

# Phylogenetic network of armed groups in civil war

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Civil war is one of the most serious threats to human security today. A difficulty of understanding civil war is its complicated change of warring parties during the war. Though civil war was traditionally studied as biparty conflict between a government and a rebel group, recent works revealed that many civil wars are/were fought by more than two, sometimes dozens of, armed groups [1]. Moreover, most of multiparty conflicts observe that warring parties frequently merge and split. This fission-fusion of armed groups tends to prevent political resolution of conflict and prolong the civil war. Therefore, it is crucial for international society and policy makers to understand what drives the fission-fusion and what types of intervention they should choose for effective control of the dynamics.

Though several works have tackled these questions, consensus is yet to be reached about the mechanism of this dynamics. A study puts an emphasis on the global balance of power among warring parties [1], while another insists local politics plays the key roles [2]. There are also studies that focus on the effect of international society [3].

There are two obstacles to reveal the fundamental mechanism that drives fission-fusion of warring parties. The first is the lack of detailed empirical data on fission-fusion of armed groups that covers various civil wars. Case studies focus on different civil wars with different measures, while conflict databases that covers a wide range of cases do not include detailed information about changes of warring parties. The second is the lack of attention to the whole structure of fission-fusion in each civil war. Most of previous studies have paid attention only to the frequency of fission-fusion events or interpretation of each event.

As a step to overcome these obstacle, this study constructs phylogenetic networks of armed groups that represents which groups split/merged into which groups in several African civil wars. Information of the fission-fusion is collected from publications of the UN, NGOs, and various research projects. For example, Fig. 1 is a part of the phylogenetic network of Congolese armed groups since the Second Congo War erupted in 1998, the whole of which includes 92 nodes and 112 links. In this presentation, the characters of the networks (degree distribution, assortativity, centrality, etc.) and their implications, especially pivotal roles of integration into and defection from the national army, will be discussed.

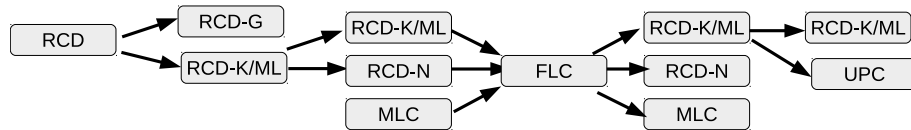


Figure1: A part of the phylogenetic network of armed groups in Congo since 1998. This part is based on [4].

## References

- [1] F. Chritia, *Alliance Formation in Civil Wars*, Cambridge Univ. Press, New York, (2012).
- [2] L. J. M. Seymour, “Why factions switch sides in civil wars: rivalry, patronage, and realignment in Sudan”, *Int. Security* vol. 39, 92–131 (2014).
- [3] M. Olson Lounsbury & A. H. Cook, “Rebellion, mediation, and group change: An empirical investigation of competing hypotheses”, *J. Peace Res.* vol. 48, 73–84 (2011).
- [4] H. Tamm, *UPC in Ituri: The external militarization of local politics in north-eastern Congo*, Rift Valley Institute, London, (2013).