COMPLEXITY OF SOCIAL STABILITY: A MODEL-TO-MODEL ANALYSIS OF YUGOSLAVIA'S DECLINE

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SUMMARY

In this paper a model-to-model analysis is described which compares a model of ethnic mobilisation with a model of hierarchy decline. Even though the two models are not concerned with the same or at least a similar target, they are related by empirical findings: e.g. the decline of the Federal Republic of Yugoslavia was predominantly driven by processes of ethnic mobilisation. This appears to be a more general pattern, not restricted to this specific example. Hence, both models can be regarded as describing two related aspects of one and the same social process. However, since neither models describe a concrete target system, but rely on the notion of stylised facts, the models cannot be directly compared with reference to an empirical relative. Instead, in this paper a theoretical framework is elaborated which works as a rule for a comparison: relying on a differentiation between mass phenomena and decisions centres, the process of ethnic mobilisation can be identified as a mass-phenomenon, while the process of hierarchy decline concerns social decision centres. While mass-phenomena gain their effectiveness by enforcing social institutions, the working condition for decision centres is the establishment of social positions. It will be argued that the relation between these two phenomena can be described by the analogy of a lock and key. This makes possible conclusions with regard to both social theory and empirical explanations.

KEY WORDS

model-to-model analysis, political sociology, comparative sociology

CLASSIFICATION

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INTRODUCTION: NEW LINES OF MODEL-TO-MODEL ANALYSIS

In a paper describing an agent-based model of ethnic mobilisation [1] the authors expressed the hope that their model was "a small step towards the creation of a larger number of models that would eventually enable better understanding of the recent events in former Yugoslavia". The following considerations are intended as one small step in this direction. In a model-to-model analysis their model of ethnic mobilisation will be compared with a model of hierarchy decline as a consequence of internal hierarchical operational mechanisms. Comparable models of a causal analysis of ethnic mobilisation have been developed by Mimkes [2, 3] or Lim et al. [4]. The objective of this approach is comparable to these models.

Methodologically, the motivation for model-to-model analysis is to overcome a situation of researchers working in isolation without anyone else reproducing their results. It would enhance the transferability of knowledge drawn from simulation models to overcome this situation, i.e. progress should be made possible [5]. Since the research process of simulation is closer to experimental science than to deductive logic [6], only a progressive inspection of models may enfold their potential bearings. Yet, there are several modes of model-to-model analysis suggested by Hales et al. [5].

The most straightforward way of undertaking a model-to-model analysis is to replicate a model. Related to this approach is the use of models with different structures but the same target to confirm their results or to compare different models that announce the same type of results and to check their fitness with respect to particular data. What these and related techniques have in common, is that the models under investigation are concerned with the same or a related target system.

However, Hales et al. also suggest composing models of different scales in a larger model. Moreover, Cioffi-Revilla and Gotts [7] even related two seemingly unrelated models from distinct domains to draw out their structural similarities and differences. The comparative analysis undertaken here will follow this line of research: to use findings from each domain to illuminate the other. However, while the work of Cioffo-Revilla and Gotts is more methodologically oriented, the purpose of this approach is more theoretically oriented: to utilise the methodology of model-to-model analysis for a conceptual integration of different domains of social theory. Namely, to relate models of different aspects of the topic of political stability into a common framework [8-10]. Hence, if not to compose models of different scales into a larger one, as suggested by Hales et al., then at least it would be desirable to identify how they are interrelated. This could enhance the ability to transfer knowledge from one model to another. Hence, the models will be used to integrate different sociological theories. As a first step in this direction, a framework to compare at least two models will be introduced in this article.

The paper proceeds as follows: Firstly, the historical background will be outlined. The war 1991-1995 in former Yugoslavia can be regarded as a stylised target of the models. Some attempts at an explanation of the war are considered. However, this cannot be done in a comprehensive manner. The main purpose of this section is to develop an empirical framework to relate the models to different explanatory modes.

Secondly, the main conceptual ideas and the target system of the models will be introduced. However, it has to be taken into account that the models describe stylised facts that can only loosely be related to the empirical relative.

Finally, a theoretical framework will be outlined into which both models can be integrated. Since the models cannot be directly validated against data taken from processes in former Yugoslavia (because they describe stylised facts), this framework enables a comparison of the models insofar as it provides a common rule. Hence, this theoretical framework can be regarded as complementary to the empirical one. This will lead to conclusions relevant for the foundations of sociological theory and empirical analysis.

EMPIRICAL BACKGROUND

It is a phenomenon of modern European societies that in the so-called Eastern-European [11] or, more specifically, nation-to-state [12] mode of state formation, national movements emerge from larger political entities. Examples include the decline of the Austria-Hungarian Monarchy and the Ottoman Empire into nation states. This process is still underway: most recently a number of Eastern European states have declined along ethnic borderlines. Perhaps one of the most severe structural ruptures happened in former Yugoslavia: the Federal Republic of Yugoslavia ended in inter- and intra-state wars between ethnic movements, including genocide and ethnic cleaning. Hence, an understanding of the dynamics of the decline mechanisms would be crucial for political sociology [13]: ethnic identity seems to be a central driving force for the stability and instability of political power. In the following, a very brief outline of the recent conflicts in former Yugoslavia will be introduced.

BRIEF OUTLINE OF THE WAR IN YUGOSLAVIA

According to the constitution of 1974, the Federal Republic of Yugoslavia described itself as a multi-national state, consisting of six republics. Each republic comprised one of Yugoslavia's constituent nations. Moreover, the territories of the republics were drawn along historically established borderlines. Thus, ethnic movements could rely on cultural traditions. Nevertheless, for a long time until the 1980s the degree of ethnic mobilisation was considerably low. For example, marriages across different ethnic groups were not an exception. Opinion polls of 1990 in Bosnia indicate that more than 90 % of the population regarded the ethnic relationships in their local neighbourhood as good [14]. Thus, although there was an awareness of it, ethnicity was not an important feature of identity formation.

After the death of Josip Broz Tito (1892-1980), the long term prime minister of Yugoslavia (until his death) and founder of the socialist regime, ethnic movements emerged on the territory of Yugoslavia. The escalation of violence took on various forms: punch-ups between hooligans as well as rationally calculated speeches by political entrepreneurs [15]. Beginning with Slovenia's declaration to leave the Federal Republic, the process of disintegration finally resulted in a series of intra- and inter-state wars [16, 17]. Thus, for the first time after more than forty years, the phenomenon of war appeared in Europe. It is well known that the collapse of Yugoslavia went alongside massacres and genocide which was a challenge for international law [18, 19]. The intensity of the war, however, was highly different within various regions: while officially only 19 war victims were counted in Slovenia, the official number for Bosnia was 242 330.

Numerous explanations can be found in the literature, each stressing the importance of different explanatory factors:

1) Perhaps the most prominent and most widely accepted explanation is simply the reference to *wilful political actions* of Slobodan Milosevic (1941-2006), since 1989 head of the communist party and president of Serbia, and other members of the political élite. There can be no doubt that in the 1980s and early 1990s actors from the centre of the political élite consciously escalated the crisis of the Federal Republic to reinforce their personal

political power. Thus, a considerable part of the political élite gained personal advantage from the political collapse of the Federal Republic [20]. However, the questions remain, firstly, why the more aggressive politicians were more successful than the political 'doves' and, secondly, why they were successful at this particular time and not at other times [1]. This question can be traced back to two factors:

2) One factor can be identified in the *international situation* [21]: at the end of the Cold War, international relations were in a phase of destabilisation. The 'new world order' still had to be found. For example, some authors stress that the early acceptance of Slovenia and Croatia by the European Union, particularly enforced by Germany, yet, without possessing regulatory power when the war escalated, was in part responsible for the escalation. The unclear and too weak mandate of UN soldiers is another example. Yet these factors can explain the possibility of the escalation but not why it took place in the first place.

3) One therefore has to enquire about the internal conditions of the Federal Republic of Yugoslavia. Classical political economy would call for an investigation of the *economic situation*. In fact, Yugoslavia underwent a serious economic crisis in the 1980s [22]. From the mid 1980s, Yugoslavia was confronted with a decreasing production volume. Also, the republic had to face a dramatic increase in the inflation rate. In 1989, there was even a hyperinflation of 2700 %. Together with wages remaining at a constant level, this led to a dramatic decrease in the standard of living. Moreover, the combination of these factors resulted in a dramatic increase in state debts. Thus, political collapse went hand in hand with economic collapse.

4) Nevertheless, the economic situation itself cannot explain why nationalist political leaders took advantage of this particular situation. A prominent explanation for this phenomenon is the recourse to *history*. Particularly, history was stressed by the ideologies of the nationalist leaders [23-26]. Wars in the very early history of the region, such as the battle of Kosovo Polje [27] served as a demonstration of the impossibility of Yugoslavia as a nation state. Even though these 'explanations' are clearly ideological, the question has to be answered why these ideologies were successful. In fact, one can argue that the founders of Yugoslavia had to rely on pre-existing nations with a rather long history for the constitution of the Federal Republic. Thus, societal conditions determining cultural modes of identity formation have to be taken into account for the understanding of the borderlines of the conflicts [28]. In particular, conflicts may crystallise at the borderlines of the different religions [29] and different languages [30] within the one Federal Republic.

BRIEF OUTLINE OF THE MODELS

Without a doubt, all these factors contribute to an explanation of the phenomenon. Hence, a conceptual integration of these different aspects would be desirable. To contribute to an understanding of the mechanisms of the interaction of the explanatory factors, in this paper a comparison of two models concerned with two of these topics shall be undertaken. Both models highlight very different aspects of social disintegration. As the title of their paper, 'An Agent-Based Model of Ethnic Mobilisation' [1] indicates, the model developed by Srbljinovic et al. is concerned with the process of ethnic mobilisation. The MUE & HIER model [31], however, deals with the macrosocial decline of hierarchy levels.

AN AGENT-BASED MODEL OF ETHNIC MOBILISATION

The Model

The target of this model is described by its title: to study ethnic mobilisation. This is inspired by already existing theories of mobilisation [32, 33] and methodically implemented by extending modelling constructs which have already been in use so far [34, 35]. Developed in co-operation with the Croatian MoD's Institute for Defence Studies, Research and Development, the background of the model is factual ethnic mobilisation in the course of the war 1991-1995 in former Yugoslavia. However, in the model this can only be described as stylised facts. Hence, the model is not an instrument for prognostic purposes but intends to investigate possible social mechanisms that can generate patterns such as ethnic mobilisation.

The question analysed by the model is how successful political entrepreneurs are in mobilising ethnical identities and in identifying the conditions for the escalation of ethnic conflicts. In particular, the model was inspired by the observation that in former Yugoslavia regions with very little differences in their socio-economic characteristics exhibited great differences in their degree of ethnic mobilisation. The question therefore remains as to what factors are responsible for the success of mobilising activities by political actors.

The model is an agent-based model written in SWARM. It consists of 200 agents with a fixed ethnic identity: They can be blue or red, which cannot be changed. The dependent variable in the model is the *degree of ethnic mobilisation*, m^i, of each actor i. The degree to which they identify themselves with their given ethnicity can vary between 0 and 1. The difference between the maximum of 1 and the actual value is interpreted as the importance that an agent attaches to this ethnic identity in comparison to other possible identities. The actual degree of ethnic mobilisation is dependent on several social conditions:

- Firstly, it depends on the satisfaction of the agents with their life conditions, expressed by a grievance degree gr^i. It is a variable which can also vary between 0 and 1. This captures the satisfaction with economic, political and other aspects of social life.

- Secondly, it depends on the agents' social network: the agents are able to observe the identity and the agents' degree of mobilisation in their social network, which influences their degree of mobilisation m^i. This is formalised as:

$$m^i_{socnet} = k \cdot (imp_{same} + imp_{other}) / netsize \qquad (1)$$

The term m^i_{socnet} denotes the influence of the social network on the mobilisation of agent i. k is simply a coefficient, to control the magnitude of this influence. The number of agents in the social network of agent i is denoted by netsize, and imp_{same} and imp_{other} denote the impact of members of the network whit the same and the other colour on the mobilisation of agent i.

- In particular, during the simulation the agents receive *appeals*, which may be red, blue or grey, i.e. neutral. However, in the absence of appeals the degree of mobilisation gradually decreases to 0 and the strength of the susceptibility of agents to ethnic appeals is smoothed by the grievance coefficient:

$$m^i_{app} = \begin{cases} k \cdot k_{same} \cdot gr^i \cdot m^i(t), & \text{for appeals of same colour,} \\ k \cdot k_{other} \cdot gr^i \cdot m^i(t), & \text{for appeals of other colour,} \\ k \cdot k_{neutral} \cdot gr^i \cdot [1 - m^i(t)], & \text{for neutral appeals.} \end{cases} \qquad (2)$$

The quantity m^i_{app} is the impact of appeals on the degree of mobilisation of agent i, k is a constant to control the magnitude of this influence. The same holds for k_{same}, k_{other} and $k_{neutral}$: they are constants to control the strength of the respective appeals. This is multiplied with the

satisfaction with life conditions and the already existing degree of mobilisation of agent *i*. Thus, the effect of appeals is stronger, if the agent has already a high degree of mobilisation and the more dissatisfied the agents are. The inverse relation holds for neutral appeals.

The appeals are public in the sense that they are observable for every agent. Hence, the agents can react to stimuli of their own colour as well as to stimuli of other colours. Their initial degree of identification is uniformly distributed between 0 and 1 and they have a constant value of satisfaction with their life condition of 0,5. Finally, their network size is chosen randomly.

This structure can be summarised as follows: with m^i_{app} and m^i_{socnet} as defined above, and m^i_{cool} as the cooling effect, the dynamics of ethnic mobilisation reads as:

$$m^i(t+1) = m^i(t) + (m^i_{app} + m^i_{socnet} + m^i_{cool}) \cdot \Delta t \qquad (3)$$

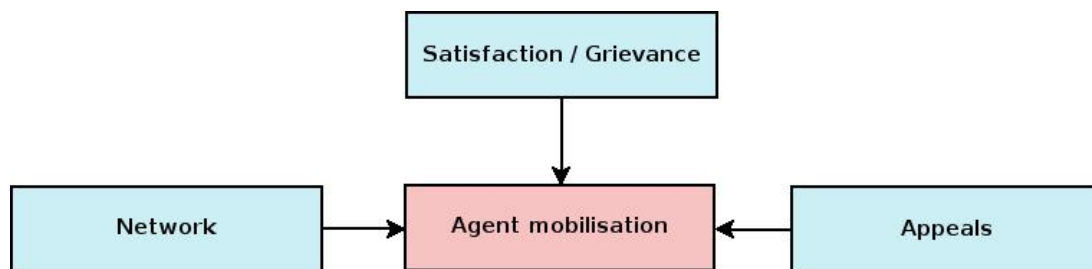which can be graphically displayed as in Fig. 1.

Figure 1. Structure of agent mobilisation.

Simulation results

This model was used to undertake a series of experiments to investigate the behaviour of the dependent variable – the degree of ethnic mobilisation – in cases of varying constellations of the independent variables. 100 agents are red and 100 agents are blue. Initially, they receive only appeals of the colours red and grey. These appeals are given at constant intervals. In an initial experiment it was checked whether the model behaviour was as expected: for example, an increase in coloured appeals increases the speed of mobilisation. Moreover, simulation runs resulted in a degree of ethnic mobilisation of either 1 or 0, dependent on whether the mobilising or cooling effect was stronger. This seemed to be a plausible result. Furthermore, mobilisation was faster when the agents possessed a social network.

The objective of this simulation runs was to enhance trust in the model. However, even in the initial setting it could be observed that in some simulation runs the average mobilisation intensity remained approximately constant for quite long simulation periods. This was mainly dependent on the appeal frequency. This was the focus of interest for further experiments.

Hence, in the next step a closer examination of this more complex behaviour was undertaken. Therefore the simulation runs were repeated with a randomly chosen appeal frequency. Approximately 60 % of the simulation runs showed the following result: either both populations reached a degree of mobilisation of 0 or the reds converged to 1 and the blues to 0. However, a long period of oscillation could be observed. Some simulation runs even remained in the oscillatory mode.

The next experimental setting was to investigate the influence of the agent's network composition. Hence, the experiments were repeated with a varying probability of having a friend of the same colour. In the case of relatively homogeneous networks, the result was that only the outcome documented above appeared: either both populations reach degrees of

mobilisation of 0, or the reds converges to 1 and the blues to 0. However, an increase in the network's diversity also increased the diversity of the outcomes.

A further experiment was to vary the degree of satisfaction with the life conditions. Instead of a constant degree of satisfaction of 0,5, a uniform distribution with the mean value 0,5 was chosen. Moreover, the variance of the distribution was varied. While some new patterns arose, diversity of the results diminished with increasing variance of the satisfaction. The most frequent outcome was a mobilising intensity value of 0,9 for red and 0,5 for blue.

Finally, experiments were undertaken with appeals of both red and blue colour. A red appeal was given every 3rd simulation period, and a neutral one was given every 4th period. Then blue appeals were introduced with varying frequency. With the other parameters as in the initial setting, surprisingly, blue appeals seem to strengthen the mobilisation of the red agents.

Empirical evidence

The main result of these simulation experiments was that *differences* in the degree of mobilisation appeared *across similar populations*. This result captures the observation that differences in the degree of ethnic mobilisation cannot be tracked back to socio-economic factors. Srbljinovic et al. [1] mention ethnic conflicts in the Croatian region of Lika with a mixed Croatian and Serbian population, while other areas with very similar socio-demographic characteristics remained stable. This finding can be explained by the model. According to the model, this is merely due to random effects in the initialisation of the primary ethnic mobilisation as well as their network composition. Yet this limits the predictability of the simulation runs. The conclusion drawn from this result is that processes such as ethnic mobilisation, once they are initialised, are only controllable to a very limited degree.

A MODEL OF HIERARCHY DECLINE

On the other hand, the model of hierarchy decline is an equation-based model to evaluate the range of a theory of social power. While the agent-based model of ethnic mobilisation is explicitly motivated by the escalation of ethnic conflicts in former Yugoslavia, the MUE & HIER model was not intentionally developed to model a (however stylised) concrete target system. The objective of the model was to formalise a general theory of hierarchical operational mechanisms. Therefore, the relationship of this model to processes in former Yugoslavia has to be denoted explicitly.

The main theoretical term of this theory is the notion of a power territory (PT), governed by a so-called power territory ruler (PTR). The theory aims at formulating idealised structural conditions for the behaviour of PTs, namely three existence conditions and one operation condition [36]:

- Existence condition 1 (competence)
  At least one competence field has to be defined for each PT.

- Existence condition 2 (scope and effect)
  Let individuals or social units in the competence field of a PT be called clients of the PT; then the relation between the number of clients and the number of PT members may not fall below a certain minimum. It is obvious that this minimum number is greater than or equal to 1, i.e. that there has to be at least one client allocated to each PT member .

- Existence condition 3 (budget)
  The PT has to dispose of sufficient financial assets.

- Operation condition
  If a PT exists, one central condition for its undisturbed operation is that PT strategies are effective.

This theory can be graphically displayed, Fig. 2. The square indicates the society (large social unit). The PTs are indicated by the cones which serve clients in their competence field.
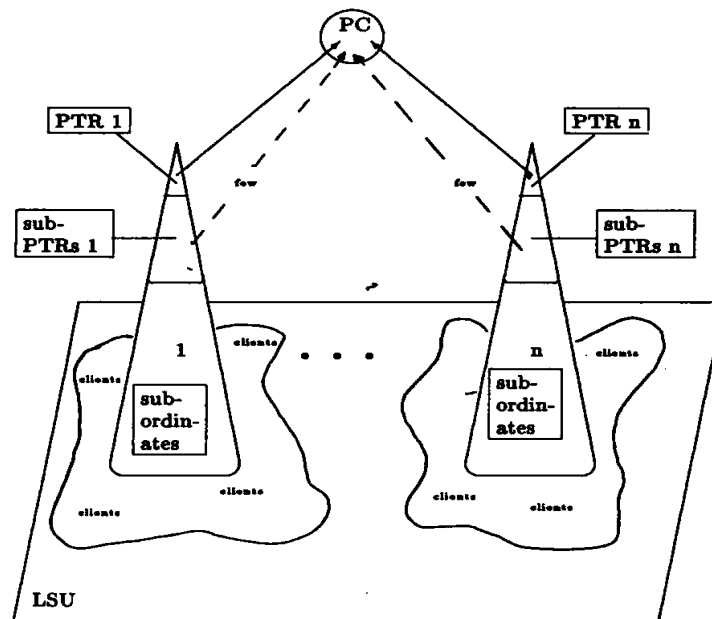

Figure 2. Structure of PT System **-** the wiggly lines represent the competence fields.

The Model

The MUE & HIER model described in [31] is an equation-based model written in DYNAMO. It relies on the theoretical framework as outlined above. The central variable is the number of positions in a so-called Power Territory (PT) system. The focus of the model is how hierarchical operational mechanisms are shaped by person-position relations. Hence, it is a model of élite exchange. Three types of élite exchange are implemented in the model:

- A continuous flux of ordinary replacement, for example, after retirement.
- Medium size structural ruptures, for example governmental change after elections.
- Serious structural ruptures like civil wars or the collapse of hierarchy levels.

The model consists of 8 sectors at all. However, they will not be outlined completely in this paper; to concentrate on the purpose of comparison, only the central operational mechanisms will be highlighted in more detail: the positions in the PT system, the personnel in the PT system, the hierarchical operational mechanisms, and the ruling demand and budget of the PT system.

Ad 1) The Positions in the PT System. The positions in the PT system are calculated according to the hypothesis of a strict hierarchy, i.e. it is assumed that there is a constant relation between the number of positions along the hierarchy levels. For example the relation between the positions on the top level and the underlying one is 1 : 10. Hence, the positional dynamics is predominantly driven by the top level in the hierarchy, articulating the demand for positions of sub-PTRs. It is possible, however, that one person can hold multiple positions. The growth of oligarchic positions is driven by three mechanisms:

- Ordinary growth
- PT partition
- Downward mobility; i.e. the creation of new positions on lower hierarchy levels.

The decline of oligarchic positions on level i is calculated by a specific *alarm function*, dependent on overdebt in i, and a so-called career aspirants crowding alarm (explained in the

paragraph on hierarchical operational mechanisms). However, it is smoothed by a passing over of financial restrictions in i to lower hierarchy levels. The most important growth mechanism is PT partition: if ordinary growth of PT positions is low compared with the number of additional positions desired by career aspirants, then the PT partition quota grows.

Ad 2) The personnel in the PT system. The personnel dynamics is predominantly driven by career aspirants on lower hierarchy levels, waiting for higher positions in the hierarchy. However, since the model is an equation based model, the career aspirants are not modelled individually. It is simply a quota from the number of persons inhabiting positions at hierarchy level i −1, which are assumed to have the desire to gain positions on higher levels.

In particular, this section contains a *waiting chain* for career aspirants, which determines the above mentioned crowding alarm. At the beginning of every time step the waiting chain is occupied with career aspirants on the one hand and persons that formerly have lost their PT positions in structural ruptures on the other. This is realised as a flow model in the system dynamics style. After this process PT positions are created and occupied with persons from the waiting chain.

Ad 3) Hierarchical operational mechanisms. This section defines the *crowding alarm*. When the waiting chain is filled, the crowding alarm is activated. It will be shown below (in the section: the dynamics of the model) that this function is of central importance for the model behaviour. It is important to note that career aspirants have to follow the hierarchy: hence, first they gain positions on the lowest hierarchy level. If they have achieved a position on this level they can wait for a position on the next higher level, and so on. Again note, that their career is not modelled individually, but only as a quota of the persons occupying a position at each hierarchy level.

At this point the interaction between the positional and the personnel dynamics come into play: Positions are created by the top level. However, because a growth of top positions in the PT system leads to an even greater increase in the number of positions on the lower hierarchy levels this leads to a greater number of persons inhabiting positions which qualify them for positions on a higher hierarchy level – i.e. this leads to an increase of career aspirants. Note, that the *quota* remains constant. Thus, a greater *number* of positions leads to a greater number of career aspirants.

In particular through the mechanism of PT partition, this mechanism leads to a growth of the PT system. Hence, an autocatalytic dynamic is the consequence: growth of the PT system yields growth of the waiting chain, which yields growth of the PT system. The unsatisfied career aspirants, however, are the driving force for the crowding alarm function, since they are assumed as enhancing the revolutionary potential: they have the know-how of how PTs are running as well as the ambition to rule a PT.

Ad 4) Ruling demand and budget of the PT system. The budget of the PT is particularly dependent on the ruling demand, however limited by a ceiling, when a threshold of maximum overdebt is reached.

The ruling demand of a PT is specified by the number of involvement in activities. These are specified by the number of contacts within the PT system. The demand per activity is calculated by a linear combination of a minimum and a maximum demand per interaction. While the minimum demand is simply a constant, the maximum demand is to denote *conflict* interactions. It is assumed that a certain quota of interactions is of such a kind and that conflict interactions are more costly. If conflicts become more numerous, the so-called hectic state intensity is increasing. It is assumed that in turn conflict interactions are even more frequently when this stress is increasing, what recursively intensifies the hectic state. it

follows that an increasing amount of money and personnel is needed to deal with these conflicts. Thus, again there is an autocatalytic process: increasing number of PT positions yield an increasing hectic state which yields to an increasing demand of PT positions.

Summary. Hence, in principle the model is a *waiting chain model*: In the centre of the model is a waiting chain of career aspirants, which is mostly responsible for the dynamics of the model. However, each sector of the model consists of many interdependent equations, which does not permit to display them in a fashion sufficient for replication within this article (comp. [28, pp. 274-307]). Therefore a simplified graphical illustration might help to identify its main causal structure, Fig. 3.
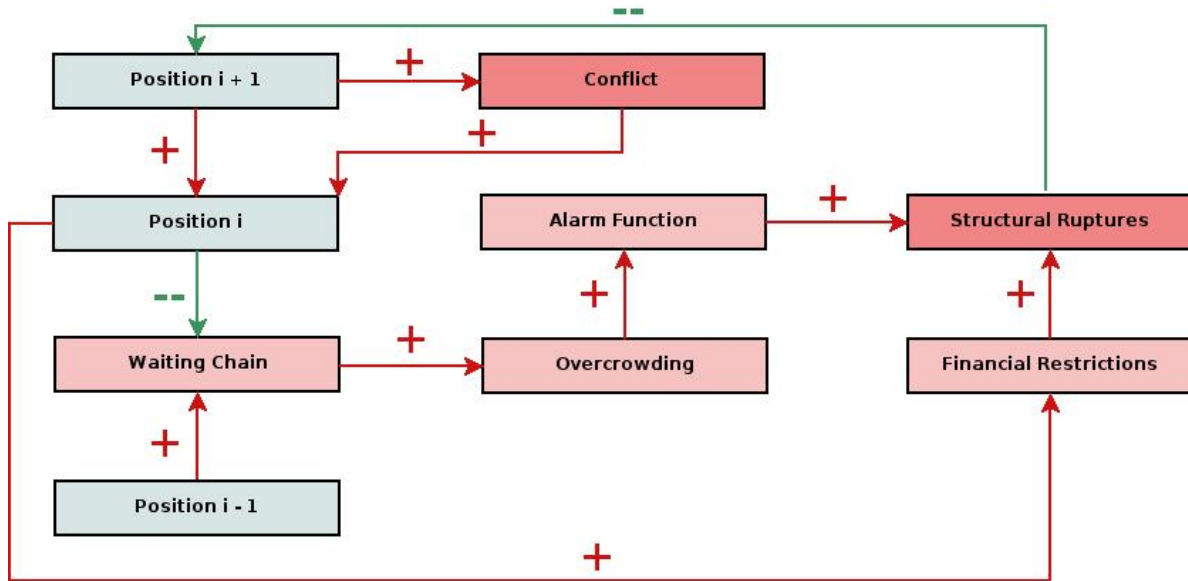

Figure 3. Causal structure of the model.

Hierarchical positions at the hierarchy level i are generated at the above level i + 1. The process of generating positions is amplified by conflicts on the hierarchy level i + 1. The positions at level i are occupied with persons from the waiting chain. Thereby the number of persons in the waiting chain is reduced. The waiting chain is filled with career aspirants from the lower hierarchy level i – 1. If the maximum capacity of the waiting chain is reached, the overcrowding of the waiting chain activates an alarm function. This alarm function enhances the value of a structural rupture register function. A further input for this register function comes from financial restrictions. The financial demand is caused by the positions at level i: the more positions exist the greater is the financial demand. If a certain threshold of the structural rupture register function is reached, the function is activated which destroys the top hierarchy level i + 1.

Simulation results

The dynamics of the model is mainly driven by the two autocatalytic processes which result in a strongly growing PT system: These are processes implemented in the sector of the personnel of PTs and in the hierarchical operational mechanisms:

- PT growth → waiting chain growth → PT growth
- PT growth → increase conflict interactions → PT growth

The growth of the PT system leads to a strongly growing financial demand. This can be financed by two means: through growth of GNP and through debt. Since in the long run the growth of GNP has to be extreme high to fulfil the demand of the PT system, after a while the

PT system turns into a mode of debt financed growth. Then the structural rupture register function is activated. After a structural rupture the register function relaxes to zero.

As a result of the decline, however, the positions on the top level are destroyed and, consequently, the persons inhabiting these positions are thrown into the waiting chain and again the process starts from the beginning.

Empirical evidence

Obviously, the decline of former Yugoslavia can be described as a decline of a hierarchy level. The Federal Republic of Yugoslavia collapsed into its pre-existing constituting parts. This process was enforced by political leaders with a high revolutionary potential: for example, during Tito's regime, Franjo Tudjman (1922-1999), from 1992 until his death the first president of Croatia, had already been in prison in the 1970s and the 1980s due to so-called nationalist agitation [12]. However, the qualitative analogies go even further: the constitution of 1974 can be regarded as a PT partition, as described by the model. This constitution describes the republics as states and even gives regions like Kosovo and Vojvodina more autonomy [37]. Therefore political aspirants can be satisfied with PT positions in these regions. Also two phases of PT growth can be distinguished in former Yugoslavia: The successful 1960s which was a phase financed by GNP growth can be distinguished from the time of the 1980s which was characterised by growing debts. Thus, even though the model was not intentionally developed to cover the events in former Yugoslavia, the theoretical assumptions underlying the model are in fact confirmed by them.

OUTLINE OF A THEORETICAL FRAMEWORK

Both aspects of ethnic mobilisation and hierarchy decline can be observed in the history of former Yugoslavia: On the one hand, there was a decline of the Federal Republic into smaller units along pre-existing borderlines of a lower hierarchy level. On the other hand, one of the central driving forces behind this process was the mobilisation of ethnic identities. Hence, empirical evidence suggests, that these models capture some relevant aspects of the processes which had to be observed in the former Yugoslavia. But how are these aspects related to one another?

In the model of ethnic mobilisation the ethnic appeals are given as external facts. No analysis is made regarding where these appeals come from. Hence, obviously the question cannot be posed why they are given at all. On the other hand, the model of hierarchy decline is blind to the borderlines of the decline. This is due to the fact that the competence fields are not specified in the model. Thus, no conditions of success or failure can be identified. Hence, it appears to be reasonable to regard both models as complementary in 'some way'.

However, both models are concerned with stylised facts; they do not represent a concrete target system [38]. Firstly, this is due to the overwhelming complexity of social reality, which cannot be represented by a simulation model. In contrast to models based on first principles (at least rhetorically) the actual state of the social sciences does not allow for reliance on some simple laws representing the complexity of their target system [38, 39]. Hence, it has to be questioned in what respect, i.e. in what 'way' they can be compared: Since the empirical facts cannot serve as a rule to compare models of stylised facts, there is no measure available to judge the validity of these models in a straightforward manner. Yet, the notion of stylised facts implies what can be called a proto-theory: in principle, a stylised fact is a shorthand for a theory taken from everyday knowledge. Thus, it is plausible to identify the theoretical framework behind the stylised facts. A theoretical structure will therefore be developed which is able to relate both models in a common theoretical framework. Within such a framework it is possible to identify which questions are posed and answered by the models

and which are left open by them. Hence, such a theoretical framework is a precondition to relate isolated models of stylised facts to one another insofar as this theoretical framework can serve as a rule: instead of comparing the models directly, firstly the theoretical topic with which the models are concerned will be identified and then these theoretical topics can be compared to relate the modelled stylised facts to one another. It thus becomes possible to identify the extend to which the models' behaviour factually intersects.

DECISION CENTRES AND MASS PHENOMENA

In fact, the targets of the models can be distinguished by the way they are generated as well as by their functional relevance within social processes.

In a first step, a more formally oriented differentiation will be introduced of how some output data Y is generated to reflect the difference between the models [40]: it may result from a sequence of processes which, in principle, can be divided into two categories. It may result as a consequence of a process in a social decision centre or it may result as an aggregate of a sum of individual processes, thus, it may be a social mass phenomenon. Decision centres are social units whose reactions constitute instances of concentrated influences [41]. The concentration can be identified by the relationship between the number of specific reactions and the number of actors producing these reactions. Examples may be war between nation states or the building of motorways [40]. For instance, if the president of the United States declares war, this is a decision of an individual person. Yet it can affect – in principle – the whole human race. If no such influence concentration can be observed, the socially generated data has to be regarded as mass phenomena. Examples of mass phenomena are income distributions, language or a traffic jam. Every statistical aggregate is a mass phenomenon. Hence, in principle, socially generated data Y is the set union of the set of mass phenomena and phenomena caused by decision centers:

$$Y = \{Y_{DC}\} \cup \{Y_{MASS}\} \tag{4}$$

With regard to the models, this distinction leads to the following formal classification of the models:

- In the model of ethnic mobilisation no influence concentration is implemented. Of course, the agents are highly determined by the ethnic appeals they receive. However, these appeals are not ascribed to an individual actor. Thus, the model describes a mass phenomenon, since ethnic mobilisation is a social phenomena only insofar as it appears as a mass phenomenon.

- On the contrary, the existence or the decline, respectively, of hierarchies is not a mass phenomenon. Hierarchies can be regarded as mechanisms for collective decisions, i.e. as a decision centre. Hence, the model of hierarchy decline is concerned with operational mechanisms of decision centres.

Thus, as a first result, the models can be identified as models of mass phenomena and decision centres, respectively. This distinction leads to a first more formally oriented conclusion of how the processes described by the models can be differentiated.

However, the next sociological question is under what circumstances mass phenomena and processes within decision centres are related to one another. Obviously, many operations of decision centres do not cause mass mobilisation. On the other hand, not every mass phenomenon concerns competence fields of PTs and will in turn enhance the probability of conflict interactions. For instance, the mass phenomenon of smoking has caused operations within decision centres only in the last decade. Hence, the question remains: when do both levels affect each other? This leads to the question of what are the material social conditions at work

behind these two phenomena. What is the causal mechanism to connect decision centres and mass phenomena? Hence, the question of their functional relevance has to be addressed.

INSTITUTIONS AND POSITIONS

On the one hand, the mass phenomenon of ethnic identity is a predisposition for social orientation, directing social action. This refers to the notion of the homo sociologicus [42]. Hence, ethnic mobilisation can be regarded as an example of the enforcement of a social institution [43, 44]. Although a detailed examination of the sociology of institutions cannot be undertaken [45, 46], some key elements can be highlighted: these are elements of sociality within the individuals, which can be regarded as the non-contractual elements in the social contract [47]. They can be regarded as an element of sociality in the brains of the individuals. It is claimed that institutions are necessary to regulate social interaction in a way that people are able to interpret and enable them to react to other actors' behaviour. Hence, institutions create stable behaviour patterns. Ethnicity provides a means for the formation of such forms of stable behaviour patterns. People can create a personal identity by relying on their ethnicity: ethnicity provides a social role for individuals [48]. Moreover, it enables people to structure their world view insofar as it provides a means for the inclusion and exclusion of other people in a commonly shared way. Hence, ethnicity is an institution to regulate social interaction.

Now, let us ask what kind of phenomena decision centres are: hierarchically organised decision centres can be regarded as formal organisations. Yet, a comprehensive review of the sociology of organisations cannot be the task of this article (compare e.g. [49, 50]). However, a central feature of formal organisations is that the legitimisation of social relations is organised by a membership relation [51]. Following Peter Blau [52], it will be proposed to conceptualise the difference between membership and non-membership in a decision centre as the distribution of a population among social positions. This is because social structure "nearly always includes the concepts that there are differences in social positions, and that there are social relations among these positions" [52, p. 27]. Undoubtedly, social positions influence people's social relations, but they have to be distinguished from mere interaction. At different times the same position can be inhabited by different people. By the establishment of social positions, society faces the individuals. Inhabiting positions in formal organisations enables individuals to distinguish between official duties and private life [51]. Note, that the creation of position and the struggle of individuals to gain positions are the core process of the model of hierarchy decline. Thus, it is a model of the dynamics inherent in organisational positions. To sum up:

a) Hierarchies, on the one hand, are operational mechanisms of decision centres, constituted by social positions.

b) Ethnicity, on the other hand, as a mass phenomenon is a social institution, directing individual actions as their precondition.

Yet the question remains, as to how they are related: empirically, the phenomena of hierarchy decline went alongside ethnic mobilisation. However, the extend to which the behaviour of the models intersects must be theoretically deduced. It will therefore be theoretically demonstrated that, in fact, institutions and organisations have a causal power on each other.

THE THEORETICAL LINK

Thus, the stylised target systems of the two models can be distinguished by the way they are generated as well as by their functional relevance. However, the question remains of how they are linked together: when do mass phenomena and decision centres affect each other. Such a link would enable to integrate sociological theories of institutions and organisations.

1) *The input of the model of hierarchy decline for the model of ethnic mobilisation*

On the one hand, it is a plausible assumption, that the appeals that the agents receive in the model of ethnic mobilisation are caused by decision centres. Obviously, this was the case in former Yugoslavia. Their analysis is left open in the model of ethnic mobilisation. Note, however, that the degree of mobilisation drops to zero in the absence of ethnic appeals. Therefore appeals and, in turn, the existence of decision centres is of central relevance for the reinforcement of the social institution of ethnic identity. The absence of ethnic appeals can explain the long period of peace in former Yugoslavia. The MUE & HIER model provides an explanation for their appearance. The frequency of ethnic appeals can be explained by the length of the waiting chain of career aspirants. The frequency of appeals should increase with the length of the waiting chain, because career aspirants (the persons in the waiting chain) might gain advantages if they can be identified as a representative of a social institution like ethnic identity. This might help explain the rise of the number of political entrepreneurs in the specific situation of Yugoslavia in the late 1980s and early 1990s. Namely, the precarious economic situation of the 1980s did not allow for the creation of a sufficient number of positions to satisfy career aspirants, i.e. an overcrowding of the waiting chain has to be expected.

2) *The input of the model of ethnic mobilisation for the model of hierarchy decline*

On the other hand, according to the model of hierarchy decline, a precondition for the operation of decision centres is the existence of a competence field. The specification of competence fields, however, is left open by the model. This is what the model of ethnic mobilisation is about. To be regarded as competent, a decision centre has to possess defining power over a specific topic. However, the topic cannot be arbitrary. For instance, people would not ascribe any competence to a political leader appealing to condemn, e.g. red-haired people (at least nowadays). The propensity, to be regarded as important, increases if a competence field refers to a social institution. Ethnicity provides such an institution. Thus, the notion of a competence field links decision centres to mass phenomena of social institutions like ethnicity. This might help explain the concrete nature of the appeals of the political entrepreneurs. Insofar as they have to find a competence field, it might be an advantage for them to appeal to institutionally deep-seated patterns of social orientation like ethnic identity. The degree of mobilisation can be regarded as a measure of their success. Note, for instance, that the parents of Slobodan Milosevic were Montenegrins and that his brother Bora made a political career as a Montenegrin.

In conclusion, the relation between institutions and organisations can be described by the analogy of a *lock and key*: a social institution like ethnic identity provides a possible competence field for decision centres. Since the existence of a competence field is a necessary precondition for the operation of decision centres, institutions may be regarded as a lock for the success of a decision centre; namely insofar as appeals from decision centres have to match a social institution like a key has to match a lock. The metaphor of a lock is used to denote that institutions play a 'passive role': obviously, they are not a social actor.

Conversely, decision centres possess the power to reinforce a social institution like ethnicity (for instance, by sending ethnic appeals). In fact, this is reflected in the model of ethnic mobilisation by the assumption that ethnic mobilisation drops to zero in the absence of ethnic appeals. Thus, decision centres are the key to call into being the social institution of ethnic identity, and, in turn, processes of ethnic mobilisation. The metaphor of a key is used to denote that organisations are a social actor, they play the 'active role'.

Hence, this theoretical framework allows us to show where the behaviour of the models intersects: Namely, the appeals in the model of ethnic mobilisation may be generated by the

model of the decision centres while the competence fields in the model of hierarchy decline may be defined by the model of the mass-phenomenon of mobilisation. The success in establishing a competence field can be measured by the degree of mobilisation. The formal structure of a model docking can be described as in Figure 4.
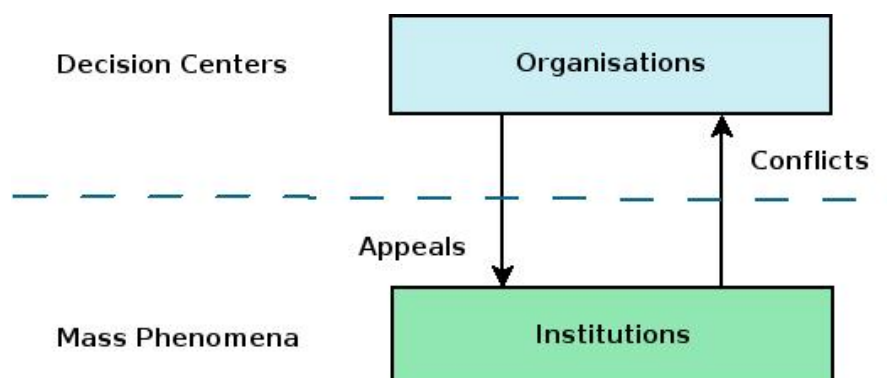

Figure 4. Causal interaction of the models.

Decision centres have to be regarded as possessing a competence field. This is a precondition for their succesfull operation: it is the legitimisation for the positions in the PT. To be regarded as competent, they can send appeals. These may be successful if they address social institutions. Note, that a competence field may not necessarily be ethnicity. The frequency of ethnic appeals may be determined by the length of the waiting chain. In particular, waiting chain overcrowding might increase the number of appeals. Thus, career aspriants are the main driving force. This in turn leads to a reinforcement of an institution. Yet, the competition between decision centres to be regarded as representing an institution may cause conflict interactions between the decision centres. Note, that the degree of conflict interactions already serves as an input for the structural rupture register function, which determines the stability of the organisational system. However, in the model it not specified what the conflicts are about. This can be specified by a model of the mass-phenomenon of mobilisation. Thus, the degree of ethnic mobilisation may be used as an input for the calculation of conflict interactions.

EPISTEMOLOGICAL FRAMEWORK

Finally, this investigation shall be brought to an end with some remarks on the epistemological perspective opened up by these considerations: Theoretically, the model-to-model analysis opens a perspective on theories of the relation between culture and politics and the related question of social constructivism: following Cederman [53], 3 theories of the relationship between culture and politics can be distinguished. An essentialist, an instrumental-constructivist, and a limited-constructivist approach. The essentialist approach stresses the role of the cultural 'raw material'. Hence, ethnicity is assumed as given and "each ethnic core produces a political identity more or less straightforwardly" [53]. The constructivist approaches, on the contrary, emphasize the active role of politics in the formation of ethnic identities by manipulating cultural symbols. According to the instrumentalist-constructivism the causal chain goes from politics to culture, which is seen more or less as an epiphenomenon. The limited-constructivist approach, however, sees the relation between culture and politics as a complex feedback structure: political actors do shape the cultural material, but they are limited in their freedom of choice.

The two models under consideration implement a mechanism [54, 55] of such a feedback loop: On the one hand ethnicity is a pre-given fact in the model of ethnic mobilisation. Thus, this

assumption is in contrast to an instrumentalist-constructivist approach. Nevertheless, the degree of mobilisation is open for political manipulation by the means of ethnic appeals. These appeals can be analysed by the means of the model of hierarchical operational mechanisms: PTs are successful if they can find a competence field. This means that they have to send some forms of appeals to prove their competence. This is a constructivist perspective since they have the ability to manipulate cultural symbols. However, they can be more or less successful. In particular, their chance to be successful enhances if they can point to social institutions. These institutions can be regarded as the cultural 'raw material', which limit the freedom of manipulating cultural symbols. Thus, the integration of the two models, i.e. the methodological approach of a model-to-model analysis, turns out to be relevant for the epistemological foundations of social theory: namely, it suggests a limited-constructivism by demonstrating possible mechanisms of a feedback loop between voluntary political action and cultural conditions.

CONCLUSION AND PERSPECTIVE

The considerations developed in this paper can only be regarded as a brief outline and are by no means a comprehensive investigation of either the empirical or the theoretical background of a political sociology. Moreover, no direct political advice could be expected from this more fundamental research. However, it enables a methodological and a theoretical clarification as well as it helps for a conceptual integration of the different explanations of the inter- and intra state wars in former Yugoslavia:

1) Firstly, due to the fact that Artificial Societies describe stylised facts, this model-to-model analysis is only possible by explicitly enfolding the theoretical dimensions behind the everyday theories of stylised facts. Theoretical considerations provide a tool for relating models concerned with seemingly diverse phenomena. Thus, at this point the theoretical considerations developed in this paper serve as an input for methodology.

2) On the other hand, also social theory profits from this methodological research. Insofar as simulation models allow for a formal docking of models, they should also allow for a theoretical discourse: commonly, theories concerned with cultural phenomena on the one hand and political theories on the other hand, or more general theories of social micro- or macro phenomena, respectively, employ a highly different language. It is therefore no trivial task to undertake a comparative theory analysis. However, by using simulation models, a common language can be elaborated within which it seems possible that the theories from both levels could benefit from findings on the other level. In principle, it should be possible that both models could import and export data to a common software frame: On the one hand, the model of hierarchy decline could export data about the length of the waiting chain. This data could be utilised to calculate the appeal frequency that could be imported by the model of ethnic mobilisation. Note that appeals are given externally in this model anyway. On the other hand, the model of ethnic mobilisation could export data about the average degree of mobilisation. This data could be imported by the model of hierarchy decline to calculate the degree of conflict interactions. Note that these are given as a simple quota and are not calculated internally in the original model. Along these lines, the model-to-model analysis could allow for the conceptual integration of social theory. In particular, a sensitivity analysis might allow for an investigation of the recursive impact of the two levels of social theory (which are at the backdrop of the stylised facts of the models) on each other.

3) Moreover, it has been pointed out, that the different explanations of the empirical phenomenon of the series of intra- and inter-state wars all contribute to an understanding of different aspects of the phenomenon. The model-to-model analysis allows for a conceptual integration of those explanations highlighting internal conditions: The *first*

explanation outlined in the section about the empirical background was that the decline of Yugoslavia was driven by wilful political action. This can be explained by the model of hierarchy decline: namely, an overcrowding of the waiting chain with career aspirants suggests a high probability of aggressive political action. However, the possibility of PTs to generate positions, which could prevent such an overcrowding is dependent on financial restrictions. This refers to the *third* explanation: precarious economic circumstances. Thus, the model of hierarchy decline might help to integrate these two explanations: why aggressive political actors emerge at a given time. By the model of ethnic mobilisation the cultural borderlines of the conflict can be taken into account. This was the *forth* explanatory mode. This model explains why aggressive political actors where successful with propagating a nationalist ideology. Hence, except for the international situation the two models provide a framework to integrate the internal conditions that where proposed to explain Yugoslavia's disaster.

ACKNOWLEDGMENTS

REFERENCES

[1] Srbljinovic, A.; Penzar, D.; Rodik, P. and Kardov, K.: *An Agent-Based Model of Ethnic Mobilisation.*
     Journal of Artificial Societies and Social Simulation **6**(1), 2003,
     http://jasss.soc.surrey.ac.uk/6/1/1.html,

[2] Mimkes, J.: *Society as a many-particle system.*
     Journal of Thermal Analysis and Calorimetry, **60**(3), 1055-1069, 2000,

[3] Mimkes, J.: *Binary Alloys as a Model for the Multicultural Society.*
     Journal of Thermal Analysis and Calorimetry **43**(2), 521-537, 1995,

[4] Lim, M.; Metzler, R. and Bar-Yam, Y.: *Global Pattern Formation and Ethnic/Cultural Violence.*
     Science **317**(5844), 2007,

[5] Hales, D.; Rouchier, J.; Edmonds, B.: *Model-to-Model Analysis.*
     Journal for Artificial Societies and Social Simulation **6**(4), 2003,
     http://jasss.soc.surrey.ac.uk/6/4/5.html,

[6] Gilbert, N.; Troitzsch, K. *Simulation for the Social Scientist.*
     Open University Press, Buckingham, 1999,

[7] Cioffo-Revilla, C. and Gotts, N.: *Comparative Analysis of agent-based Social Simulations: GeoSim and FEARLUS models.*
     Journal of Artificial Societies and Social Simulation **6**(4), 2003,
     http://jasss.soc.surrey.ac.uk/6/4/10.html,

[8] Axelrod, R.: *A model of the emergence of new political actors.*
     In Gilbert, N. and Conte, R. (eds.): Artificial Societies. UCL Press, London, 1995,

[9] Cederman, L.: *Emergent actors in world politics: how states and nations develop and dissolve.*
     Princeton University Press, Princeton, 1997,

[10] Cederman, L. and Weidemann, N.: *GeoContest: Modelling Strategic Competition in Geopolitical Systems.*
In Troitzsch, K. (ed.): Representing Social Reality. Pre-Proceedings of the Third Conference of the European Social Simulation Association. Fölbach, Koblenz, 2005,

[11] Schieder, T.: *Nationalismus und Nationalstaat. Studien zum nationalen Problem im modernen Europa.*
Vanderhoeck & Ruprecht, Göttingen, 1992,

[12] Smith, A.D.: *The ethnic origins of Nation.*
Blackwell, Oxford, 1986,

[13] Trotha, T. von: *Perspektiven der politischen Soziologie.*
Soziologie **35**(3), 283-302, 2006,

[14] Calic, M.: *Der Krieg in Bosnien-Hercegovina: Ursachen, Konfliktstrukturen, Internationale Lösungsversuche.*
Surkamp, Frankfurt a. M., 1995,

[15] Djuric, R. and Bengsch, B.: *Der Zerfall Jugoslawiens.*
Morgenbuch Verlag, Berlin, 1992,

[16] Roggeman, H.: *Krieg und Frieden auf dem Balkan.*
Arno Schmitz, Berlin, 1993,

[17] Melic, D. (ed.): *Der Jugoslawien Krieg: Handbuch zu Vorgeschichte, Verlauf und Konsequenzen.*
Westdeutscher Verlag, Opladen, 1999,

[18] Oether, S.: *Völkerrechtliche Rahmenbedingungen und die Staatengemeinschaft.*
In Melic, D. (ed.): Der Jugoslawien-Krieg. Handbuch zu Vorgeschichte, Verlauf und Konsequenzen. Westdeutscher Verlag, Opladen, 1999,

[19] Lutz, D. (ed.): *Der Krieg im Kosovo und das Versagen der Politik.*
Nomos, Baden-Baden, 2000,

[20] Silber, L. and Litte, A.: *Yugoslavia: Death of a Nation.*
Penguin Books, New York, 1997,

[21] Woodward, S.: *Balkan Tragedy: Chaos and Dissolution after the cold war.*
The Brooking Institution, Washington D.C., 1995,

[22] Djekovic, L.: *Der kurze Atem der Selbstverwaltung: Eine Volkswirtschaft zwischen Dauerkrise und gescheiterten Reformen.*
In Furkes, J. and Schlarp, K.H. (eds.): Jugoslawien: Ein Staat zerfällt. Reinbeck, Hamburg, 1992,

[23] Colovic, I.: *Die Erneuerung des Vergangenen.*
In Stefanov, N. and Werz, M. (eds.): Bosnien und Europa: Die Ethnisierung der Gesellschaft. Fischer, Frankfurt a.M., 1994,

[24] Colovic, I.: *Symbolfiguren des Krieges. Zur politischen Folklore der Serben.*
In Melcic, D. (ed.): Der Jugoslawien-Krieg: Handbuch zu Vorgeschichte, Verlauf und Konsequenzen. Westdeutscher Verlag, Opladen, 1999,

[25] Tokic, S.: *Etnische Ideologie und Eroberungskrieg.*
In Stefanov, N. and Werz, M. (eds.): Bosnien und Europa: Die Ethnisierung der Gesellschaft. Fischer, Frankfurt a.M., 1994,

[26] Zanic, I.: *Das politische Imaginarium der kroatischen Nationalgeschichte.*
In Melcic, D. (ed.): Der Jugoslawien-Krieg. Handbuch zu Vorgeschichte, Verlauf und Konsequenzen. Westdeutscher Verlag, Opladen, 1999,

[27] Lampe, J.: *Yugoslavia as History: Twice there was a country.*
Cambridge University Press, Cambridge, 1996,

[28] Cudic, S.: *Multikulturalität und Multikulturalismus in Bosnien-Herzegowina.*
Peter Lang, Frankfurt a.M., 2001,

[29] Bremer, Th.: *Die Religionsgemeinschaften im ehemaligen Jugoslawien.*
In Melcic, D. (ed.): Der Jugoslawien-Krieg. Handbuch zu Vorgeschichte, Verlauf und Konsequenzen. Westdeutscher Verlag, Opladen, 1999,

[30] Katicic, R.: *Jugoslawien im Lichte seiner Sprachen.*
In Melcic, D. (ed.): Der Jugoslawien-Krieg. Handbuch zu Vorgeschichte, Verlauf und Konsequenzen. Westdeutscher Verlag, Opladen, 1999,

[31] Müller, N.: *Civilisation Dynamics.* Vol II.
Aldershot, Avebury, 1991,

[32] Szayna, T.A. (ed.): *Identifying Potential for Ethnic Conflict: Application of a Process Modell.*
RAND, Santa Monica, 2000,

[33] Moore, W.H. and Jaggers, K.: *Deprivation, Mobilisation, and the State: A synthetic Model of Rebellion.*
Journal of Developing Societies **6**(1), 17-36, 1990,

[34] Axelrod, R.: *The Complexity of Cooperation: Agent-Based Models of Competition and Collaboration.*
Princeton University Press, Princeton, 1997,

[35] Hammond, R.: *Endogenous Transition Dynamics in Corruption: An Agent-Based Computer Model.*
Center of Social and Economic Dynamics Working Paper, 2000,
http://www.brook.edu/es/dynamics/papers/ross/ross.pdf,

[36] Müller, N.: *Civilisation Dynamics*. Vol I.
Aldershot, Avebury, p.30, 1989,

[37] Meier, V.: *Der Titostaat in der Krise. Jugoslawien nach 1966.*
In Melcic, D. (ed.): Der Jugoslawien-Krieg: Handbuch zu Vorgeschichte, Verlauf und Kosequenzen. Westdeutscher Verlag, Opladen, 1999,

[38] Heine, B.; Meyer, M. and Strangfeld, O.: *Stylised Facts and the Contribution of Simulation to Economic Analysis and Budgeting.*
Journal for Artificial Societies and Social Simulation **8**(4), 2005,
http://jasss.soc.surrey.ac.uk/8/4/4.html,

[39] Küpper, G.; Lennhard, J.: *Validation of Simulation: Patterns in the Social and Natural Sciences.*
Journal for Artificial Societies and Social Simulation **8**(4), 2005,
http://jasss.soc.surrey.ac.uk/8/4/3.html,

[40] Müller, N.: *Real Structure Modelling: a methodology for the description of large-scale social units.*
Social Science Information **24**(3), 603-624, 1985,

[41] Lenski, G.: *Power and Privilege.*
McGraw-Hill, New York, 1966,

[42] Dahrendorf, R.: *Homo Sociologicus. Ein Versuch zu Geschichte, Bedeutung und Kritik der Kategorie der sozialen Rolle.*
Westdeutscher Verlag, Opladen, 1953,

[43] Durkheim, E.: *Regeln der Soziologischen Methode.*
Luchterhand, Neuwied, 1961,

[44] Durkheim, E.: *Erziehung, Moral und Gesellschaft.*
Luchterhand, Neuwied, 1973,

[45] Schülein, J.: *Theorie der Institution.*
Westdeutscher Verlag, Opladen, 1987,

[46] Esser, H.: *Soziologie: Spezielle Grundlagen Bd. 5.*
Campus, Frankfurt a.M., 2000,

[47] Parsons, T.: *The Structure of Social Action.*
Free Pres, Glencoe, 1937,

[48] Goffman, E.: *Wir spielen alle Theater. Die Selbstdarstellung im Alltag.*
Piper, München, 1969,

[49] Drepper, T.: *Organisation der Gesellschaft.*
Westdeutscher Verlag, Wiesbaben, 2003,

[50] Mayntz, R. and Scharpf, F. (eds.): *Gesellschaftliche Selbstregulierung und politische Steuerung.*
Campus, Frankfurt a.M., 1995,

[51] Luhmann, N.: *Funktion und Folgen formaler Organisationen.*
Duncker & Humblot, Berlin, 1964,

[52] Blau, P.M.: *A Macrosociological Theory of Social Structure.*
American Journal of Sociology **83**(1), 26-54, 1977,

[53] Cederman, L.: *Nationalism and Bounded Integration: What it would take to construct a European Demos.*
European Journal of International Relations **7**(2), 139-174, 2001,

[54] Mayntz, R.: *Mechanisms in the Analysis of Social Macro-Phenomena.*
Philosophy of the Social Sciences **34**(2), 237-259, 2004,

[55] Bunge, M.: *How does it work? The search for explanatory mechanisms.*
Philosophy of the Social Sciences **34**(2), 182-210, 2004.

KOMPLEKSNOST SOCIJALNE STABILNOSTI: ANALIZA RASPADA JUGOSLAVIJE POMOĆU MODELĀ

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SAŽETAK

U radu je opisana analiza modelā u kojoj se uspoređuju model etničke mobilizacije s modelom raspada hijerarhije. Ti modeli nisu postavljena za jednaku, ili sličnu svrhu, ali su empirijski povezani: raspad federativne republike Jugoslavije većinom je uzrokovan etničkom moblizacijom. Ovo je općenitija situacija i nije vezana samo uz ovaj posebni slučaj. Zbog toga oba modela mogu biti razmatrana kao povezani aspekti jednog društvenog procesa. Međutim, budući da ni jedan model ne opisuje konkretni nego stilizirani sustav, ne možemo ih izravno uspoređivati s podacima. Umjesto toga, u ovom je radu postavljen teorijski okvir: na temelju razlikovanja masovnih pojava i središta odlučivanja, etničku mobilizaciju može se promatrati kao masovnu pojavu, dok je raspad hijerarhije vezan uz društvena središta odlučivanja. Dok masovne pojave postaju djelotvorne uključivanjem institucija, radni uvjeti za središta odlučivanja je uspostava društvenih pozicija. Relacija navedenih pojava slikovito je opisana na način koji omogućava zaključivanje vezano uz društvene pojave i emprijska objašnjenja.

KLJUČNE RIJEČI

analiza modelā, politička sociologija, komparativna sociologija