Haggling on Values: Towards Consensus or Trouble*

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The "AMAP" Movement in France

In the last 15 years, a large alternative food movement has grown in France and gave birth to AMAP (= "CSA"), association in which a group of consumers share the risk of production hazard with a farmer, paying in advance and accepting variation in the supply [1] against quality and good practices in production. This chain involves consumers much more than a usual vegetable market, and participants usually hold and share strong values related to what food and agriculture should be. These associations have gathered as networks, which evolved in time due to ideological choices in the type of food and practices that are implemented. Indeed, even when individuals agree on values, they often differ in attitudes (the way the value should be implemented) to be adopted in their AMAP and/or network. The discussions about how to enact the shared principles and values, taking place on an everyday basis or in assembly, sometimes even led networks to split. We are interested in understanding the link between interaction patterns among these bounded rational agents, which imply the establishment of norms, and the structures that can emerge.

Building a Multi-dimensional Model of Opinion

We build a model to show the influence of the mental representation and the organisation strucutre (size of the board, number of values, open-mindedness of agents) on the stability of networks. The model is made of two submodels ("AMAP matching model" and "metastructure evolution model") - in each of which agents influence each other, associate or split (after studying their dynamics separately, we will further unit them in one big articulated model). Our models are made of "basic" agents who hold vectors of opinions which represent the ideal attitudes they want to see implemented in the "structure" agent (AMAP/AMAP network) they belong to. "Basic" agents can influence each other on their vectors of opinions through the Social Judgement Theory model [2], discuss which attitudes to implement in their "structure" agents through haggling (taking the arithmetic mean of opinion vectors), and decide to stay in, leave or create a "structure" agent depending on the utility they retrieve from the haggled attitudes.

AMAP Matching Model (AMM) and observations

The AMAP matching model, is a simple model where agents *Farmers* and *Groups* of consumers meet, create *AMAP* (here the "structure" agent), influence each other inside the *AMAP*, update the implemented attitudes of their *AMAP*, and then decide to renew or to destroy it. In this model we are interested in the percentage of *Groups* in *AMAP* and the global efficiency of the matching process at the equilibrium (do we need to create and destroy a lot of AMAP before reaching the steady state?). We can first say that neither the number of agents (*Farmers* and *Groups*), nor the scheduling of their introduction in the simulation significantly impact the result. In this model, it's the uncertainty (U) and the rejection (T) which

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impact the most significantly the result : there exist a frontier given by the equation $U + T = 1$, below this frontier ($U + T < 1$, narrow-minded agents) there is few AMAP, above ($U + T > 1$, open-minded agents) almost all Groups are in AMAP and the efficiency of the matching process is very good.

MetaStructure evolution model (MEM) and observations

In this model "basic" agents are *AMAP* and "structure" agents are AMAP networks (called here *MetaStructures*). At the beginning of the simulation all *AMAP* are gathered in one big *Metastructure* and a percentage (*%.in.board*) of *AMAP* are randomly taken to be part of the board of the *MetaStructure*. At each turn a dimension of the vector of opinions is randomly taken, *AMAP* of the board can influence each other (if the parameter $influence-in-board?$ is turned $true$) and haggled a new attitude on this specific dimension. If all the *AMAP* of the board retrieve a positive utility to apply this attitude, its adopted, else the board splits in two boards by affinity giving birth to two new *Metastructures*, which inherit the attitudes of the old *MetaStructure* except on the specific dimension. In this model, at the equilibrium we are interested in the number of *Metastructures*, indicator of the stability of the system, and the fraction of *AMAP* involved in *MetaStructures*, indicator of the representativeness of all *MetaStructures*. We first can see that the dimension of the vector of opinions (the total number of attitudes that can be discussed : $nb.of.values$) have a negative effect on both the stability (increase the number of *MetaStructures*) and on the representativeness. Then more generally, the more the democratic process is involved (large number of *AMAP*, large *%.in.board*, and allowing influence in board), the less stable the system but the more representative it is.

Conclusion

In conclusion we put foward the elements that influence the appearance of two main regimes of organisation : few big AMAP Networks vs numerous small AMAP Networks able to reach more AMAP in the population thanks to their diversity.

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