Growing *qawms*: A case-based declarative model of Afghan power structures

Armando Geller and Scott Moss

Centre for Policy Modelling, Manchester Metropolitan University Business School
Aytoun Building, Aytoun Street, Manchester, M1 3GH, United Kingdom
{armando, scott}@cfpm.org

Abstract. By means of evidence-based and declarative social simulation we grow *qawms*. *Qawms* denote solidarity networks in Afghanistan. They are dynamic social modules that contribute to the establishment of social structure. The study of *qawms* lends insight into the structural and processual dynamics of Afghan society. In particular we concentrate on the evolution of power structures. A computational model is presented whose ontology is based on a notion of power structures traceable in contemporary conflicts. The model's agent behaviour, however, is informed by qualitative data derived from case studies on Afghanistan and, in terms of cognition, by the conception of endorsements. Our preliminary findings suggest – in accordance with existing case-studies – that actors are deemed if they are isolated, but perform strong if they are socially embedded and act according to the principles of neo-patrimonial behaviour.

Keywords: Afghanistan, anomie, critical realism, declarative modelling, evidence-based social simulation, neo-patrimonialism, power structures.

1 Introduction

We computationally grow *qawms*. *Qawms* denote (opportunistic) solidarity networks in Afghanistan. They can be perceived as dynamic modules based on actor interconnectedness which generate social order. Because *qawms* permeate all different spheres of Afghan social life, their analysis allows multidimensional insight into a conflict-torn society. We are particularly interested in the formation of power structures amongst Afghan stakeholders, for whom *qawms* are a means to acquire, maintain and increase power. It is in this respect the notion of neo-patrimonialism is pivotal to our understanding of power. Although neo-patrimonialism has been identified as an important organisational principle in contemporary conflicts (cf. [1], [3], [21], [22]), it has been routinely ignored in model-based approaches to conflict analysis.

The methodological approach we apply is evidence-based and declarative multi-agent social simulation. It is evidence-based because agent behaviour is informed by qualitative data derived from case studies and interviews conducted in Afghanistan; it

is declarative because of a descriptive – in contrast to imperative – implementation of the evidence-based agent behaviour.

There are three reasons such a research design has been chosen. i) Statistical data is either scarce or unreliable in the context of contemporary conflicts, constraining the scope of applicable methodological tools. ii) A variety of social phenomena exhibit characteristics which can be labelled as complex, a condition in which agent behaviour and social interaction combine to generate macro level outcomes that firstly could not be predicted from knowledge of the behaviour and nature of interactions alone and secondly result in sporadic volatile episodes the timing, magnitude, duration and outcomes of which are themselves unpredictable [2]. In the Afghan context, the interactions within *qawms* determine a pattern of actions that could be described as episodic clusters of aggressive activity or even extreme violence. Such *qawm* level behaviour leads to interactions amongst the *qawm* that cause episodic conflicts of unpredictable magnitude, duration and outcome. It is the virtue of agent-based social simulation to analyse such phenomena [5], [8], [10], [14], [17]. iii) Declarative programming supports the use of mnemonic terms resembling natural language terms in which stakeholders describe behaviour, social environments and social interactions.

Our research design is developed against the backdrop of critical realism, a meta-theory compatible with complexity [10]. Social science in the tradition of critical realism focuses on a context-sensitive approach (see also [4]) to agency and structure, the interplay of which leads to emergent phenomena, underlining the generative paradigm of computational social science [26]. The *entrée* for the object of investigation is provided by a well-informed, but intuitional model that serves as a real definition and thus specification to the context-relevant aspects of agency and structure [19] (see sec. 2). Once properly defined, the intuitional model needs to be qualitatively validated to ensure the descriptive accuracy of the computationally implemented processes (agency) and architectures (structure). A construct valid model is expected to yield strong results which can be cross-validated against real world (statistical) data (if available).

This study is expected to be of general interest as a research design is presented that allows for systematic and dynamic but context-sensitive analysis of social phenomena under statistical data scarcity, as for example in conflict-torn societies.

2 Anomie, neo-patrimonialism and Afghanistan

2.1 Power in a deranged order

Power structures are anthropogenic [20]. In conflict regions such as Afghanistan, Chechnya or the Democratic Republic of Congo the anthropogeneity of power has been shown in a variety of studies [3], [21], [22].

Sofsky [28] argued that conflict societies are societies *sui generis*. They function according to their own social laws and are structurally and processually disjointed from societies lacking a comparable degree of organised violence. In conflict-torn societies virtually everything goes. This can be illustrated by the concept of *anomie*.

Anomie is the situation in which the upper and lower normative boundaries for the aspirations of members of a society are thrown awry [7] [11]. An anomic situation emerges when the means to attain a specific goal, such as accumulation of wealth or power, run out of social control [13]. Accordingly, in a space emptied of restricting norms, i.e. an anomie, virtually everything goes – also the creation of power structures to one's own ideas and interests.

Anomic spaces are political spaces lacking strong modern institutions, such as the state's monopoly on organised violence, stability of the law and protection of property rights. In these circumstances only highly adaptive stakeholders prevail. The socio-structural outcomes of this organisational process are manifold and so are the adopted means that serve one's interests.

In contemporary conflict societies this outcome is neo-patrimonialism (cf. [12], [22], [10]). Weber [30] understands patrimonial power as power based on authority, suppressed subjects and paid military organisations, by virtue of which the extent of a ruler's arbitrary power as well as grace and mercy increases. Stakeholders interested in gaining power in contemporary conflict settings have to act neo-patrimonially to accumulate and redistribute monetary and material as well as social resources. The range of related activities is broad and includes corruption, clientelism, patronage, nepotism, praebendism and so forth (cf. [12]).

2.2 A model of *qawm*

Although twenty-seven years of conflict accentuated two important factors in Afghan society, namely ethnicity and religion, the traditional organisational principle of the *qawm* rested sound [23], [25], [27]. Less mentioned, however, is a general decline of norms and values in Afghan society leading to a Hobbesian form of society [29]. Today's Afghanistan is an *anomie*.

The causes for this development are complex, but nevertheless directly linked to the Jihad of 1979 to 1989. Although trends of neo-patrimonial politics are already recognisable in the very beginning of the Jihad – and are indeed a characteristic of Afghan politics throughout history –, the war's proper goals started to mutate with its increasing duration, from throwing out the Soviets to personal enrichment and personal aspiration for power. Some of the adopted means of warfare have been traditional, such as organised violence, intrigue, alliance formation and dissolution; others have been imported, such as religious extremism, radicalisation of ethnicity, corruption and narcotics.

The *qawm* is a dominating feature of Afghan society [23]. Mousavi [18] refers to it as a complex interpersonal network of political, social, economic, military, and cultural relations. Afghan social structure does not take the form of a unified hierarchy and nor does an individual *qawm*. However, each *qawm* has a *primus inter pares* who competes with other *primi inter pares* as well as with *qawm*-internal rivals for manifold reasons [24].

Figure 1 depicts an informed intuitional and idealtypical representation of an Afghan solidarity network or *qawm*. Our notion of *qawm*-based social structure has been informed either by the literature cited above or by data collected by ourselves.

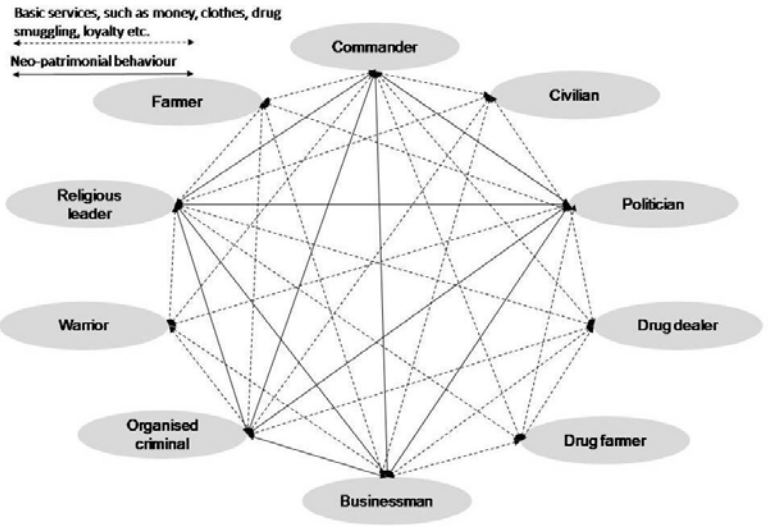

Fig. 1. A case-study informed intuitional model of a *qawm*.

The *qawm*-model consists of ten actor types: politicians, religious leaders, commanders (meritocratic title for a militia leader), businessmen, warriors, civilians, farmers, drug farmers, organised criminals and drug dealers. An important abstraction from reality is that in our model each actor has its distinct role, whereas in reality actors may incorporate a variety of roles. For example a commander can be a (military) commander, a politician and a drug lord at the same time, for which General Mohammed Daud is a good example, a former Deputy Minister of Interior Affairs, Governor of Badakhshan, favourite commander of Ahmad Shah Massud and drug lord. We proxy individual role pluralism by mutual interdependence, i.e. each actor has virtues another actor may be in need of and vice versa, leading to mutual coorporation and interdependence. This, of course, is also a common pattern in reality, where there is no clear distinction between role incorporation and cooperation.

The following examples explain the *qawm*-model in terms of agency. If a politician is in need of military protection, he approaches a commander. In return, a commander receives political appreciation by mere cooperation with a politician. If a businessman wants to be awarded an official construction contract by the government, he relies on a politician's political connections. In return, the politician receives a monetary provision, for example bribes. If a politician wants beneficial publicity, he asks a religious leader for support. The religious leader, in return, becomes perceived as a religious authority. If a warrior seeks protection and subsistence for his family, he lends his services to a commander, who, in return, provides him with weapons, clothes, food and/or money. If an organised criminal wants to carry drugs, he relies on the transport business of a businessman who, in return, receives a share of the drugs sold. If a drug farmer needs protection for his poppy fields, he affiliates with a commander, who, in return, receives a tithe on the drugs sold to a local drug dealer. Our model represents this behaviour.

3 Modelling *qawms*

3.1 Evidence-based and declarative modelling

The evidence on which we base our model is largely qualitative and drawn from case-studies (cf. [1], [9], [18], [23], [24], [25], [27], [29]) or data collected by ourselves during semi-structured interviews with Afghan urban elites between May 2006 and January 2007. Interviewees were motivated to reflect on power. The main reason we rely on rich qualitative data is the lack of reliable statistical data in Afghanistan and other comparable contexts.

Evidence denotes information about the target system that allows to develop a representative model *of* reality. This information stems from case-studies, empirically tested theories *and* interviews with experts and stakeholders. A model is evidence-based if the rules according to which agents behave are directly derived and reified from this information. This presupposes that the data makes concrete declarations of how an actor behaves in a particular social situation. The triangulation of the information sources is vital for the model's validity.

Unlike other simulation approaches, evidence-based modelling pursues construct validity. It is important that the modelled processes and structures resemble the processes and structures identified in the target system. Agent-based models are more than mere input–output models. As demanded by critical realism, they direct a researcher's focus on internal processes (agency) and structures and allow for the analysis of them.

Results are more valid if an evidence-based social simulation's output can be cross-validated [17] and not only "validated" by circumstantial evidence. There are three strategies: i) If models generate statistical output, this output is statistically analysed and the resulting significant signatures are compared with statistical signatures generated from target system data. If the model yields numerical output but no statistical target system data is available, then validation must rely on qualitative data. In this case, validation must ii) either seek systematic structural and processual similarities between the model and the target system or iii) find circumstantial evidence in the target system that can also be found in the simulation. Except for civilian casualties data only ii) and iii) can be applied to our model.

A program is declarative if there are a set of statements on a database, rules have a set of conditions which are statements with some values left open as variables, and consequents exists which are another set of statements. When all of the statements in the conditions of a rule are matched by statements on the database, then the variables are given their specific values from the database statements and the consequent statements are added to the database. When a set of conditions is satisfied and a rule fires (i.e. puts its consequents on the database), then the state of the environment as represented by the database is changed and perhaps other rules will now be able to fire and so on until all rules have fired and no further matches of conditions can be found on the database. The sequence of rules that will fire and the particular values of their variables' instantiations are determined only as the program is running. The sequence of actions represents the process of agent behaviour and leads in each case to a new state of the environment. If all agents are implemented declaratively, then

they will be changing the state of the environment for one another and the pattern of rules and therefore actions of all of the agents taken together will be influenced by one another.

The outcomes for the model as a whole are, in these circumstances, impossible to predict with any exactitude. Frequently, such models exhibit the sort of episodic volatility associated in the first section with complexity. The same effect can be achieved by other means, but declarative representations of agents have a number of virtues in terms of ease of development as new evidence becomes available and in terms of yielding comprehensible outputs stored as statements on the databases.

3.2 Endorsements

As we have implied above, power relations are interactions between at least two actors. The computational implementation of these interactions must be based on certain grounds. This can be knowledge an actor has about another actor; it can also be experiences an actor has made in the past with his environment. Endorsements are a "natural" way of computationally implementing reasoning about this knowledge or experience. As cognitive-behavioural modules they represent within the computational model what has been described in section 2.2 as agency aspects of the *qawm*, i.e. interaction, but need further specification (see below).

Endorsements were introduced by Cohen [6] as a device for resolving conflicts in rule-based expert systems (cf. also [16]). Endorsements can be used to describe cognitive trajectories aimed at achieving information and preferential clarity over an agent or object from the perspective of the endorsing agent himself. We use endorsements exactly in this sense, namely to capture a process of reasoning about preferences and the establishment of a preferential ordering (cf. [15], [17]).

Because endorsements capture an agent's (the endorser) reasoning process about another agent (the endorsee), the information collected by the endorser cannot be identical with the endorsee himself. It is more precise to state that during the endorsement process the endorser's endorsement scheme is projected onto the endorsee. If a commander endorses for example a businessman, he has no base to rate if the businessman is a better Muslim if he is a Sunni or a Shia. But the individual endorsement scheme tells the commander how important it is for himself that the businessman is Sunni or Shia. If this is done for every of the endorsee's attributes, the so called overall endorsement value (E) for the endorsee can be calculated. E allows the endorser to select the preferred endorsee among the endorsees.

The process of endorsing an agent is embedded in an agent's environment, i.e. his neighbouring agents. The endorsement process allows an agent to find the agent most appropriate to *him* – he does not seek the most successful or most reliable of all agents. This implies that the chosen agent may not be preferable to differently embedded agents.

The main advantage in applying the idea of endorsements lies in the fact that they allow for combining the efficiency properties of numerical measures with the richness and subtleties of non-numerical measures of interest or belief.

Based on our interview data and on secondary data, particularly [1], we had to develop an endorsement scheme for an idealtypical "Afghan agent", which, in

principle, had to answer the following questions: When is an agent powerful? How does a powerful agent behave? How does an agent behave towards a powerful agent? Azoy [1] argues that authority depends on *hisiyat*, character, and *e'tibar*, credit. The analysis of our interview data supports this view. Logically, *hisiyat* and *e'tibar* are the dimensions in which an "Afghan agent" reasons about another agent. *Hisiyat* is related to the social embeddedness of an actor. An actor has character if he is of particular kin, religion and/or neighbourhood and can, in case of cultural pattern matching, be trusted. An actor who is creditworthy and has political support disposes of *e'tibar*. *E'tibar* has to do with meritocracy and reliability.

Hisiyat and *e'tibar* can be straightforwardly operationalised. *Hisiyat* are generally intangible endorsements and are attributed at the beginning of the simulation, such as ethnicity, religion or kin. *E'tibar* are generally dynamic endorsements which change their values during the simulation, such as payment or success.

3.3 Model specifications

The simulation is spatially based on a 2D-grid topology, the dimension of which is 30 × 30 cells. Each cell can be inhabited by one agent. The total number of cells are distributed into 4 ethnic regions (Pashtun 40%, Tajik 25%, Uzbek 25%, Hazara 10%).[1] There are ten agent types and a total number of agents of 132: 3 politicians, 3 religious leaders, 3 businessman, 3 organised criminals, 4 commanders, 6 drug dealers, 10 drug farmers, 20 warriors, 30 farmers and 50 civilians. In the beginning of the simulation, each agent is assigned an ethnicity (proportional to the land indices), a religion (Sunni or Shia), a number of kinspersons and a (Moore) neighbourhood. The majority of the land is rural. There is only one city. Rural areas are rather homogeneous in terms of ethnicity and religion, whereas the city is a "multicultural" space. Some agents belong only to rural spaces, such as farmers (drug farmers), some only to the city, such as organised criminals. However, we do not model geographical representation as such and our agents are spatially static.

The overarching model architecture is simple. Everything that has to do with cognition is implemented in Jess, the rest is implemented in Java. For example the decision if a commander wants to invest money with a businessman is coded in Jess. Money transaction and control over assets, by contrast, are coded in Java. Besides the arguments put forth in section 3.1 such an architecture makes efficient use of computational resources. The model makes use of the Repast libraries.

4 Results

We discuss three categories of results. First we describe a commander's "life". Subsequently we refer to the sequence of a single simulation run. Whereas the first two categories address problems of agency, the final category deals with networks and thus with structural aspects of the simulation results.

[1] Numbers and proportions are vague approximations as the size of the Afghan population, something between 20 and 25 million people, is an unreliable and politicised figure.

All data presented is drawn from the same representative simulation run with the abovementioned agent configurations.

4.1 A commander's "life"

A commander behaves according to the rules listed in table 1. The names of the rules are self-explanatory. Other agents have comparable sets of rules.

Table 1. A selection of the set of rules according to which a commander behaves (implemented in Jess). "h" denotes *hisyiat*, "e" denotes *e'tibar*.

Rule
default-daily-payment-commander-to-warrior [e]
commander-endorses-warrior-as-reliable [e, h]
commander-endorses-warrior-as-unreliable [e, h]
commander-endorses-warrior [e, h]
commander-endorses-businessman [e, h]
commander-endorses-politician [e, h]
commander-asserts-trustworthiness-affiliation-with-politician [h]
commander-sends-message-to-answer-politician-protection-request [e, h]
commander-endorses-religious-leaders [h]
commander-sends-message-to-best-endorsed-religious-leader [h]
commander-sends-message-to-answer-religious-leader-spiritual-leader-request [h]
commander-sends-message-to-answer-businessman-protection-request [e]
commander-sends-message-to-accept-businessman-protection-request [e]
commander-invests-money [e]

During the setup of the simulation (time step (tick) 0), a commander (actually commander-1) checks how many warriors he can afford on the basis of his assets. He scans his neighbourhood for warriors, kin and spatial neighbours. He endorses warriors, selects a number of them, offers to hire them and pays those he hires.

In tick 1, the commander endorses several warriors as unreliable and at the same time endorses a number of agents for same religion and ethnicity. He keeps on collecting warriors and pays their salary on a daily basis. He also endorses a politician, a businessman and a religious leader.

In tick 2, the commander mainly collects warriors and pays them. In principal this goes on as long as he has money to pay them.

In tick 3, the commander again endorses a businessman and a religious leader but is not able to affiliate with either of them.

Although commander number 1 is a particular boring commander – at least in this simulation run – we can see clearly how he gradually builds up his neighbourhood, namely by constantly watching the area surrounding him for possible affiliations. If he finds a suitable agent he endorses him and decides on the basis of varying facts – for example ethnicity, religion, kin, reliabilty, trustworthiness – if he wants to affiliate with him. It becomes also obvious that the ability to accumulate and redistribute resources is vital. Commander number 1 will have a hard time, as he is lacking affiliations with businessmen and thus will soon have no more money to pay his warriors on a regular basis. This will characterise him as untrustworthy. As a

consequence he will have even less affiliations leading to a “death” in isolation. As a neo-patrimonial agent commander number 1 failed.

4.2 The sequence of events

We stated above (section 3.1) that the sequence of actions represents the process of agent behaviour, the totality of which represents the course of the simulation and thus the model dynamics. Let us consider the same simulation run, but this time from a macro perspective. Figure 2 represents the number of rules that fired per tick for each type of agent (tick 0 to 20). In total 19983 rules fired during these 20 ticks.

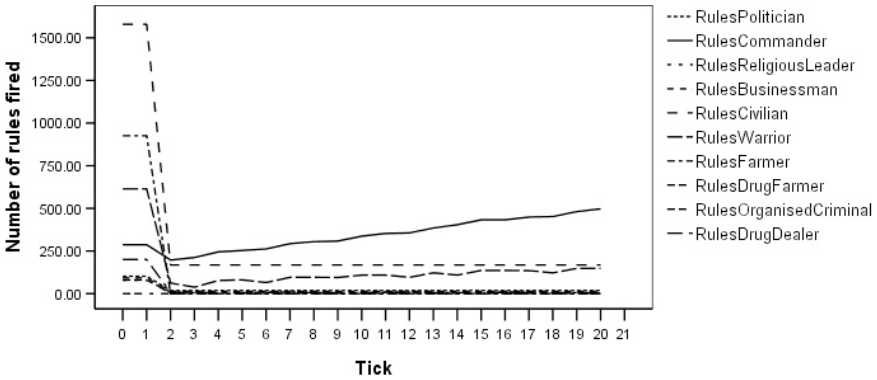

Fig. 2. Number of rules that fired per tick for each type of agent.

In general, figure 2 indicates that the agents, and thus the model, are in constant flux. Between tick 0 and 2 a sharp decline in the number of rules that fire is recognisable. This is not only due to a high number of rules that fire during the model setup in tick 0, but it also mirrors an organisational process. Agents intensively endorse each other and select with whom they want to interact in an initial organisational phase.

After the decline comes to an end in tick 2, two interesting developments occur. On one hand, commanders and warriors start getting very active, while on the other hand the rest of the agents remain in a constant state of action. The frequency of this constant activity is between 18 fired rules per tick for politicians and 0 fired rules per tick for farmers. This result appears to be sensitive to the initial agent distribution and needs to be further explored in upcoming model versions.

Per contra, increasing activity among commanders and warriors indicates, from an agency point of view, the establishment of a dense network among these two types of interacting agents and a cooperation takeoff. This might be a consequence of the model’s initialisation as well as of the number of agents in the model. Naturally, the likelihood of mutual interaction increases with an increasing population density. The effects of both, model setup and population density on mutual cooperation must therefore be analysed in more detail. We expect that other types of agents, for example politicians or religious leaders with civilians, experience similar takeoffs.

4.3 *Qawms* as neo-patrimonial networks

After having discussed the model output in relation to individual and aggregated agency, let us turn now to structural output, i.e. networks. Again, we analyse the same simulation run. Figure 3 depicts a simple network visualisation for our model output. Agents affiliated with each other are linked via a line.

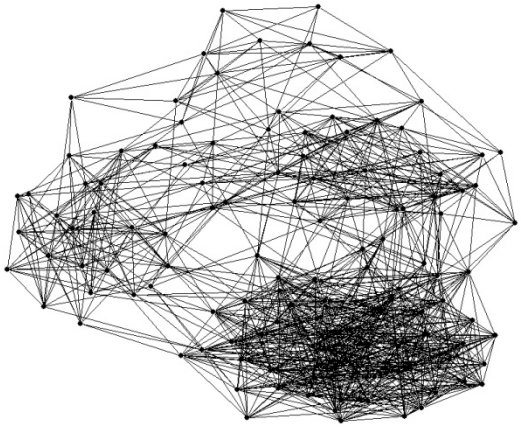

Fig. 3. Network of agents exhibiting three distinct clusters.

Three distinct but nevertheless interconnected clusters of agents are visible in the network. Each cluster consists of a variety of agent types. Agents assumed to be more powerful then others, i.e. politicians, commanders, religious leaders and organised criminals, are prevalent in the two more dense clusters on the right hand side of figure 3. The third cluster on the left consists only of civilians, farmers and warriors. However, there is one exception to this finding, namely the lonely commander number 1 discussed in section 4.1. He can be found rather isolated on the top of the network not embedded in one of the three clusters. It is possible that real centres of power emerge in highly populated areas exhibiting a large variety of agent roles.

The reasons for the evolution of this network of clustered affiliations are manifold: agents affiliate because they share the same ethnicity or religion or because they have established a business relationship or because they seek protection with a commander. But in general, the clusters can be perceived as emergent properties of agent neo-patrimonial behaviour as reified by our agent rules. The model generates data of the sort we expected (see section 2.2) and its output can therefore be considered as representations of *qawms*.

5 Conclusions

This paper is about growing *qawms* computationally. It includes meta-theoretical, contextual and social modelling considerations which have been exemplified by reasoning about critical realism as meta-theory for social simulation, by the introduction of a case-study informed intuitive model of *qawms* and by a conceptual

as well as implementational discussion of an evidence-based and declarative social simulation model and its output. We consider the proposed proceeding to be a feasible and promising general research design for evidence-based social simulation.

Because we cannot provide stringent cross-validational results at this stage of research, our conclusions are preliminary. Nonetheless, section four reports interesting results which indicate processual and structural homology with the target system. In particular, we find neo-patrimonial behaviour is a highly socialised strategy to gain power. Isolated actors are doomed to fail – even if they have the personal potential of becoming powerful. Moreover, neo-patrimonial behaviour requires constant activity. Actors must be continuously aware of potential chances to affiliate with other actors for their own good. This can result in a mutual takeoff-process. Both of these features of the model output are found on the ground in Afghanistan where a strongman is always embedded and where there are constant changes of alliances in hope of positional gains.

The sequence of events referred to in section 4.2 produced a dynamic pattern that resembles the dynamics prevalent in conflict-torn societies, where all-out war is the exception, but constant noise and hard to forecast volatility is the rule [10]. This applies to Afghanistan as well.

Finally, we succeeded in simulating an artificial social structure that resembles *qawms*. Mutual interaction among different types of actors leads to the emergence of a complex organisational structure which contains a number of centres of power which themselves consist of a number of political, economical and military stakeholders cooperating in a limited way. Fuchs [9] reports similar structures in a network analysis of Afghan regional leaders based on qualitative data.

The model presented suggests possible insights into the complexities and evolution of Afghan power structures. It also suggests directions of further qualitative, ethnographic research regarding individual actors, such as spatial movement and conflict behaviour. Finally, the emergent network must undergo an in-depth social network analysis.

Acknowledgements. We would like to thank Sayyed Askar Mousavi for advice in the data collection process, Zemaray Hakimi for his translation and faciliator skills and two anonymous reviewers for their helpful comments. We gratefully acknowledge Shah Jamal Alam's, Ruth Meyer's and Bogdan Werth's modelling support.

References

1. Azoy, Whitney G.: Buzkashi. Game and Power in Afghanistan. 2nd edn. Waveland Press, Long Grove (2003)
2. Bak, P.: How Nature Works: The Science of Self Organized Criticality. Oxford University Press, Oxford (1997)
3. Bayart, J.-F., Ellis, S., Hibou, B.: The Criminalization of the State in Africa. Indiana University Press, Bloomington Indianapolis (1999)
4. Boero, R., Squazzoni, F.: Does Empirical Embeddedness Matter? Methodological Issues on Agent-Based Models for Analytical Social Science. J. of Artificial Societies and Social Simulation. 4 (2005) http://jasss.soc.surrey.ac.uk/8/4/6.html

5. Cederman, L.-E.: Modeling the Size of Wars: From Billiard Balls to Sandpiles. Amer. Pol. Sc. Rev. 1 (2003) 135–150
6. Cohen, P.R.: Heuristic Reasoning About Uncertainty: An Artificial Intelligence Approach. Pitman Advanced Publishing Program, Boston London Melbourne (1985)
7. Durkheim, E.: Suicide. A Study in Sociology. The Free Press, New York [1897] (1951)
8. Epstein, J.: Modeling Civil Violence: An Agent-Based Computational Approach. Proceedings of the U.S. National Academy of Sciences. 3 (2002) 7243–7250
9. Fuchs, C.: Machtverhältnisse in Afghanistan. Netzwerkanalyse des Beziehungssystems regionaler Führer [Power Structures in Afghanistan. A Network Analysis Among Regional Leaders.]. 1992–2004/05. Unpublished M.A. thesis. University of Zurich (2005)
10. Geller, A.: Macht, Ressourcen und Gewalt: Zur Komplexität zeitgenössischer Konflikte, Eine agenten-basierte Modellierung [Power, Resources, and Violence: The Complexity of Contemporary Conflicts, An Agent-based Model]. vdf, Zurich (2006)
11. Marks, S.R.: Durkheim's Theory of Anomie. Amer. J. Soc. 2 (1974) 329–363
12. Médard, J.-F.: L'État patrimonialisé [The Patrimonialised State]. Politique Africaine. 39 (1990) 25–36
13. Merton, R.K.: Social Structure and Anomie. Amer. Soc. Rev. 5 (1938) 672–682
14. Moss, S.: Game theory: Limitations and an Alternative. J. of Artificial Societies and Social Simulation. 2 (2001) http://jasss.soc.surrey.ac.uk/4/2/2.html
15. Moss, S.: Canonical Tasks, Environments and Models for Social Simulation. Computational and Mathematical Organization Theory. 3 (2000) 249–275
16. Moss, S.: Critical Incident Management: An empirically Derived Computational Model. J. of Artificial Societies and Social Simulation. 4 (1998) http://jasss.soc.surrey.ac.uk/1/4/1.html
17. Moss, S., Edmonds, B.: Sociology and Simulation: Statistical and Qualitative Cross-validation. Amer. J. Socio. 4 (2005) 1095–1131
18. Mousavi, S.A.: The Hazaras of Afghanistan, An Historical, Cultural, Economic and Political Study. St. Martin's Press, New York (1997)
19. Outhwaite, W.: New Philosophies of Social Science. Realism, Hermeneutics and Critical Theory. Macmillan Education, London (1987)
20. Popitz, H.: Phänomene der Macht [Phenomena of Power]. 2nd edn. Mohr Siebeck, Tübingen (1992)
21. Reno, W.: Warlord Politics and African States. Lynne Rienner Publishers, Boulder London (1998)
22. Richards, P.: Fighting for the Rain Forest. War, Youth and Resources in Sierra Leone. The International African Institute; James Currey, Oxford; Heinemann, Portsmouth (1996)
23. Roy, O.: Afghanistan: From Holy War to Civil War. The Darwin Press, Princeton (1995)
24. Roy, O.: The New Political Elite of Afghanistan. In: Weiner, M., Banuazizi, A. (eds.): The Politics of Social Transformation in Afghanistan, Iran and Pakistan. Syracuse University Press, Syracuse (1994) 72–100
25. Roy, O.: Islam and Resistance in Afghanistan. 2nd edn. Cambridge University Press, Cambridge (1990)
26. Sayer, A.: Realism and Social Science. Sage, London Thousand Oaks New Delhi (2000)
27. Schetter, C.: Ethnoscapes, National Territorialisation, and the Afghan War. Geopolitics. 1 (2005) 50–75
28. Sofsky, W.: Zeiten des Schreckens. Amok, Terror, Krieg [Times of Terror. Amok, Terror, War.]. S. Fischer, Frankfurt a.M. (2002)
29. Tarzi, S.M.: Afghanistan in 1992: A Hobbesian State of Nature. Asian Survey. 2 (1993) 165–174
30. Weber, M.:. Wirtschaft und Gesellschaft. Grundriss der verstehenden Soziologie [Economy and Society: An Outline of Interpretive Sociology]. 5th edn. J.C.B. Mohr (Paul Siebeck), Tübingen [1921] (1980)