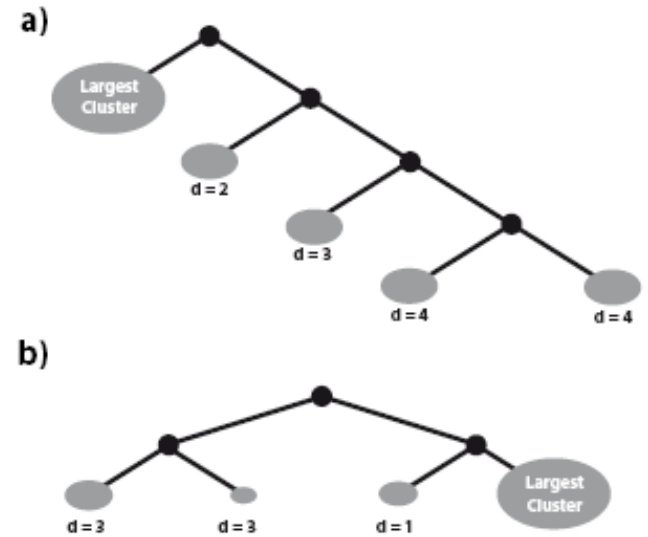- Choice of distance function allows adaptation to specific problem

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Quantified Coherence

Stability

$$C_{dynamic} = \sum_{i=0}^{l-1} \frac{CS(i\Delta T) + CS((i+1)\Delta T)}{2nl} \quad (3)$$

Diversity

$$C_{static} = \sum_{i=1}^{k} \frac{d_i}{d_{max}} \cdot \frac{|c_i|}{|\bar{c}|}$$

Possible Causal Roles for Coherence

Moral Agency and Coherence

We assume that …

(1) moral agents have many beliefs of various types (regarding both factual and normative issues, whereas it will not be possible in all cases to draw a clear distinction between them),

(2) some of these beliefs are recruited in specific decision situations

(3) there exist at least one type of similarity between these beliefs that is relevant for the specific decision situation.

We then claim that the structure of this belief-subset, in terms of coherence, is a decisive factor in understanding the actions of moral agent with respect to the specific decision problem.

This claim requires to

(a) find correlations between different degrees of coherence and specific behavior patterns, and

(b) to show some causal relation between belief coherence and behavior
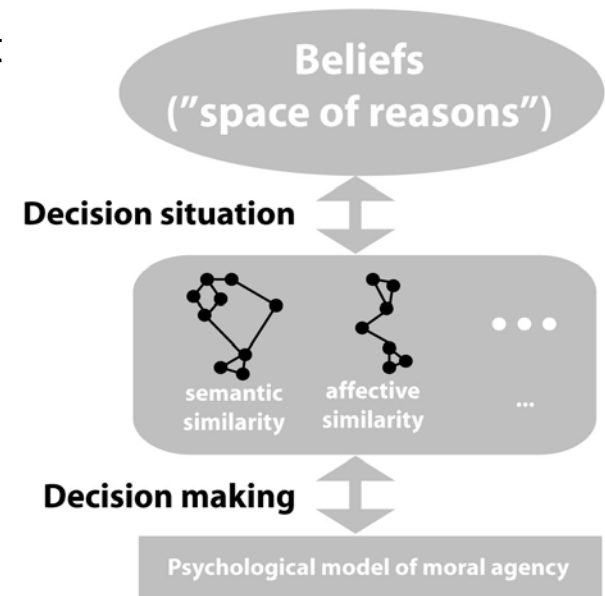
A Framework for Coherence

A moral agent possesses probably many thousands beliefs about the world and evaluations of matters of fact These beliefs serve as potential reasons in a decision making process upon moral issues.

A specific decision problem recruits a subset of those beliefs that may be activated both through fast and intuitive processes and through deliberation.

Several similarity measures for this subset of beliefs are possible, in particular:

- Semantic similarity

- Affective similarity

Technically, both measures can be combined and weighted individually in order to assess those different aspects of similarity and their weight towards the coherence of a decision-specific belief system.

Exemplifying the Role of Coherence: Political Beliefs

Political Beliefs

In our example, the sub-group of agent-beliefs whose coherence is of interest consists of beliefs upon political issues (e.g. "I support nuclear power", "Less money should be spent on the military" etc.) for which survey data from the "smartvote" project was available.

The question of interest was, to which extent the degree of coherence may explain two recent party splits in Switzerland (Green Party: 2004, Swiss People's Party: 2008).

Due to this question, not the single beliefs, but the belief-holders (i.e. party members) are the "natural" units that form a (more or less) coherent system

The mutual comparison of survey data among all candidates of a party both in 2003 and 2007 using a standard distance measure results in a distance matrix that serves as input for the clustering algorithms.
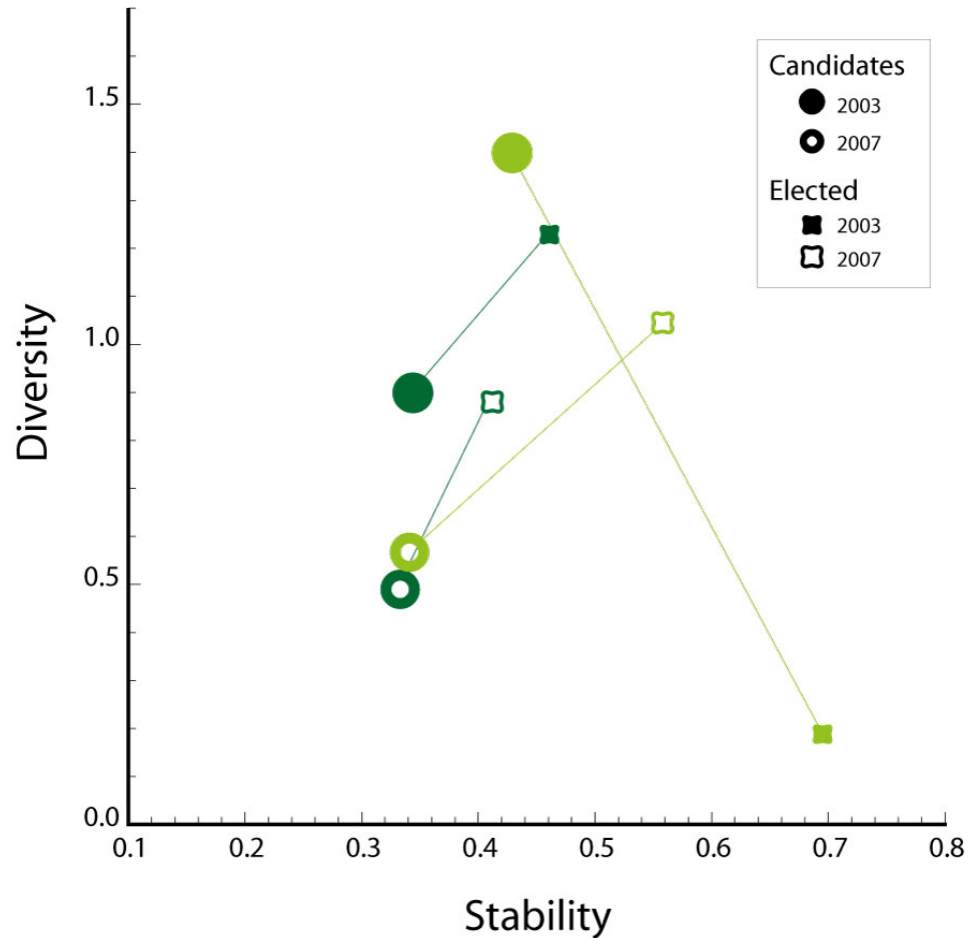
Coherence and Party Stability (1)
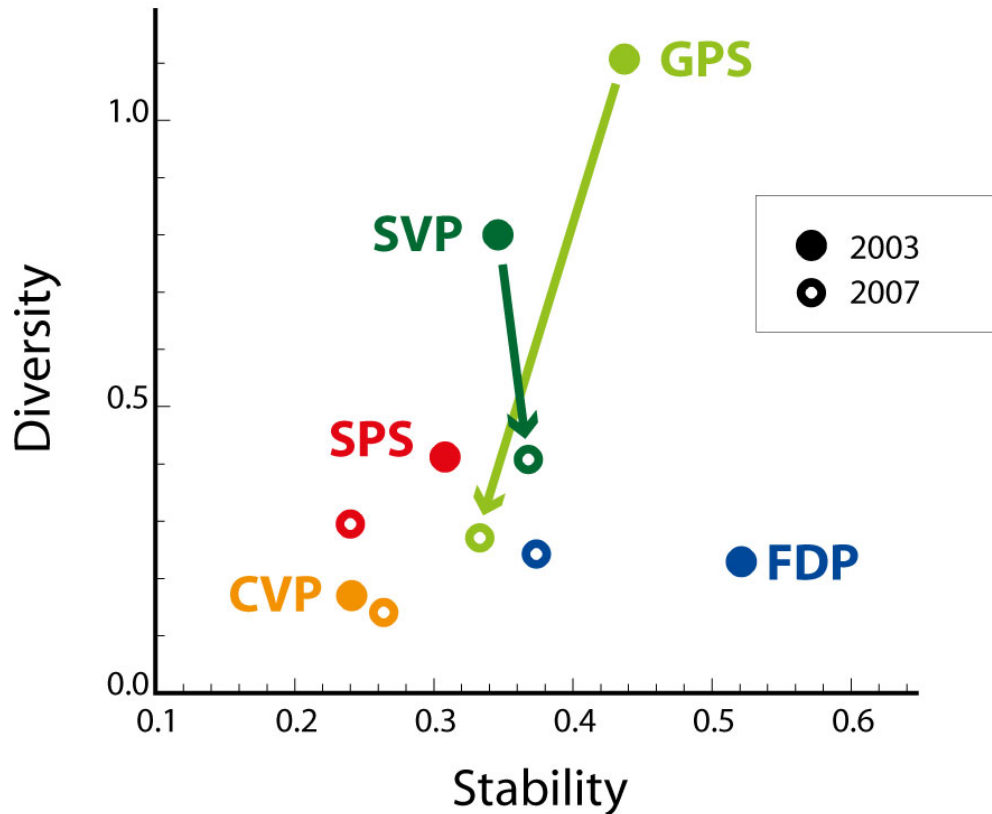
Coherence and Party Stability (2)

Coherence of Moral Beliefs: Experimental Setups

Coherence and Single Person Decision Making

In our framework of quantified coherence, we predict that dilemmatic situations would be described as a combination of high-coherence diversity and stability, as several strong sub-groups exist that are inherently stable and mutually incohesive.

The application of different types of similarities may allow distinguishing different types of dilemmatic settings.

For example, one setting using semantic similarity could show a case-4 situation, i.e. a situation in which two contradicting options are both supported by two belief sets of comparable size and stability – whereas the application of an affective similarity measure does not provide this picture but reveals a case-3 situation.

This may indicate a dilemmatic situation in terms of fulfilling a certain rationality standard (i.e. the situation is dilemmatic because two contradicting options are both supported by many good reasons) – but not in terms of emotional involvement of the agent (as the "important" reasons are not in mutually exclusive belief clusters).

Coherence and Collectives

This point is related to the question, whether a theory of moral agency may also refer to collectives. Although this involves various difficult problems, we tend not to exclude the possibility of collective moral agency

On the level of collectives, the concept of coherence may allow an analysis similar to the one made in politics. I.e. one could ask whether societies, whose belief-holders form a similar structure like the schism zone in our party analysis, may also be in a risk of splitting or similar types of social fraction.

If such an analysis turns out to be positive, this may indicate that moral values (and disagreements upon them) may be of more important for these kinds of social dynamics as generally assumed, because usually economic forces are seen as main driving forces of tensions within societies.