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# **A tool for theory evaluation, robustness tests, and selecting conditions with QCA**

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# **A tool for theory evaluation, robustness tests, and selecting conditions with QCA**

## **1. Introduction**

When researchers apply QCA either inductively to summarize data and identify patterns or deductively to assess competing theories or policy instruments, maintaining an overview of the range of results can prove difficult.<sup>1</sup> Another challenge is keeping track of the findings pertaining to checks for robustness, which are recommended for explorative applications as well as hypothesis-testing studies (Skaaning 2011: 405). All of these approaches often have to deal with the issue of how to select conditions from among a plethora of candidates, as the number of cases limits how many conditions can be considered without arriving at flawed results (Marx/Dusa 2013). This paper proposes a tool for addressing these challenges. While the tool itself is not a new QCA variant, it facilitates important steps in well-established applications. It provides a parsimonious illustration of which specified concepts are best able to distinguish among outcomes. It uses a parameter designed to assess the coverage of cases by relevant paths in both outcomes' solutions on the basis of analyses of sufficient conditions. Paths prove to be relevant when they either support or oppose the claim that is under investigation. Moreover, the parameter offers a straightforward way to illustrate just how much the results depend on certain specifications. Additionally, it can guide decisions about which conditions to include in the QCA.

The paper proceeds as follows: the next three parts respectively deal with one of the specified applications and provide a demonstration for using the tool. The second section starts with an assessment of competing theories or policy programs and it introduces data on civil war recurrence since 1990, which is used throughout the paper. The following section discusses how to apply the tool when checking for robustness, and the fourth is devoted to selecting conditions. The final section discusses how to use the tool beyond the examples presented here and it addresses logical remainders, the question of causal asymmetry, and the assessment of parameter values.

## **2. Evaluating competing theories or policy programs**

When assessing the explanatory power of a theory, researchers consider which portion of cases is covered by the solution. Before rates of coverage and consistency were introduced, scholars used to examine how many configurations exhibited a contradictory outcome: the higher the portion of cases in configurations with a contradictory outcome, the weaker the

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1 On different uses of QCA, see Berg-Schlosser et al. 2009: 15-16; Schneider/Wagemann 2012: 276.

support for the theory. Additionally, researchers checked whether the non-contradictory configurations corresponded to the theory. Compared to these approaches, rates of coverage and consistency provide more straightforward information about the explanatory power of the theory under investigation. However, solution coverage alone is often unsuitable for ascertaining a theory's explanatory power, as the solution may include some paths that support the theory, some that oppose it, and still others that do not exhibit the condition or combination of conditions highlighted by the theory and therefore are irrelevant for its assessment. For example, let us assume that a theory posits that configurations which include Condition A, but not those which include Condition B, are consistently related to a certain outcome.<sup>2</sup> An analysis of sufficient conditions would result in the following paths:

- 1) A\*C\*D
- 2) B\*E
- 3) C\*E

Path 1 supports the theory, Path 2 contradicts it, and Path 3 does not help in assessing the theoretical claim. In reality, many applications will result in more than one supporting and more than one opposing path. The tool presented here considers both the supporting and contradicting paths in order to arrive at a parameter that indicates the extent to which the theory explains the outcome of interest.

Such a tool is all the more necessary when comparing several theories. Most QCA applications published in journals present one model per outcome. A comparison of several theories or models is, however, more common than it may appear. Numerous studies have set out to explicitly compare competing models (e.g. Berg-Schlusser/De Meur 1994; Pinfari 2011; Van der Maat 2011; see Mello 2013: 5 for further references). Other applications indirectly compare different models when determining which conditions should be excluded (e.g. Bara 2014: 701; Lambach et al. 2015). As Emmenegger et al. (2013: 190) argue, using competing models is a strategy for coping with a plethora of conditions. QCA is not confined to strict academic applications but can be used for evaluating projects and programs as well (Befani 2013; Stern et al. 2012: 24, 28). Evaluations can benefit from comparing competing policy programs or instruments. For instance, they can assess which instrument performs best in a certain context. In sum, as a relevant portion of QCA applications deal with comparing competing theories or policy programs represented by contending models, the tool introduced here helps track the results of such comparisons.

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2 For the sake of simplicity, I refer to an individual condition. A theory can certainly also postulate the interplay of several conditions.

## 2.1 Are victories better suited for preserving peace than peace agreements?

To illustrate how the tool works, this paper uses data compiled for a project on peace survival after civil wars that terminated between 1990 and 2009. Civil wars are defined as intrastate armed conflicts in which at least 1,000 lives have been lost in battles or assaults throughout the period of fighting. Apart from the number of battle-related deaths from armed conflict, it considered any victims of violence against civilians as well as non-state conflicts, provided that such violence occurred with participation by one of the parties to the armed conflict. The sample is based on datasets from the Uppsala Conflict Data Program (UCDP).<sup>3</sup> A civil war is considered as terminated when the threshold of 25 fatalities, as set by UCDP, has not been surpassed for at least one year in relation to armed conflict, non-state conflict and one-sided violence against civilians. Civil war recurrence is conceptualized in a strict sense: The new war has claimed at least 1,000 lives, involves the same warring parties and concerns the same issues as the previously terminated war.

The sample consists of 43 cases, which are traced until the recurrence of civil war, or for a maximum of seven years if peace has endured. This time span allows me to capture almost all cases of resumption that occurred up until 2012, while losing only a few instances of peace survival on account of the shorter period of investigation. Peace collapsed in 14 cases, and it endured for at least seven years in the remaining 29. The appendix documents the list of civil war dyads and the data used in this paper.

As the outcome is dichotomous (civil war recurrence ('recurrence') versus peace survival ('~recurrence')), crisp-set QCA is applied, as recommended by Ragin (2014: 90). The tool's suitability for fuzzy-set QCA is discussed in the final section.

I select up to five conditions in the following illustrations. The literature on the resumption of civil war addresses how the characteristics of terminated wars shape the prospects for peace survival. While the majority of the relevant studies do not use set-theoretic but rather probabilistic reasoning, this does not prove problematic for the purposes of this paper. The effect of the type of war termination on peace survival is widely contested. A plurality of contributions conclude that victories tend to preserve peace better than peace agreements, as military triumphs destroy the organizational capabilities of the defeated side, promote structural change, and inhibit commitment problems (e.g. Licklider 1995: 684-685, Toft 2010: 33-34, 41, 152). A competing line of research argues that peace agreements perform better in fostering peace, as 'treaties enable international involvement, in the form of lending, foreign aid programs, transfers of goods and services, and the deployment of UN peace operations'

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3 <http://ucdp.uu.se/downloads/>.

(Doyle/Sambanis 2006: 103, 108-115). Moreover, peace agreements apply compromises to address the grievances perceived by the parties (Walter 2004: 373). As wars are not only terminated by military victories or peace agreements, but also by mere ceasefires or ongoing fighting that does not surpass the threshold of armed conflict (in brief ‘low activity’), I include two conditions that represent the type of war termination: ‘victory’ and ‘agreement’. When both are given in their negated form within the same configuration (‘~victory\*~ agreement’), the civil war ended with a ceasefire or low activity. The following demonstration compares the relative explanatory power of the competing claims that either victories or peace agreements foster enduring peace.<sup>4</sup> As QCA assumes that the effect of a condition is mediated by its interplay with other conditions, I do not analyze the type of war termination as an isolated condition but rather in the context of other characteristics of the terminated war.

Since the paper focuses on the tool and not on civil war recurrence, I briefly introduce the other conditions and do not go into their calibration. Ethnic conflicts are deemed to be particularly prone to recurrence (e.g. Kreutz 2010: 248), as they are more persistent and harbour more grievances and opportunities for mobilization than other conflicts (Denny/Walter 2014). An ethnic conflict (‘ethnic’) is given when, according to case-specific literature, the parties to the conflict define themselves based on ethnic criteria.

Studies on civil war recurrence frequently use measurements of war intensity, reasoning that more intense conflicts deepen cleavages and cause greater material destruction, intensifying grievances and opportunities as causes for another war. Accordingly, most studies find that higher intensity makes civil war recurrence more likely (e.g. Toft 2010: 56). In line with the majority of studies, I consider the absolute number of fatalities. As I see no theoretical guidance for dichotomization, I use a leap in the raw data and set the threshold of dichotomization at 50,000 fatalities (‘50000deaths’). The death toll is based on best estimates from the case literature.

War duration is another prominent variable in pertinent studies, though most do not identify any significant effect on peace survival (e.g. Gurses et al. 2008: 147). This may be due to contradicting consequences of long wars: while cementing hostilities and empowering violent actors, long conflicts also increase war weariness and destroy illusions about one’s military capabilities. Lacking theoretical instructions, I use the distribution of the raw data and dichotomize at the threshold of 70 months (‘wardur70’). The values for war duration are derived from the UCDP data.

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4 For a concise illustration of the tool, it seems appropriate to test a theory that highlights a single condition. Nevertheless, theories that postulate a certain combination of conditions can also be tested.

What type of evidence supports the hypothesis that victories are superior to peace agreements in preventing civil war recurrence? Here, victories would turn out to be a necessary condition for peace survival, while peace agreements would prove necessary for civil war recurrence or at least not a necessary condition for enduring peace. The analysis of sufficient conditions also helps assess the claim. Ideally, the solution for civil war recurrence would comprise paths that include only peace agreements and not victories, while the solution for peace survival would exhibit paths with victories and not with peace agreements. In less perfect results, victories would be less represented in paths to civil war recurrence compared to peace agreements, whereas agreements would be less prominent than victories in paths leading to enduring peace.

Do the empirical results correspond to these expectations? In Table 1, neither victories nor peace agreements prove to be a necessary condition for peace survival or civil war recurrence. None of the conditions obtains consistency of at least 90% along with coverage of at least 50% – the thresholds proposed by QCA literature (Schneider/Wagemann 2012: 143).

**Table 1: Analysis of necessary conditions<sup>5</sup>**

condition	civil war recurrence		peace survival	
	consistency	coverage	consistency	coverage
victory	0.214	0.214	0.379	0.786
~victory	0.786	0.379	0.621	0.621
agreement	0.143	0.154	0.379	0.846
~agreement	0.857	0.400	0.621	0.600

Table 2 presents the results of the analysis of sufficient conditions for the resumption of civil war.<sup>6</sup> A configuration must surpass a consistency threshold of 75% to be considered for further analysis (Schneider/Wagemann 2012: 127).

<sup>5</sup> All analyses for necessary and sufficient conditions were conducted with fs/QCA 2.5.

<sup>6</sup> Since this paper does not focus on an analysis of civil war recurrence, it does not present truth tables.

**Table 2: Sufficient conditions for civil war recurrence**

Model: recurrence = f(ethnic, wardur70, 50000deaths, agreement, victory)				
COMPLEX SOLUTION <sup>7</sup>				
Paths	raw coverage	unique coverage	consistency	consistent cases
ethnic*50000deaths*~agreement*~victory	0.500	0.500	1.000	7: Angola 1, Chechnya, DRC RCD <sup>8</sup> , Iraq Kurds, Philippines, Rwanda, Sri Lanka LTTE
solution coverage: 0.500				
solution consistency: 1.000				

The single path in Table 2 lends no support to the claim that victories are better suited to lasting peace than peace agreements. On the contrary, peace agreements are not included in the path to civil war recurrence. Instead, other types of war termination, besides peace accords and victories, are related to the resumption of civil war, i.e. ceasefires and war endings owing to low activity.

Table 3 shows the results of the analysis of sufficient conditions for peace survival. In Path 1 and Path 2 in Table 3, victories are among the configurations consistently related to peace survival. Combined, they describe six different cases.<sup>9</sup> Paths 3-5 exhibit configurations in which peace agreements consistently led to enduring peace, covering nine different cases in total. Path 6 and Path 7 do not contribute to a comparison of victories and peace agreements.<sup>10</sup> As the three peace paths with peace agreements describe nine cases, while two peace paths with victories represent only six cases, the results do not support the claim that victories are better suited for preventing civil war recurrence. This is evident in that the solution for civil war recurrence can be ignored for this assessment, as its single path does not include victories or peace agreements (see Table 2). If recurrence paths with victories or peace agreements existed, the description would be longer and the interpretation more complex. Even when comparing only two concepts, a single parameter illustrating the relative explanatory power of the theories considered would be helpful. Such a parameter is all the more necessary when comparing a series of claims.

7 As I do not consider logical remainders, the complex solution corresponds to the intermediate solution and the parsimonious solution. See the final section for coping with logical remainders.  
 8 See the appendix for abbreviations.  
 9 Six of 29 cases indicate a portion of 20.7%. If one adds the raw coverage for Path 1 (17.2%) and the unique coverage of the overlapping Path 2 (3,4%), the same value (20.6%) is obtained. The small difference is due to truncation. However, as Paths in 2 and 3 in Table 8 demonstrate, not all solutions allow us to derive the portion of covered cases directly from the raw coverage and the unique coverage.  
 10 In Path 6, all covered civil wars terminated in a ceasefire. Path 7 includes ‘~agreement’, since the civil war in Cambodia ended in military victory, whereas ‘low activity’ terminated the civil war in Peru. Cambodia is covered along Peru by Path 7, as ‘victory’ is sorted out.



**Table 3: Sufficient conditions for peace survival**

Model: ~recurrence = f(ethnic, wardur70, 50000deaths, agreement, victory)				
COMPLEX SOLUTION				
Paths	raw coverage	unique coverage	consistency	consistent cases
<i>Supporting the claim that victories are better than peace agreements</i>				
1) victory*~agreement*~50000deaths*~wardur70	0.172	0.069	1.000	5: Chad 2, Congo, Georgia, Liberia 2, Yemen
2) victory*~agreement*~wardur70*ethnic	0.138	0.034	1.000	4: Angola 2, Chad 2, Georgia, Liberia 2
<i>Opposing the claim that victories are better than peace agreements</i>				
3) ~victory*agreement*50000deaths*~ethnic	0.172	0.172	1.000	5: DRC MLC, El Salvador, Mozambique, Sierra Leone, Tajikistan
4) ~victory*agreement*~wardur70*ethnic	0.103	0.034	1.000	3: Bosnia Croats, Bosnia Serbs, Kosovo
5) ~victory*agreement*~50000deaths*ethnic	0.103	0.034	1.000	3: Bosnia Croats, Indonesia (Aceh), Kosovo
<i>Irrelevant for the claim that victories are better than peace agreements</i>				
6) ~victory*~agreement*~50000deaths*wardur70	0.138	0.138	0.800	4: Azerbaijan, Nicaragua, Northern Ireland, Myanmar
7) ~agreement*50000deaths*wardur70*~ethnic	0.069	0.069	1.000	2: Cambodia, Peru
solution coverage: 0.724				
solution consistency: 0.955				

## 2.2 What the parameter indicates and how it is calculated

The parameter summarizes the complex comparison of the extent to which supporting paths and opposing paths contribute to each outcome. Its calculation starts with the analyses of sufficient conditions. Next, it identifies the relevant paths with regard to the claim under investigation. Thereafter, the number of different cases in supporting paths and the number of different cases in opposing paths are ascertained. All these steps were presented above.

Before introducing how the parameter compares supporting paths and opposing paths, some remarks about the previous steps are needed. The tool does not consider each configuration

that exhibits the condition(s) in focus – here a victory or a peace agreement. Instead, it only assesses configurations with a victory or a peace agreement that are consistently related to an outcome, i.e. configurations that surpass the consistency threshold. By exclusively considering such paths, the tool holds to an understanding of causation as conjunctural. Often, these paths do not exhibit the condition in focus alone (e.g. just ‘victory’) but represent this condition through its interaction with others (e.g. ‘victory\*~agreement\*~50000deaths\*~ war-dur70’). By considering all paths that support or oppose a claim, the tool recognizes equifinality. Case frequency in the paths is not decisive for their inclusion in the further analysis. Thus, in Table 3, not only Path 1 with five cases but also Path 2 with four cases is categorized as supporting path. If there are paths with only one or two cases, they also have to be considered. I now continue by introducing the parameter itself. Once the number of different cases in supporting paths and opposing paths is ascertained, the subsequent step calculates the portion of these cases in relation to all cases with the respective outcome. In the example, the supporting paths in Table 3 cover six different cases, a portion of 21% of the 29 cases with peace survival. The paths opposing the claim of the superiority of victories cover nine different cases, which constitutes a portion of 31% of all instances with lasting peace. As the solution for civil war recurrence does not include paths with a victory or a peace agreement, the portion of supporting or opposing cases is 0%, respectively. The last step in calculating the parameter encompasses assessing the differences between these portions.

This procedure exhibits some parallels with assessing the relative importance of sufficient conditions as discussed by Goertz (2006: 105). According to him, a sufficient condition proves of greater importance the more often ‘its’ path is taken. The parameter introduced here considers how many cases are covered by relevant paths. It is not confined to a single path but assesses all supporting and opposing paths. It measures their relative importance by identifying the total number of different cases they cover and then compares the aggregated importance of the supporting paths and the aggregated importance of opposing paths. This is done with regard to both outcomes. In the example used here, the result indicates how effectively the juxtaposition of victories and peace agreements distinguishes between civil war recurrence and peace survival.

For illustrating how the tool works and what the proposed parameter indicates, I construct a perfect relationship in which paths with victories represent all peace cases and no recurrences, while paths with peace agreements describe all recurrences and no peace cases. Moreover, I assume perfect coverage rates in the solutions, i.e. the paths represent all recurrence cases and all peace cases. Finally, I presuppose that all paths are relevant with respect to the claim in

question, i.e. they include the conditions highlighted by this claim. For comparison, I also construct a perfect non-relationship in which the presence of victories or peace agreements is evenly distributed among cases with lasting peace and cases with civil war recurrence.<sup>11</sup> Again, I assume that the solutions cover all cases and that all paths are relevant. Here, the type of war termination does not at all distinguish between the outcomes. In Table 4, the score ‘0’ indicates that 0% percent of the cases are represented, while ‘1’ indicates perfect coverage of 100%.

**Table 4: A perfect relationship and a perfect non-relationship<sup>12</sup>**

	portion of represented recurrence cases	portion of represented peace cases
<i>Perfect relationship</i>		
paths with victories	0.00 (Cell A)	1.00 (Cell C)
paths with peace agreements	1.00 (Cell B)	0.00 (Cell D)
<i>Perfect non-relationship</i>		
paths with victories	0.50 (Cell A)	0.50 (Cell C)
paths with peace agreements	0.50 (Cell B)	0.50 (Cell D)

In the perfect relationship, maximum differences arise within the same column (Cell A vs. Cell B and C vs. D) and within the same row (A vs. C and B vs. D). In the perfect non-relationship, differences within the same column and the within in the same row are at a minimum. The differences within the same column indicate how much one condition contributes to the respective outcome compared to the other condition. The differences within the same row show the extent to which the same condition contributes to one outcome but not to the other.

A straightforward way to assess all differences within the columns and rows is to sum the values along the first diagonal (A-D) and then to subtract the sum of the values along the second diagonal (B-C). The result can range from -2 to 2. The more it approximates one of the end points of this range, the stronger the relationship. The closer the result is to 0, the more it approximates a perfect non-relationship. I suggest calling this result the ‘explanatory power score’. It shows the extent to which the conditions under investigation distinguish between the outcomes.

In Table 4, the value for the perfect relationship is -2 (as  $(0+0)-(1+1)=-2$ ), while the value for the perfect non-relationship is 0 (as  $(0.5+0.5)-(0.5+0.5)=0$ ). The algebraic sign shows the direction of the relationship. In the constructed example, it indicates that victories are related to

11 This is one of various non-perfect relationships characterized by all cells exhibiting the same value.  
 12 See the Excel file ‘QCA tool data for tables’ for Table 4, Table 5, Table 12, Table 13, and Table 14. It can be adapted for applications with other data.

peace survival and peace agreements to civil war recurrence. A value of 2 would show an inverse relationship. Whether the algebraic sign is positive or negative has no substantial reason. Instead, it depends on how the covered portions are presented, i.e. which condition or combination of conditions and which outcome are listed first. Therefore, comparisons of various results have to abide by the same sequence.

Having introduced the technical aspects of the tool, I conclude this section by returning to the assessment of the claim that victories score better in preserving peace than peace agreements. Table 5 uses the results illustrated in Table 2 and Table 3. As seen, neither the configurations with ‘victory’ nor configurations with ‘agreement’ are consistently related to civil war recurrence. However, there are two paths with ‘victory’ and three paths with ‘agreement’ that are consistently related to peace survival. Thus, two paths covering six different cases accord to the claim that victories are more conducive to stable peace. Three paths with a total of nine cases contradict this claim, with enduring peace following peace agreements. As there are 29 cases of peace survival, paths with victories cover 21% of all instances of peace survival, while paths with peace agreements cover 31%. The explanatory power score with the positive algebraic sign shows that peace agreements are more strongly related to lasting peace than victories. In total, however, the juxtaposition of victories and peace agreements offers little in terms of explaining why peace endures or collapses after civil war. This is indicated by the explanatory power score of 0.1, which is close to 0.<sup>13</sup>

**Table 5: Victories and peace agreements in comparison**

Claim in focus	number of recurrence paths	number of peace paths	number of paths supporting the claim	number of paths opposing the claim	number of covered recurrence cases	number of covered peace cases	number of cases supporting the claim	number of cases opposing the claim	portion of covered recurrence cases	portion of covered cases with peace survival	explanatory power score
paths with victories	0	2	2	3	0	6	6	9	0.00	0.21	0.10
paths with peace agreements	0	3			0	9			0.00	0.31	

<sup>13</sup> Using the formula introduced above, the explanatory power score is: (0+0.31)-(0+0.21)=0.10.

### 2.3 Victories and peace agreements vs. ceasefires and low activity

To show how the tool simplifies the comparison of results, this section presents results from another application. In Table 2 on civil war recurrence, neither war termination through victory nor through a peace agreement is part of the single path covering half of the cases in which peace collapsed. This is in line with studies arguing that victories and peace agreements are essentially equally effective in preserving peace, whereas ceasefires and/or low activity relate to civil war recurrence (Doyle/Sambanis 2006: 87-88; Hartzell 2009: 357-358; Meernik et al. 2010: 317-318). Meernik and his co-authors (2010: 324) point to conclusiveness as a factor shared by victories and peace agreements. In contrast, ceasefires and other war outcomes are characterized by indeterminateness and are thus prone to civil war recurrence. In the following, I explore the degree to which juxtaposing victories and peace agreements ('victoryoraccord') with ceasefires and low activity ('~victoryoraccord') helps distinguish between civil war recurrence and peace survival.<sup>14</sup> As Table 6 shows, the new condition does not prove necessary for civil war recurrence or for peace survival.

**Table 6: Analysis of necessary conditions**

condition	civil war recurrence		peace survival	
	consistency	coverage	consistency	coverage
victoryoraccord	0.357	0.185	0.759	0.815
~victoryoraccord	0.643	0.563	0.241	0.438

Table 7 presents the results of the analysis of sufficient conditions for civil war recurrence. Again, ethnic conflicts along with the war's duration and intensity are used as additional conditions. This solution corresponds to Table 2: Only war termination through ceasefire or low activity is consistently related to the resumption of civil war.

**Table 7: Sufficient conditions for civil war recurrence**

Model: recurrence = f(ethnic, wardur70, 50000deaths, victoryoraccord)				
COMPLEX SOLUTION				
Paths	raw coverage	unique coverage	consistency	consistent cases
<i>Supporting the claim that victories and peace agreements are better than other war outcomes</i>				
~victoryoraccord*50000deaths*ethnic	0.500	0.500	1.000	7: Angola 1, Chechnya, DRC RCD, Iraq Kurds, Philippines, Rwanda, Sri Lanka LTTE
solution coverage: 0.500				
solution consistency: 1.000				

14 In the replication data, the name of the condition is 'victoryoraccas' for 'victory or accord according to the case literature'.

Table 8 presents the results of the analysis of sufficient conditions for peace survival. The claim as to the relative advantage of victories and peace agreements is supported by the single path in Table 7, comprising seven cases, and Path 1 in Table 8, comprising 12 consistent cases. This claim is opposed by Paths 2 and 3 in Table 8, which together cover five different cases. Due to the vast amount of figures arising from tables, paths, and cases, such presentations tend to confuse readers. When juxtaposing victories and peace agreements, it is easier to compare the explanatory power scores: -0.74 for the comparison of clear-cut war endings to less conclusive war endings (see Table 12), and 0.10 for the juxtaposition of victories and agreements (see Table 5). The difference between the explanatory power scores highlights that, in terms of peace survival, the more crucial difference is not between victories and peace agreements but rather between these war endings and ceasefires or low activity.

**Table 8: Sufficient conditions for peace survival**

Model: ~recurrence = f(ethnic, wardur70, 50000deaths, victoryoraccord)				
COMPLEX SOLUTION				
Paths	raw coverage	unique coverage	consistency	consistent cases
<i>Supporting the claim that victories and peace agreements are better than other war outcomes</i>				
1) victoryoraccord*~wardur70	0.414	0.414	0.923	12: Angola 2, Bosnia Croats, Bosnia Serbs, Chad 2, Congo, DRC MLC, Georgia, Kosovo, Liberia 2, Sri Lanka JVP, Tajikistan, Yemen
<i>Opposing the claim that victories and peace agreements are better than other war outcomes</i>				
2) ~victoryoraccord*wardur70*~ethnic	0.069	0.000	1.000	2: Nicaragua, Peru
3) ~victoryoraccord*~50000deaths*wardur70	0.138	0.000	0.800	4: Azerbaijan, Nicaragua, Northern Ireland, Myanmar
<i>consistent cases in total</i>				
5: Azerbaijan, Nicaragua, Northern Ireland, Myanmar, Peru				
<i>Irrelevant for the claim</i>				
4) 50000deaths*wardur70*~ethnic	0.172	0.138	1.000	5: Cambodia, El Salvador, Mozambique, Peru, Sierra Leone
5) ~50000deaths*wardur70*ethnic	0.207	0.103	0.750	6: Azerbaijan, India, Indonesia (Aceh), Myanmar, Northern Ireland, Uganda ADF
<i>consistent cases in total</i>				
11: Azerbaijan, Cambodia, El Salvador, India, Indonesia (Aceh), Mozambique, Myanmar, Northern Ireland, Peru, Sierra Leone, Uganda ADF				
solution coverage: 0.828				
solution consistency: 0.889				

### 3. Robustness tests

As Skaaning (2011: 405) recommends, '[s]ystematic sensitivity tests (...) should (...) be part of all serious employment of comparative configurational methods'. Schneider and Wage-mann (2012: 285-293) criticize the lack of attention paid to the robustness of results in the QCA debate. They urge researchers to compare coverage rates of the respective solutions and examine the extent to which their paths are mutually compatible. Compatibility is given when the paths in the original application correspond to those in robustness tests, or when a path constitutes a superset or subset of a path in the other application.

The robustness of results relates, *inter alia*, to how the universe of cases is defined, the specification of the theoretical model, the operationalization of conditions and outcomes, the frequency of cases in configurations to be considered, or the chosen consistency threshold. The following illustration does not relate to these aspects of robustness, which are particularly prominent in the QCA debate. It instead addresses measurement error, as highlighted in one important critique of QCA (Hug 2013). The same procedure has to be applied when another aspect of robustness is in focus.

To date, values for the type of war termination have drawn from assessments in case-specific literature; I now use the values provided by UCDP. Again, I compare victories and peace agreements to ceasefires and low activity. As shown in Table 9, the conditions under investigation once more do not prove necessary for the resumption of civil war or for peace enduring for at least seven years.

**Table 9: Analysis of necessary conditions (UCDP data for the type of war termination)**

condition	civil war recurrence		peace survival	
	consistency	Coverage	consistency	coverage
victoryoraccord <sup>15</sup>	0.357	0.200	0.690	0.800
~victoryoraccord	0.643	0.500	0.310	0.500

In Table 10, showing the analysis of sufficient conditions for civil war recurrence, the single path corresponds to the analysis in the original solution but covers only six cases instead of seven.

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15 In the replication data, the name of the condition is 'victoryoraccued' for 'victory or accord according to UCDP'.

**Table 10: Sufficient conditions for resumed civil wars (UCDP data for the type of war termination)**

Model: recurrence = f(ethnic, wardur70, 50000deaths, victoryoraccord)				
COMPLEX SOLUTION				
Paths	raw coverage	unique coverage	consistency	consistent cases
<i>Supporting the claim that victories and peace agreements are superior to other war outcomes</i>				
$\sim$ victoryoraccord*50000deaths*ethnic	0.429	0.429	1.000	6: Angola 1, Chechnya, Iraq Kurds, Philippines, Rwanda, Sri Lanka LTTE
solution coverage: 0.429				
solution consistency: 1.000				

Table 11 presents the results of the analysis of sufficient conditions for peace survival. The comparison of Table 11 and Table 8 comes at the price of complexity. The configuration on Path 1 here corresponds to Path 1 in Table 8, Path 4 here corresponds to Path 2 above, and Path 5 here corresponds to Path 4 in Table 8. Path 1 in Table 11 covers one less case than the corresponding paths in Table 8. Paths 2 and 3 here are new and include additional cases with peace survival.<sup>16</sup> Nevertheless, they partly overlap with Path 1 in Table 8, as a glance at the covered cases shows. In contrast to Table 8, there is only one path in Table 11 for which ceasefires or low activity consistently relate to lasting peace. As Path 3 in Table 8 has no equivalent in Table 11, the number of covered cases decreases from five to two. Path 6 in Table 11 does not correspond to any path in Table 8. In sum, there is a considerable degree of compatibility between the original findings and the results of the robustness test. Based on the UCDP data, the solutions corroborate the finding that clear-cut war endings are better suited for preserving peace than indeterminate types of war termination. Hats off to you, if you have been able to follow this presentation thus far. It is really difficult to keep track of so many path comparisons.

<sup>16</sup> Table 11 also covers Cambodia, El Salvador, Indonesia (Aceh), Mozambique, Sierra Leone, and Uganda ADF; it does not represent Chad 2, which is part of Path 1 in Table 8.



**Table 11: Sufficient conditions for peace survival (UCDP data for war outcome)**

Model: ~recurrence = f(ethnic, wardur70, 50000deaths, victoryoraccord)				
COMPLEX SOLUTION				
Paths	raw coverage	unique coverage	consistency	consistent cases
<i>Supporting the claim that victories and peace agreements are superior to other war outcomes</i>				
1) victoryoraccord*~wardur70	0.379	0.138	0.917	11: Angola 2, Bosnia Croats, Bosnia Serbs, Congo, DRC MLC, Georgia, Kosovo, Liberia 2, Sri Lanka JVP, Tajikistan, Yemen
2) victoryoraccord*~50000deaths*ethnic	0.207	0.069	1.000	6: Bosnia Croats, Georgia, Indonesia (Aceh), Kosovo, Liberia 2, Uganda ADF
3) victoryoraccord*50000deaths*~ethnic	0.241	0.000	0.875	7: Cambodia, DRC MLC, El Salvador, Mozambique, Sierra Leone, Sri Lanka JVP, Tajikistan
<i>consistent cases in total</i>				
17: Angola 2, Bosnia Croats, Bosnia Serbs, Cambodia, Congo, DRC MLC, El Salvador, Georgia, Indonesia (Aceh), Kosovo, Liberia 2, Mozambique, Sierra Leone, Sri Lanka JVP, Tajikistan, Uganda ADF, Yemen				
<i>Opposing the claim that victories and peace agreements are superior to other war outcomes</i>				
4) ~victoryoraccord*wardur70*~ethnic	0.069	0.034	1.000	2: Nicaragua, Peru
<i>Irrelevant for the claim</i>				
5) 50000deaths*wardur70*~ethnic	0.172	0.000	1.000	5: Cambodia, El Salvador, Mozambique, Peru, Sierra Leone
6) ~50000deaths*~wardur70*ethnic	0.241	0.103	0.875	7: Bosnia Croats, Chad 1, Chad 2, Croatia, Georgia, Kosovo, Liberia 2
<i>consistent cases in total</i>				
12: Bosnia Croats, Cambodia, Chad 1, Chad 2, Croatia, El Salvador, Georgia, Kosovo, Liberia 2, Mozambique, Peru, Sierra Leone				
solution coverage: 0.759				
solution consistency: 0.917				

A more straightforward option for comparing and presenting the results of the original application and the robustness check is to consider their respective explanatory power scores. As shown in Table 12, the explanatory power score is -0.74 when using codings of the war outcome based on case-specific literature and -0.95 when using the UCDP data for the type of war termination. As the negative algebraic sign in both scores shows, the results point in the same direction. Using UCDP data, the relative advantage of victories and peace agreements over ceasefires and low activity is larger than when using data derived from case-specific literature.

**Table 12: Results in comparison**<sup>17</sup>

theory in focus	number of recurrence paths	number of peace paths	number of paths supporting the claim	number of paths opposing the claim	number of covered recurrence cases	number of covered peace cases	number of cases supporting the claim	number of cases opposing the claim	portion of covered recurrence cases	portion of covered cases with peace survival	explanatory power score
<i>War termination according to case-specific literature</i>											
victoryoraccord	0	1	2	2	0	12	19	5	0.00	0.41	-0.74
~victoryoraccord	1	2			7	5			0.50	0.17	
<i>War termination according to UCDP</i>											
victoryoraccord	0	3	4	1	0	17	23	2	0.00	0.59	-0.95
~victoryoraccord	1	1			6	2			0.43	0.07	

#### 4. Assisting in the selection of conditions

Selecting conditions is a core challenge in QCA applications (Amenta/Poulsen 1994). Many studies have to deal with a plethora of potential conditions, for instance when the theory under investigation cannot be reduced to a small number of conditions that can be processed using the given number of cases. A surplus of potential conditions is also a frequent challenge in explorative applications that attempt to identify patterns which distinguish among the outcomes.

The QCA literature offers suggestions for dealing with this issue. A good practice involves only considering conditions with values that vary across cases (Berg-Schlosser/De Meur 2009: 28). Even a condition that seems strong in theoretical terms is not useful when its values remain (nearly) constant. Other recommendations include using more abstract concepts that summarize two or more conditions (Ragin 2000: 321-328) or selecting tried-and-tested variables from quantitative studies as conditions in QCA (Yamasaki/Rihoux 2009: 125). Schneider and Wagemann (2006) have introduced a two-step QCA that first identifies different contexts defined by the interplay of remote conditions and subsequently complements these contexts with proximate conditions.<sup>18</sup>

<sup>17</sup> The sample consists of 29 cases with enduring peace and 14 instances of civil war recurrence. Using the formula introduced above, the explanatory power score is  $(0+0.17)-(0.5+0.41)=-0.74$  when using the case-specific literature and  $(0+0.07)-(0.43+0.59)=-0.95$  when using UCDP data.

<sup>18</sup> With an increasing number of contexts, it is becoming more difficult to keep track of the proliferation of constellations and to analyze and present them to readers. Additionally, it is not clear how exactly to conduct a two-step QCA. Here, the presentations deviate from one another (Schneider 2009: 85-88; Schneider/Wagemann 2006: 767-775; Schneider/Wagemann 2012: 253-255). For two-step QCA, also see Manewitz 2011.

The tool presented in this paper offers another step-by-step approach. The idea is to first define subfields of the issue under study, to then run a separate QCA for each, and finally to use the strongest conditions from each subfield for an integrated analysis. A subfield can relate to a certain theoretical perspective which is to be included in the further analysis. Here, the researcher might face the problem that several conditions seem equally strong in terms of theory and operationalization. By ascertaining their relative explanatory power, the tool can aid in identifying which conditions offer the best representation of the theory. A subfield can also be understood as comprising one dimension of an empirical topic. In the study of civil war recurrence, the characteristics of the terminated war constitute a subfield, while other subfields may relate to the distribution of power among the former warring parties or further post-conflict developments.

To illustrate how to apply the tool in selecting conditions, I use the data presented in Tables 7 and 8 on the conflict type and the civil war's duration, intensity, and type of termination. In identifying the conditions to be included in the integrated analysis, one first explores which conditions from the subfield perform best in distinguishing between the outcomes. For this purpose, the explanatory power score for each condition must be calculated.<sup>19</sup> For instance, paths with 'ethnic' cover 50% of the 14 recurrence cases and 21% of the 29 cases with lasting peace. Paths including '~ethnic' cover 0% of all resumed civil wars and 21% of the cases of peace survival. Using these numbers, one can calculate the explanatory power score. Table 13 presents the explanatory power scores for conditions which comprise characteristics of terminated civil wars.

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19 One must address the following questions for all conditions in the subfield:

1. How many different cases are covered by configurations that include the condition and prove consistent in the first outcome? For instance, the condition 'ethnic' (indicating an ethnic conflict) in Table 7 is part of the single path to civil war recurrence, covering seven cases.
2. How many different cases are covered by configurations which include the condition and consistently relate to the other outcome? In Table 8, the only path to lasting peace with 'ethnic' covers six cases.
3. How many different cases are covered by configurations that include the condition's negation and are consistently related to the first outcome? There are no paths in Table 7 with '~ethnic' and, thus, no instances of civil war recurrence are covered.
4. How many different cases are covered by configurations that include the condition's negation and prove consistent for the other outcome? In Table 8, two paths exhibit '~ethnic' and together account for six cases of stable peace.

Paths that include neither the condition nor its negation are ignored. The portion of covered cases is subsequently calculated.

**Table 13: Conditions related to the characteristics of the terminated civil war**

<b>condition</b>	<b>explanatory power score</b>
ethnic / ~ethnic	0.50
wardur70 / ~wardur70	0.00
50000deaths / ~50000deaths	0.57
victoryoraccord / ~victoryoraccord (based on case literature)	-0.74

In the example, the condition that juxtaposes victories and peace agreements with ceasefires and low activity performs best in distinguishing between cases of resumed civil war and peace survival. Thus, it would be the first candidate for inclusion in an analysis using conditions from all subfields.

Before a condition is used in an integrated analysis, checks for robustness should explore the degree to which changes in the specifications alter the ranking of conditions. If no condition within a subfield exhibits considerable explanatory power, the researcher may decide to discard this subfield.

The suggested procedure presumes that all conditions under consideration are equally important for a theory. If, however, a condition is of particular theoretical relevance, it could be included in the further analysis despite a low explanatory power score. This could be the case, for instance, when the aim is to demonstrate the weakness of a certain claim.

An objection against the approach proposed here is that it implies discarding conditions that possess relatively weak explanatory power when combined with other conditions from the same subfield. One cannot, however, rule out that the dropped conditions might significantly contribute to solutions for an outcome when used in combination with conditions from other subfields. This refers to a general problem: The presentation of a meaningful solution does not disprove the existence of other meaningful solutions. Such evidence could only be provided by assessing all possible combinations; yet this would prove an overwhelming task, even with only a handful of conditions. One may assume that many researchers, particularly in explorative studies, initiate dialogues between ideas and evidence (Ragin 1987: 164-165), adhere to the principle of trial and error when selecting conditions, and ultimately strive to exclusively present the most interesting solutions. Since the majority of such applications cannot test all possible combinations, their published results do not escape from being perceived as somewhat haphazard, even if they accord to a theory. To alleviate this problem, the step-by-step approach proposed here provides transparency regarding the selection of conditions.

In the illustration, the procedure was applied to single out the ‘strongest’ conditions within a subfield in order to include them in the next step of analysis. The explanatory power score can

also be calculated to identify the most effective higher-order concept or summary of conditions.

## **5. Discussion**

This paper has introduced a tool that is meant to provide support for tasks involved in many QCA applications. First, the tool helps assess the relative performance of theories or policy instruments when distinguishing among outcomes. By boiling down the information contained in the solutions to one parameter, it assists in documenting and comparing the results. Second, this parameter can indicate how sensitive the results are when reacting to alterations in the sample, the calibration of conditions, the model, or other specifications. Third, the tool can assist in the selection of conditions by illustrating which conditions in a thematic subfield or which summarized conditions possess the strongest explanatory power. For all these uses, the tool determines the portion of cases covered by supporting and opposing paths in the solutions. This ensures that the focus is not on the mere frequency of a condition's value, irrespective of other conditions. Rather, the tool assesses the presence or negation of a condition in configurations consistently related to an outcome and thereby considers the interplay of conditions. The remainder of this concluding section addresses some questions that were not considered in the introduction.

The example used crisp-set QCA, as the outcome was conceptualized as dichotomous: civil war recurrence versus peace survival. I see no reason as to why this approach would not also be applicable for fuzzy-set QCA.

In the illustration, none of the conditions proved necessary for either outcome. When necessary conditions are identified, they must be prioritized for inclusion in the analysis of sufficiency.

The solutions presented above did not contain any paths that only cover a single case. A cautious approach thinks twice about whether to include such paths when ascertaining the number of covered cases, as there is no second case for validating the relation between the configuration and the outcome. The larger the sample and the fewer the total number of single case paths, the less the explanatory power score will be affected by the inclusion of such configurations. The smaller the sample and the more frequent the paths covering only one case, the greater the impact on the explanatory power score when considering these configurations.

The demonstration did not consider logical remainders.<sup>20</sup> Apparently, (more) parsimonious solutions and the tool presented here fulfil similar tasks, as both facilitate the presentation and interpretation of QCA results. Nevertheless, the tool is by no means redundant in terms of examining intermediate or parsimonious solutions, since they alone do not indicate the extent to which the theory or policy instrument under investigation distinguishes between the outcomes. Moreover, even when considering parsimonious solutions, it can still prove difficult to keep track of results when evaluating competing theories or policy instruments.

Although the demonstration only used complex solutions, the tool can also use intermediate or parsimonious solutions. In many applications, the inclusion of logical remainders will lead to fewer relevant paths and thereby accelerate the first steps in calculating the explanatory power score. Users have to consider another consequence: The inclusion of logical remainders can lead the condition in focus to being sorted out as superfluous, causing the affected paths to lose relevance in terms of ascertaining the extent to which the concepts under consideration distinguish among the outcomes. When the cases on these paths are not covered by other relevant paths, a smaller portion of cases is represented, thus influencing the explanatory power score. This score diminishes as differences between the portions of represented cases for a respective outcome decrease (the columns in Table 4) and/or with decreasing differences between the two outcomes covered by the same condition (the rows in Table 4). The explanatory power score increases when these differences expand.<sup>21</sup> As the type of solution affects the explanatory power score, only solutions of the same type should be compared.

The examples in this paper used the same conditions for both outcomes, assuming causal symmetry. It seemed reasonable to suppose that the type of war termination would be important for both peace survival and for civil war recurrence. But how can we apply the tool introduced here when causal asymmetry is expected, as in many QCA applications (Schneider/Wagemann 2012: 78-82, 112-113)? If interest lies in explaining only a single outcome, one can look at the portion of represented cases that yield this outcome. The theory or condition in question proves to be stronger the larger the difference between the two scores within the same column. In Table 14, for example, the difference with regard to the represented peace cases is 0.4 for Relationship A. The difference can vary between 0 and 1. If both outcomes are to be considered, the researcher can adapt the models to reflect causal asymmetry and use model  $A*B \rightarrow \text{outcome}$  and model  $\sim A*C \rightarrow \sim \text{outcome}$ . The explanatory power score

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20 For a consideration of these, see: Ragin 1987: 104-113; Ragin/Sonnett 2004; Schneider/Wagemann 2012: 195-219.

21 This happens, for instance, when using the parsimonious solutions for the analyses presented in Tables 7 and 8. Here, the five cases with peace survival, despite a war termination other than victory or peace agreement, get lost, changing the explanatory power score from -0.74 to -0.91.

can be calculated, as outlined above, by analyzing the solution of the first model for one outcome and the solution of the latter model for the other outcome.

Another question is how to assess the explanatory power score. When close to 0, it illustrates that a theory or condition does not distinguish between the outcomes at all. A score close to 2 or -2 seems impossible, as it demands a perfect relationship, seamlessly covered by solutions with a coverage and consistency of 100%. At what point may we categorize the explanatory power score as being moderate or strong? A look at the constructed relationships in Table 14 can help.

**Table 14: Constructed relationships and their explanatory power score**

	portion of represented recurrence cases	portion of represented peace cases	explanatory power score
<i>Constructed Relationship A</i>			
paths with victories	0.20	0.60	
paths with peace agreements	0.60	0.20	-0.80
<i>Constructed Relationship B</i>			
paths with victories	0.13	0.67	
paths with peace agreements	0.13	0.22	-0.44
<i>Constructed Relationship C</i>			
paths with victories	0.25	0.36	
paths with peace agreements	0.38	0.29	-0.20

Constructed Relationship A seems rather strong, as paths with victories cover a large portion of cases with peace survival and only a small portion of recurrence cases, while paths with peace agreements cover a small portion of cases with lasting peace but a large portion of recurrences. Thus, there is a considerable difference between victories and peace agreements in both columns. Moreover, a significant portion of both outcomes is covered. Nevertheless, the explanatory power score here is only -0.8. In Relationship B, paths with victories and paths with peace agreements only differ with regard to the portion of represented peace cases; both fail to cover instances of resumed civil war. The resultant explanatory power score is -0.44. In Relationship C, the differences between the columns are small. Thus, the explanatory power score is low (-0.2), even though a significant portion of cases of both peace survival and civil war recurrence is covered. Table 15 proposes a scheme for assessing the explanatory power score.

**Table 15: How to assess the explanatory power score – an initial approximation**

explanatory power score	assessment
$\leq -0.8$ or $\geq 0.8$	strong relationship
$> -0.8$ to $\leq -0.6$ or $\geq 0.6$ to $< 0.8$	moderate relationship
$> -0.6$ to $\leq -0.4$ or $\geq 0.4$ to $< 0.6$	weak relationship
$> -0.4$ to $< 0.4$	no relationship

This categorization is inevitably arbitrary, as are the levels for statistical significance set in quantitative studies or the thresholds for coverage and consistency in QCA applications. If the explanatory power score is ultimately to be used in future studies, scholars must find a working consensus as to what constitutes a weak or strong relationship.

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## Appendix

**Table 16: Overview of the cases**

civil war dyad: state (rebels or rebel region)	duration (months)	ethnic conflict	fatalities (rounded to thousand)	war outcome (case literature)	war outcome (UCDP)	recurrence
Angola (National Union for the Total Independence of Angola (UNITA))	1998-2002 (49)	yes	140,000	victory	peace agreement	no
Azerbaijan (Nagorno-Karabakh)	1988-1994 (76)	yes	25,000	ceasefire	ceasefire	no
Bosnia-Herzegovina (Serb Republic)	1992-1995 (43)	yes	80,000	peace agreement	peace agreement	no
Bosnia-Herzegovina (Croat Republic Herceg-Bosna)	1993-1994 (14)	yes	13,000	peace agreement	peace agreement	no
Burundi (National Council for Defence of Democracy-Forces for the Defence of Democracy)	1994-2004 (116)	yes	160,000	peace agreement	peace agreement	no
Cambodia (Khmer Rouge)	1979-1998 (239)	no	150,000	victory	victory	no
Chad 1 (Mouvement pour le Salut/Mouvement pour un Développement Démocratique)	1990-1993(35)	yes	3,000	low activity	low activity	no
Chad 2 (Mouvement pour la Démocratie et la Justice au Tchad)	1999-2002 (47)	yes	1,000	victory	low activity	no
Congo-Brazzaville (Cobras/Cocoyes, Ninjas, Ntsiloulous)	1997-1999 (31)	no	20,000	victory	peace agreement	no
Democratic Republic of the Congo (DRC) (Mouvement de Libération du Congo (MLC))	1998-2002 (49)	no	105,000	peace agreement	peace agreement	no
El Salvador (Frente Farabundo Martí para la Liberación Nacional)	1980-1991 (139)	no	75,000	peace agreement	peace agreement	no
Ethiopia (Ethiopian People's Revolutionary Democratic Front et al.)	1976-1991 (180)	yes	1,000,000	victory	victory	no
Georgia (Abkhazia)	1992-1993 (15)	yes	8,000	victory	peace agreement	no
Guatemala (Guatemalan National Revolutionary Union et al.)	1965-1995 (372)	yes	200,000	peace agreement	peace agreement	no
India (Punjab)	1983-1993 (132)	yes	21,000	victory	low activity	no
Indonesia (Aceh)	1999-2005 (79)	yes	9,000	peace agreement	peace agreement	no
Liberia 2 (Liberians United for Reconciliation and Democracy, Movement for Democracy in Liberia)	2000-2003 (37)	yes	15,000	victory	peace agreement	no
Mozambique (Resistência Nacional Moçambicana)	1977-1992 (189)	no	1,000,000	peace agreement	peace agreement	no
Myanmar (Kachin Independence Organisation)	1961-1992 (380)	yes	3,000	ceasefire	ceasefire	no
Nicaragua (Contras)	1982-1990 (100)	no	31,000	ceasefire	ceasefire	no
Peru (Sendero Luminoso)	1982-1999 (208)	no	58,000	low activity	ceasefire	no
Sierra Leone (Revolutionary United Front, Armed Forces Revolutionary Council)	1991-2000 (115)	no	60,000	peace agreement	peace agreement	no
Sri Lanka (People's Liberation Front (JVP))	1987-1990 (41)	no	50,000	victory	victory	no
Tajikistan (United Tajik Opposition)	1992-1996 (55)	no	80,000	peace agreement	peace agreement	no
Uganda (Allied Democratic Forces (ADF))	1996-2002 (72)	yes	4,000	victory	victory	no
United Kingdom (Northern Ireland)	1970-1994 (300)	yes	4,000	low activity	low activity	no

Yemen (South Yemen)	1994 (2)	no	10,000	victory	victory	no
Yugoslavia (Croatia)/Croatia (Serbs)	1991-1993 (29)	yes	18,000	ceasefire	ceasefire	no
Yugoslavia (Kosovo)	1998-1999 (15)	yes	11,000	peace agreement	peace agreement	no
Angola 2 (UNITA)	1975-1995 (242)	yes	300,000	low activity	low activity	yes
DRC (Rassemblement Congolais pour la Démocratie du Peuple (RCD))	1998-2004 (77)	yes	350,000	low activity	peace agreement	yes
Ethiopia (Eritrean People's Liberation Front et al.)	1964-1991 (327)	yes	200,000	victory	victory	yes
Ethiopia (Oromo Liberation Front)	1983-1992 (114)	yes	1,000	victory	low activity	yes
Iraq (Kurds)	1985-1997 (151)	yes	102,000	low activity	low activity	yes
Iraq (South)	1991-1996 (72)	yes	25,000	low activity	low activity	yes
Liberia 1 (National Patriotic Front of Liberia)	1989-1996 (80)	yes	70,000	peace agreement	peace agreement	yes
Philippines (Moro National Liberation Front)	1972-1990 (217)	yes	100,000	low activity	low activity	yes
Russia (Chechnya)	1994-1996 (21)	yes	50,000	ceasefire	ceasefire	yes
Rwanda (Rwandan Patriotic Front/Party of the Liberation of Rwanda, Democratic Liberation Forces of Rwanda)	1990-2002 (138)	yes	1,093,000	low activity	low activity	yes
Sri Lanka (Liberation Tigers of Tamil Eelam (LTTE))	1983-2001 (222)	yes	70,000	ceasefire	ceasefire	yes
Sudan (Sudan People's Liberation Army, National Democratic Alliance)	1983-2004 (259)	yes	2,000,000	peace agreement	peace agreement	yes
Uganda (Lord's Resistance Army (LRA))	1986-1991 (49)	yes	15,000	low activity	low activity	yes
Zaire (Alliance des Forces Démocratiques pour la Libération du Congo)	1996-1997 (7)	no	233,000	victory	victory	yes