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War in the foreign policies of nations: an analysis of war-proneness*

by Henk W. Houweling and Jan G. Siccama

1. The image of war

In the past, the occurrence of war was usually attributed to such socially uncontrollable phenomena as the visitations of an unpropitious deity, the commands of 'great men of history', the promptings of the instinct of pugnacity, the rational decisions of statesmen acting on behalf of the national interest, or to the conscienceless exploitation by such devil-like groups as communists, capitalist plutocrats, jews or the munitions men.¹

Today, wars are increasingly regarded as a social and as a man-made problem. A problem that could be solved after acquiring adequate knowledge of the laws governing human behaviour and developing a program of behavioural control on the basis of these laws.

Several factors have come together in this reorientation in thought about war. The following three seem to be among the more important of these factors.

(1) The progressive development of the means of destruction up to the point that the outcome of a future war could mean the obliteration of human existence as such. Compared with the apparatus of destruction available now, warfare was still a children's game about a century ago, when Friedrich Engels predicted that the means of destruction could not be expected to be perfected any further in the future.²

(2) The insight that peaceful production and exchange of commodities is much cheaper, much more rewarding and less riskier than taking these goods violently from your neighbours. Until the time-span between 4500 and 2000 B.C. (a period of only 250 or 160 generations of 25 years each from now!) people in Europe lived in an economy without production. They had to make a living from what they were able to gather.³ Consequently, territory contain-

* This analysis was presented as a paper at the Joint Session of Workshops of the European Consortium for Political Science (Workshop 'Forecasting Foreign Policy'), Florence (Italy), 1980.

ed the whole stock of desired goods. In that pre-agricultural society violence and war could be regarded as instrumental. Though territory today is still the bearer of all things of value, agricultural and industrial production since have made clear that the conquest of land is not the most profitable instrument to acquire wealth.

(3) The gradual, but progressive erosion of collective values in the minds of men and their substitution by individual values. At least in growing economies, year after year the capacity of the factory to pay proved to be much greater than the gains from adherence to organizations which are based on community-oriented value systems such as the national army.

From this viewpoint it is not amazing that Hobbes, the prophet and herald of the capitalist era, was a utilitarian pacifist⁴ and that Hegel, the steadfast fighter against the disruption of society by market forces, was a philosophical glorifier of war.⁵ What really is amazing, however, is that the lesson that wars are unproductive was brought to men by the way of learning by doing. This is in conformity with Kant's view that rational insights alone do not suffice to keep mankind at the track of progress. According to Kant, disasters of his own making force man to apply scientific techniques to the study of his own behaviour. In doing so, man will change his attitude toward the phenomena he studies. As a result, wars will become regarded as manifestations of inadequate human adjustment to a social environment, man has created himself.⁶

Especially the disaster of the First World War greatly contributed to the emancipation of thought about war from fallacious doctrines. The 'Great War' drove home the point that man and society are too dangerous entities to use war as instruments of their policies. The lesson was taught so forcefully that at least some people were not able to forget it again. The progress is manifested by the investigations into war as a man-made phenomenon which were conducted by Richardson⁷, Sorokin⁸ and Wright⁹ during the interbellum. These researchers endeavoured to describe fluctuations in warfare in time and space and tried to unravel the multitude of causes determining these fluctuations.

But the victory of causal analysis was not complete at that time; nor would it be without reverses. At the same time that Richardson, Sorokin and Wright conducted their now classic investigations, nationalist historians established the doctrine of the criminal state.¹⁰ These historians reinforced the image of war prevailing in political practice. This image had provided the rationale for the victorious nations to legislate the doctrine of the criminal state in the text of the Peace Treaty of Versailles. This doctrine of the criminal state fails to appreciate that the stimuli and consequences of violent international behaviour are, – like all behaviour –, under environmental control. Stimuli eliciting violent behaviour are not innately valenced, while the consequences of that

behaviour are partially dependent upon what other people do, or fail to do. Contrary to this insight, the doctrine of the criminal state regressed thinking on war to an image of man in which criminal acts are prompted by the pre-social criminal nature of the wrongdoer. In this view, repetition of crime in the future might be prevented by making the criminal incapable to act or by removing him completely from the society of nations. It needs no clarification that this image of war was very reassuring to the victorious states in the First World War and enabled them to persist in their previous policies.

As we know now all too well, the policies based on this misconception of behavior in the doctrine of the criminal state, turned out to be counterproductive. In the dissatisfied nations to begin with, the Clausewitzian image of war revived as the desire for *revanche* became irresistible and the capabilities to behave accordingly grew. Douhet became their prophet.¹¹

Furthermore, the outbreak of the Second World War seemed to confirm the doctrine of the German war guilt, which had been established on the shaky evidence of the First World War. In the case of the Second World War, even the acts of one leader, – Hitler –, seemed sufficient to explain its outbreak until the appearance of Taylor's 'The Origins of the Second World War'; historians consequently were generally satisfied with the indictment of Germany's responsibility for the war.¹²

After the second great war, the advance of nuclear weapons firmly entrenched the Clausewitzian image of war in the defence establishments of the superpowers. In the hands of the neo-Clausewitzians, strategy became a new science, the science of interdependent decisions made by rational actors.¹³ Only towards the end of the fifties, the causal analysis of war was rediscovered by investigators like Singer¹⁴ (The Correlates of War Project) and North et al.¹⁵ (The Stanford Studies on Conflict and Integration).

In this paper we hope to contribute to this causal analysis of national war participations. In section 2.1 data on the rates of national war participation for specified time-periods are presented. These rates turn out to be unequal. This inequality seems to indicate that some nations are the culprits indeed. In section 2.2 the concept of a 'war-prone nation', which is regarded crucial for the explanation of differences in war participation, is analyzed logically. Next (in sections 2.3 and 2.4), two rival hypotheses which imply unequal rates of war participation, are introduced. The first of these hypotheses is discussed in section 2.3. In this hypothesis, national war participations are conceived as independent events occurring with identical probabilities. This conception underlies the Bernoulli trials and the Binomial distribution. In the study of national war participations Bernoulli-events provide a baseline for judgments on the adequacy of assumptions on the propensity of individual nations to fight. If warranted empirically, the assumption of identical probabilities of

national participation should result in a Poisson-distribution of the aggregate of national war behaviours over a specified time-span. In section 2.4 the rival hypothesis of 'war-proneness' is introduced. If national characteristics cause differences in the rate of war participations the observed distribution of the aggregate of national fighting behaviours should fit the Negative Binomial distribution. In section 3 these rival models are applied to the facts of national war participations. Finally, in section 4 the implications of the findings for research are discussed.

We have used Singer and Small, *The Wages of War*, as our data source.¹⁶ With the exception of the participations of Italy/Sardinia, Bulgaria and Rumania in the Second World War, which are counted in our analysis for only one participation (and not for two, like in *The Wages of War*) all operational criteria that govern the application of the concepts of 'states' and 'war' in this paper are detailed in this book.

2. War mongers and peace lovers

2.1. Unequal rates of national war participation

Quantitative descriptions of the recent history of warfare have resulted in the well-established truth that nations have gone to war at rather unequal rates. Table 1 captures the measure of national war activities to which this analysis is restricted, viz. the number of international wars fought in during the period 1816-1965. (See Table 1).

At one extreme, we notice that the United Kingdom and France have participated in 19 wars, while at the other extreme a majority of 77 of the total of 144 nations did not fight in any war at all. The object of this paper is to set up two rival hypotheses that might explain the unequal rates of change from peace to war in the foreign policies of states, as they are shown in Table 1.

With one problem in the analysis we must deal at the outset. This problem concerns differences in the number of years during which the nations listed in Table 1 were members of the international system. To mention two extremes, the USA is an independent state for the full period of 150 years, while Gambia only got its independence in 1965, the last year of the time-span under investigation.

Beyond the problem of the appearance of new actors in the international system, a number of states has disappeared altogether from the scene of world politics. Examples falling in this category are the German states and the Italian states.

In order that a comparison of rates of national war participation will make sense, the actors concerned must be able to wage war during an equal interval

of time. However, restriction of the analysis to the 13 nations that existed for the complete period of 150 years (and even than neglecting short periods of occupation of some countries), would mean that such a frequent fighter as Austria-Hungary would be dropped. Also all states in Latin America, Africa, the Middle East (except Turkey) and Asia would be omitted.

We solved the problem of changing membership of the international system by dividing the interval of 150 years in three subperiods of approximately 50 years each, and restricting the analysis to those states that participated in the international system for the full length of such a subperiod. The frequencies of national war participations during these subperiods are represented in Table 2.

The choice to divide the 150 year-period in subperiods of fifty years each is motivated by three reasons. First, this break-up mitigates the negative effects of changes in the composition of the international system to an acceptable degree. Second, periods of half a century seem long enough to afford consistent fighters - if any - to fight several wars and provide adequate time for consistent lovers of peace - if any - to manifest their disposition not to fight. Third, a period of fifty years approximately coincides with the memory period of two generations. It may be useful to compare the war records for such fifty years memory periods by correlating the numbers of war participations of those nations that existed for two consecutive subperiods.

Tables 3a, 3b and 3c then summarize for each subperiod the numbers of countries that participated in a varying number of wars.

Table 3a: 1816-1866 (20 nations, 59 participations)

	Number of wars fought in											
	0	1	2	3	4	5	6	7	8	9	10 >10	
Number of nations fighting those wars	3	8	1	2	0	0	3	1	1	0	1	0

Table 3b: 1867-1918 (30 nations, 53 participations)

	Number of wars fought in								
	0	1	2	3	4	5	6	7 >7	
Number of countries fighting those wars	11	6	4	3	2	3	0	1	0

Table 3c: 1920-1965 (58 nations, 63 participations)

	Number of wars fought in									
	0	1	2	3	4	5	6	7	8 >8	
Number of countries fighting those wars	28	15	8	2	3	0	1	0	1	0

In each subperiod, we again observe a marked inequality in the rates at which nations have gone to war. In section 2.2, we try to capture the meaning of these inequalities.

2.2. The war-proneness of nations

Tables 3a, 3b and 3c clearly illustrate that a small number of nations does in each subperiod most of the fighting. Two-third of the war participations are accomplished respectively by 8 of the 20 nations (1816-1866), 8 of the 30 nations (1867-1918) and 11 of the 58 nations (1920-1965). Clearly a small number of nations in each subperiod contributes a disproportionately high share to the aggregate amount of national war participations. Are these nations then the war-prone? Do they possess a set of attributes or stimuli predisposing them to fight? And if so, what is the nature of these national instigators of war?

On the other hand, a majority of nations contributed a disproportionately low share to the total amount of fighting. Are these nations the lovers of peace? Do these nations possess a set of attributes steering them away from fighting, even if they are attacked? And if so, what is the nature of these national pacifiers?

In answering the question of war-proneness, one fallacy should be dealt with first. It is not uncommon to prove war-proneness of named nations by their war records over an (un)specified time-interval and next to explain the war records of these nations by calling them war-prone. At least to some historians the circular character of this way of reasoning has remained unnoticed.

Next we must make explicit that identifying the war-prone nations by comparing relative rates of war involvement over an equal time-span is to promise more than can be substantiated. Such a procedure is followed by David Singer. He identifies the war-prone on the basis of the war records of nations without suggesting that the concept of war-proneness explains the rate of war participation. To the contrary, Singer seems very well aware of the problem that unequal rates of fighting do not necessarily imply the search for causes at the national level of analysis. In the introduction of Chapter 11 ('The War-Proneness of Nations') of the *Wages of War*, Singer writes:

'(...) we hope to make this volume equally valuable to scholars who concentrate not at the larger systemic setting, but on a particular geographic region, a given pair of nations, or even a single such entity. In this chapter, therefore, we shift our level of analysis and offer a wide range of war data showing the war experienced by each individual *nation* during its membership in the system (...), the general question – why some nations are more war-prone than others – merits investigation'.¹⁷

This quotation suggests, at least, that the unequal rates of war involvement might be caused by war instigators at the national level, propelling some nations to fight more frequently than others. This approach of national fighting behaviour implies that if the war-prone nations can be spotted and removed from the system, the average rate of fighting would decrease.

However, at the end of the same chapter Singer remarks:

'(...) war-proneness need not be thought of primarily as a function of nation's attributes or behavior, but should also be examined in the light of the geographical, temporal, and political setting in which it found itself'.¹⁸

If this last statement is true, it implies that removing or changing the war-prone states (as identified by their records of war-fighting) will not be followed by a drop in the average rate of fighting. Under these circumstances the concept of war-proneness is misleading and ought to be avoided altogether. This is the reason why we qualified the chapter on 'war-proneness' in the *Wages of War* as promising more than is substantiated by the contents. In our view, it is unsatisfactory to detail war records of named nations and call some of them 'war-prone', while suggesting at the same time that these national war records don't need to be caused by characteristics at the national level of analysis at all.

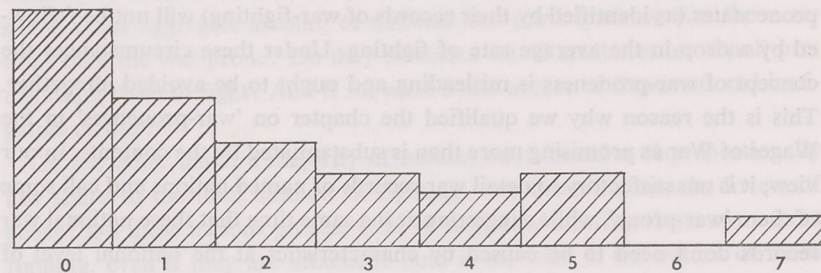
In the ideologies of the most influential and rivalizing powers (such as 'make the world safe for democracy', or: 'socialism means peace') the causes of war are indeed located in some set of attributes at the national level. Research into the causes of war seems heavily influenced by such ideologies, as well as by the different war-records of nations, in presupposing that such national attributes could be found and explaining consequently what is going on in the state- and defence departments of the various countries. Unfortunately however, we have not been able to locate any publication in modern research on the causes of war in which the assumptions justifying the search for causes of national fighting behaviours at either the national level or at a larger environmental setting, are spelled out. In these circumstances, one should not be surprised that the concept of 'war-proneness' is at the centre of ideology formation in world politics as well as a hazy one in modern research on the causes of war.

The issue at stake here is a very important one from a practical point of view. Firstly, remedial action directed at the national level – by changing the institutions of the war-prone or removing them completely from the society of nations – will be easier to accomplish than changing the structure of the international system. After a victorious war the warmongers may be controlled effectively by more powerful states. On the other hand, system variables are beyond the control of whatever actor in the international system. International

systems are not made or changed intentionally. Secondly, remedial action at the wrong level will be unproductive at best. After a wrong diagnosis, application of a treatment will not result in a drop in the average rate of fighting.

In view of the confusion with respect to the causes of national war participations, the art of modelling may be a helpful instrument to explore the unknown territory. Models force one to consider the logic of the situation consistently since they necessitate to specify the conditions which should be satisfied for obtaining a set of outcomes. To give one a notion of the direction we intend to go, observe Figure 1.

Figure 1: Frequency of nations fighting varying numbers of wars 1867-1918



This histogram displays the figures of Table 2b in graphic form.

It shows the rather general pattern that the frequency of nations decreases when the number of wars in which they have participated increases. The greatest number of countries has not fought at all, the second greatest number has participated in one war, the third greatest number has participated in two wars, and so on. Next we may ask whether there is any law (or whether there are any laws) of distribution which lay the foundation for the observed pattern. To that end, in section 2.3. we investigate the hypothesis of 'pure chance' and in section 2.4. the hypothesis of 'war-proneness'.

2.3. The hypothesis of 'pure chance'

The 'pure chance' model is based on two assumptions:

- (i) *Environmental circumstances are equal for all nations.*
- (ii) *Individual nations are all homogeneous with regard to qualities which render them liable to fight in wars.*

According to assumption (i) nations are operating in an international environment where the incitements to fight are equal for all of them. Whether this assumption is true is another matter. We may just adopt it for the sake of argument and see where it leads to in combination with assumption (ii).

Assumption (i) is not so far removed from the study of international relations as may be thought at first sight.

The classical philosophy of international relations contends that:

International relations owe their distinct character to the fact that power has been fragmented into competing or independent groups throughout world's history.

(...) It is the very lack of a supreme and generally accepted authority which explains why the rules of the game in world politics differ so sharply from the rules of domestic politics. (...) As one writer has put it, (world politics) begins with the context and is then led to consider the content: its interest is in the environment'.¹⁹

Assumption (ii) amounts to the assertion that all nations are equally war-prone.

If true, these assumptions do *not* imply that each nation fights the same number of wars.

Firstly, an obvious limitation is the fact that the number of national war participations may be smaller than the number of nations. For example, we may have a set of 100 nations and a time interval during which 10 war participations were recorded. In this situation, at most 10% of the nations has accomplished all the fighting. Obviously, a small percentage of nations doing all the fighting is not in accordance with the assertion that each nation fights the same number of wars.

Secondly, assumptions (i) and (ii) do not imply that 10 nations *must* have done all the fighting (each of them being involved in one war only). This supposition would imply that a nation which has fought once becomes immunized against further war involvements. If this were true, it would contradict assumption (ii) of the 'pure chance' model.

Therefore, we conclude that the 'pure chance' model does not imply an equal rate of war participation.

As wars continue to break out during a specified time-period the number of countries having not fought at all decreases, and the number of countries having fought only once increases. Furthermore, some countries having fought only once until then change into the category of nations having two war experiences, and so on. If war involvements occur independently from each other and at random in the international system, we expect to find that the number of war participations per country is a Poisson-variate.²⁰ Then, the probability that a nation has fought r times, equals:

$$p_r = \frac{\lambda^r e^{-\lambda}}{r!}$$

where λ is the expectancy of the distribution. To see this, suppose that the

probability of getting involved in war is p . The probability of having r war involvements is then given by the binomial probability

$$\binom{n}{r} p^r (1-p)^{n-r}$$

Now suppose that the number of occasions to become involved in war is very large, while the probability that a specific nation will fight on such an occasion is very small. Then, as n becomes large.²¹

$$\begin{aligned} p_r &= \binom{n}{r} p^r (1-p)^{n-r} \sim \frac{(np)^r}{r!} (1-p)^n \\ &= \frac{\lambda^r (1-\lambda/n)^n}{r!} \rightarrow \frac{\lambda^r e^{-\lambda}}{r!} \end{aligned}$$

Consequently, the hypothesis of 'pure chance' results in different nations having fought different numbers of wars without any one of them being war-prone.

2.4 The hypothesis of war-proneness²²

In section 2.3 we concluded that the war-prone cannot be identified on the basis of unequal war participation rates alone.

What we need to do now is primarily the postulation of rival assumptions concerning the propensity of nations to fight in wars. Next, we will ascertain the distributional consequences of these rival assumptions. Again, the final step is to compare these consequences with the observed results (which will be done in section 3).

We maintain that the exploration of rival hypotheses, with different distributional consequences, is a suitable way to explore the unknown territory of causation of national war participations. A comparison of the predicted outcomes with the observed ones may steer research in fruitful directions.

If the Poisson-distribution does not fit well, the hypothesis of war-proneness is the obvious alternative to the 'pure chance' model. The war-proneness model is based on two assumptions:

- (i) *Nations are operating in an environment in which the war instigating factors are equal to all of them.*
- (ii) *Some nations, as opposed to others, possess features that push them to war, or have such features in higher doses than other nations. Such features do not change with the passage of time and with the occurrence of war.*

If nations are non-homogeneous with respect to the factors making them inclined to fight, they are unequal among themselves in these respects. The hypothesis of war-proneness then, implies a world where nations can be

divided into several subsets. Each of these subsets is homogeneous within itself (though a subset may consist of one country), but differs from all other subsets with regard to the degree to which war-instigating features are possessed. Consequently, *within* each subset the distribution of war participations will be of the Poisson type, although each of the Poissons has a mean unique to its own:

subset 1: the war participations of nations 1, 2, ... follow the Poisson Law, with mean λ_1 ;

subset 2: the war participations of nations a, b, c ... follow the Poisson Law, with mean λ_2 ;

subset 3: the war participations of nations A, B, C ... follow the Poisson Law, with mean λ_3 .

etc.

Each subset is in this way characterized by a different rate of war involvement reflecting the degree of war-proneness of nations within the subset.

This implication of the war-proneness model cannot be tested directly. After all, the only figures we have available are the war records of nations. And, as we stated in the previous section, their national war records are an unsound basis to identify the war-prone or distinct degrees of war-proneness. Consequently, we are unable to construct subsets of equally prone nations on the basis of the available war data. We stress the impossibility to test this implication of the war-proneness model inductively, because many authors in the field of world politics make distinctions of this nature between nations with such a remarkable ease as if no further comments were required.

How does the frequency distribution for such a heterogeneous mixture of nations look like? It can be shown that it must take the form of the Negative Binomial distribution. This kind of distribution is the mathematical result of bringing together a series of Poissons, when each Poisson distribution applies to a distinct (hypothetical) subgroup of nations. Supposing that the nations are dissimilar means that λ is itself a random variable. Let us assume it has a Pearson type III distribution. Therefore we assume that the probability density function of λ is

$$f(\lambda) = \frac{1}{\Gamma(k)} \left(\frac{1}{p}\right)^k \lambda^{k-1} e^{-\lambda(1/p)} \quad (\lambda \geq 0)$$

Then

$$\begin{aligned} p_r &= \frac{1}{r! \Gamma(k)} \left(\frac{1}{p}\right)^k \int_0^\infty \lambda^{r+k-1} e^{-\lambda(1+p)} d\lambda \\ &= \frac{p^{-k}}{r! \Gamma(k)} \cdot \frac{\Gamma(r+k)}{\left(\frac{1+p}{p}\right)^{r+k}} = \frac{\Gamma(r+k)}{r! \Gamma(k)} \frac{p^r}{Q^{k+r}}, \end{aligned}$$

where $Q = 1 + P$, which is the Negative Binomial distribution.

In section 3 we investigate whether the Poisson distribution or the Negative Binomial distribution fits best to the observed distributions.

3. Empirical results

3.1. The 'pure chance' model

In Tables 4a, 4b and 4c we compare for each of the three half-century periods the observed distribution of participations with the distribution to be expected on the basis of the Poisson Law.

The result is:

Table 4a: 1816-1866

	Number of wars fought in										
	0	1	2	3	4	5	6	7	8	9	10
Number of nations <i>observed</i> in fighting these wars	3	8	1	2	0	0	3	1	1	0	1
Number of nations <i>expected</i> to fight	2	3	5	4	3	2	1	0	0	0	0

$\bar{x} = 2,95$; $\sigma^2 = 8,85$
 $\Sigma [f_i - e_i(p)]^2 / e_i(p) = 2,73$

A comparison of the mean and the variance alone suffices to conclude that the fit between the two distributions is very bad. A good fit with the Poisson Law would require that the variance and the mean of the observed distribution are equal. Consequently, the hypothesis of 'pure chance' as a principle underlying the observed distribution is rejected in the 1816-1866 period.

For the second subperiod the result is:

Table 4b: 1867-1918

	Number of wars fought in							
	0	1	2	3	4	5	6	7
Number of nations <i>observed</i> in fighting these wars	11	6	4	3	2	3	0	1
Number of countries <i>expected</i> to fight	5	9	8	5	2	1	0	0

$\bar{x} = 1,77$; $\sigma^2 = 3,71$
 $\Sigma [f_i - e_i(p)]^2 / e_i(p) = 9,94$

In order to avoid small frequencies, four groups were formed for the purpose of applying Pearson's chi-square test to the significance of the deviations

between the observed and the expected frequencies. Testing at the 5%-level with 2 degrees of freedom, we obtain $\chi^2_{0,95} = 5,99$. Consequently, the hypothesis of 'pure chance' has to be rejected.

The results for the 1920-1965 interval are represented in Table 4c.

Table 4c: 1920-1965

	Number of wars fought in									
	0	1	2	3	4	5	6	7	8	
Number of countries <i>observed</i> in fighting these wars	28	15	8	2	3	0	1	0	1	
Number of countries <i>expected</i> to fight	20	21	12	4	1	0	0	0	0	

$\bar{x} = 1,09$; $\sigma^2 = 2,49$
 $\Sigma [f_i - e_i(p)]^2 / e_i(p) = 6,90$

In order to avoid small frequencies, countries fighting 4 or more wars were grouped together. Then, with 2 degrees of freedom $\chi^2_{0,95} = 5,99$. Consequently, for the third period the principle of 'pure chance' is rejected.

Apparently, for each of the three subperiods the Poisson Law comes to nothing in explaining the historical facts. In the world of nations, there is no reason to suppose that the risk of war involvement is spread uniformly amongst all members.

3.2. The war-proneness model

In tables 5a, 5b and 5c the observed distribution is compared with the distribution to which the Negative Binomial applies.

Table 5a: 1816-1866

	Number of wars fought in										
	0	1	2	3	4	5	6	7	8	9	10
Number of nations <i>observed</i> fighting in these wars	3	8	1	2	0	0	3	1	1	0	1
Number of nations <i>expected</i> to fight	4	4	3	2	2	1	1	1	0	0	0

$\bar{x} = 2,95$; $\sigma^2 = 8,84$
 $\Sigma [f_i - e_i(NBD)]^2 / e_i(NBD) = 2,26$

Application of Pearson's χ^2 -significance test requires at least 5 observations in each group. Three such groups can be formed, leaving $3 - 2 - 1 = 0$ degrees of freedom. Consequently, the test criterion fails to apply to this case and we cannot come to a conclusion for the first subperiod.

Table 5b: 1867-1918

	Number of wars fought in							
	0	1	2	3	4	5	6	7
Number of nations <i>observed</i> fighting in these wars	11	6	4	3	2	3	0	1
Number of nations <i>expected</i> to fight	9,1	7,7	5,2	3	2	1	0	0

$$\bar{x} = 1,77 \quad ; \quad \sigma^2 = 3,71$$

$$\Sigma [f_i - e_i(\text{NBD})]^2 / e_i(\text{NBD}) = 1,17$$

With one degree of freedom, $\chi^2_{0,95} = 3,84$. Consequently, the hypothesis that the observed distribution is indeed a compound of Poissons resulting in a Negative Binomial distribution cannot be rejected.

Table 5c: 1920-1965

	Number of wars fought in								
	0	1	2	3	4	5	6	7	8
Number of nations <i>observed</i> fighting in these wars	28	15	8	2	3	0	1	0	1
Number of nations <i>expected</i> to fight	28,9	13,7	7,1	3,8	2,1	1,1	0,6	0,3	0,2

$$\bar{x} = 1,09 \quad ; \quad \sigma^2 = 2,49$$

$$\Sigma [f_i - e_i(\text{NBD})]^2 / e_i(\text{NBD}) = 0,49$$

Again, testing at the 5% significance level with one degree of freedom, we obtain $\chi^2_{0,95} = 3,84$. Consequently the hypothesis that the principle of war-proneness is basic to the observed distribution of national war participations in the third period cannot be refuted.

3.3. Two caveats

The limits of inductive reasoning

The Poisson Law of distribution is the mathematical consequence of the 'pure chance' model. It must apply if the environmental circumstances are equal to all nations and if all nations are equally prone to fight. The reverse however, is not true. From a close fit between the Poisson Law and the observed distribution we cannot deduce that the assumptions of the 'pure chance' model do apply. In the future, some other law of distribution than 'pure chance' may be found that fits the observed facts also well or perhaps even better. To our knowledge, such other hypotheses have not been developed yet. But it is just incorrect to exclude the possibility that such other hypotheses may

be developed in the future. We may conclude that, although a good fit with the Poisson is a necessary condition for the assumptions of the 'pure chance' model to apply in fact, it is not a sufficient condition. If the assumptions of the 'pure chance' model apply in fact, the Poisson Law must fit the observed distribution. But when a good fit with the Poisson is found, the assumptions of the 'pure chance' model might apply or not.²³

That these considerations are real is well illustrated by the case of the Negative Binomial distribution. The Negative Binomial will necessarily arise if the nations form subgroups which are internally homogeneous in their propensity to fight, but differ amongst themselves in the degree of war-proneness. It is well-known, however, that the converse is no longer true in fact.

Other assumptions have been developed which also result in a Negative Binomial distribution. Even if these other assumptions look somewhat implausible, the fact that they have been found underlines the hazards of rushing from facts to theory.

In this matter we have made one readily available check. If the conditions of the war-proneness model apply, we not only expect a good fit with the Negative Binomial distribution, but also a non-negligible correlation between the war records of individual nations in consecutive periods. Table 6 illustrates that these correlations in fact are non-negligible indeed.

Table 6: Product-moment correlation coefficients r between the number of individual war participations in consecutive periods

	1816-1866	1867-1918	1920-1965
1816-1866	—		
1867-1918	+ .78	—	
1920-1965	+ .56	+ .57	—

Since it is impossible to establish the principle of war-proneness on the basis of a comparison of the shares that nations contributed to the total amount of fighting, these correlations do not prove the principle of war-proneness either. We only can conclude that these correlations are consistent with the principle of war-proneness. Other hypotheses which may give rise to the hypothesis of war-proneness (e.g. unequal rates of learning or differences in the preferences of nations to win wars) are also consistent with these positive correlations. Lack of space and time, not to speak of intellectual resources, prevent us to pursue this matter of changing probabilities as a result of previous fighting here any further.

The impossibility to separate the effects of national and systemic attributes on fighting behaviour

No model of distribution, however successful it may fit the observations, is

able to separate in any absolute sense the effects of national attributes on fighting from the environmental effects on fighting behaviour.

In the 'pure chance' model, the average rate of fighting is a measure of average proneness only relative to the specific environment for which the rate was obtained. An absolute measure of proneness, independent of any environment, does not exist. Changes in the structure of the international system might result in increasing or decreasing rates of fighting for all nations, if these changes affect them all to an equal degree. Some international systems may just prove to be more dangerous than other ones, resulting in higher rates of fighting. Such changes do not contradict the assumptions of the 'pure chance' model. In the same sense, the optimist's belief that in the long run nations are learning to cope in a non-violent way with the challenges they are confronted with, will, if warranted, result in a lower rate of fighting. But when these effects of learning are affecting all states equally, they do not contradict the assumptions of the 'pure chance' model either. On the other hand, nations may forget the non-violent opportunities to solve conflicts as time goes on. This may be the case with new generations. But again, if such losses of behavioural control affect all nations simultaneously and in the same degree, the consequent effect of an increase in the average rate of fighting is compatible with the Poisson Law. The Poisson Law therefore does not presuppose an unchanging, frozen world.

Likewise, national attributes causing some nations to fight or to fight more than others, are causes relative to the specific environment in which these causes are discovered. Just as the intake of alcohol becomes a cause of traffic accidents as soon as horse riders become car drivers, socialist nations may start fighting amongst themselves as soon as the international system is no longer dominated by the superior power of one capitalist state. Capitalist nations may stop their violent struggles for scarce resources when they are challenged ideologically by a powerful socialist nation. If these statements, which just illustrate the working of ideology as a possible attribute of fighting behaviour, are true in fact, socialism is no longer a cause of peace and capitalism is no longer a cause of war.

3.4. Some possible misunderstandings

Laws of distribution are not laws of nature. Even if the 'pure chance' model would apply to reality without exception, this still would not imply that there are no general statements possible about the causes of national war involvements. The calculus of probability is a branch of mathematics with the sole task to discover which implications can be deduced from a set of assumptions. Laws of distribution do not govern the distribution of fighting among nations.

They only apply to the facts in times and places when and where the assumptions from which the laws are derived, are applicable. Its truths are of an *a priori* nature and do not predicate how the factual world will be. It is rather absurd to suppose that what is not contradicted by past observations cannot be upset by observations in the future.

Laws of distribution do not allow statements on the mechanics of war causation. Laws of distribution are useful in research on the causes of war just because they allow one to ignore, for the time being, the processes determining whether specific nations go to war or not. Distributional laws allow the researcher to study empirical variations in a disciplined fashion. Such studies may reveal where fruitful paths in the study of war causation may be found and where dead ends may begin. If warranted empirically, the Poisson Law – which is a form of distribution consequent upon the assumption of equal proneness – learns that it is useless to look for the mechanics of national war causation in differences among nations. Similarly, if we have come to believe that the Negative Binomial applies, investigation of national differences is the way to go.

Laws of distribution do not tell which nations will fight in the future. Laws of distribution contain information on groups and *not* on named nations. If well established, distributional laws are specifically useful when the assumptions on the factors determining these distributions remain stable in time. In the study of war causation, distributional laws introduce an indeterminacy as soon as one moves from the group of nations to which the probability function applies, to the behaviour of named nations.

4. Conclusion

In this paper we selected two rival images of world politics and the causes of war for further considerations.

Some people are inclined to look at the field of world politics as a system in which the fragmentation of power creates a security dilemma for nations, bearing risks of war equal to all. The 'pure chance' model is the logical outgrowth of such an image. Other people think of world politics in terms of the foreign policies of named nations. In their view, some dice are loaded in favour of war. Other dice are biased towards peace. The war-proneness model is the logical outgrowth of this image. This model is at the center of ideology formation in world politics. It is also a research strategy in the causes of war: any effort to correlate national attributes with indices of national war involvement presupposes that some nations, as opposed to other ones, are liable or

more liable to fight.

In this paper, we tried to model these images, and tested their implications. In this way, we hoped to get some clear indication where to go in the research on the causes of war.

The results we obtained are promising in at least one respect: we can reject the hypothesis of the 'pure chance' model. We can *not* reject the hypothesis of war-proneness. But it would be premature to conclude that the principle of war-proneness is proved or even that it is well substantiated for the cases at hand. Firstly, it is never possible to prove any hypothesis whatsoever with a finite set data.

Secondly, the hypothesis of war-proneness is not even well substantiated because other, rival, assumptions are known that equally give rise to a Negative Binomial distribution. Therefore, we only can conclude that the observed distributions in the second and third subperiods are compatible with the principle of war-proneness.

But nothing in fact or theory forces one to restrict thinking to only this pair of opposed hypotheses, although there may be powerful social forces and interests to accomplish this. The results from our analysis just point to the need for alternative models.

Furthermore, we like to remind at this point that the principle of war-proneness is based on two assumptions: (i) the environmental risks for war are equal to all states; (ii) some nations are more liable to fight than others, as a consequence of national characteristics. But these assumptions are not tested separately in our analysis.

In the world of nations there seems to be an uneasy balance between forces promoting randomness and forces opposing it. Neither complete randomness nor complete proneness seems to prevail. International life is probably so complex that both ideal types are liable to be disturbed by perturbations from a great many corners.

Notes

1. For a summary of classifications of theories on war causation, see Carroll, Berenice, A. and Clinton F. Fink (1975), 'Theories of War Causation: A Matrix for Analysis', in: Nettleship, Martin A., R. Dalegivens and Anderson Nettleship (Eds.), *War: Its Causes and Correlates*, The Hague: Mouton Publishers, pp. 55-71.
2. Berger, Martin (1977), *Engels, Armies and Revolution*, Hambden: The Shoe String Press, contains a detailed analysis of Engels' views on war and the army.
3. Cipolla, Carlo M. (1978⁷), *The Economic History of World Population*, Harmondsworth: Penguin, p. 131.
4. Macpherson, C. B. (ed.) (1968), *Hobbes, Leviathan*, Harmondsworth: Penguin, Chapter XXI, 'On the Liberty of Subjects', pp. 261-274.
5. For Hegel's thought on war see Avineri, Shlomo (1972), *Hegel's Theory of the*

Modern State, Cambridge: Cambridge University Press, Chapter 10: 'On War', pp. 194-208.

6. See for an exposition of Kant's analysis of international relations Gallie, W. B. (1978), *Philosophers of Peace and War: Kant, Clausewitz, Marx, Engels and Tolstoi*, Cambridge: Cambridge University Press, pp. 8-37.

7. Richardson, Lewis F. (1960), *Statistics of Deadly Quarrels*, Pittsburg and Chicago: Quadrangle Press, Boxwood Press, 1960.

8. Sorokin, Pitirim A. (1937), *Social and Cultural Dynamics*, Vol. 3: *Fluctuation of Social Relationships, War and Revolution*, New York: American Book.

9. Wright Quincy (1965², first printing 1942), *A Study of War*, Chicago: University of Chicago Press.

10. Lee, Dwight A. (ed.) (1966), *The Outbreak of the First World War, Who Was Responsible?*, Boston: Heath and Co.

11. Brodie, B. (1963³), *Strategy in the Missile Age*, Princeton: Princeton University Press, Chapter 3, 'The Heritage of Douhet', pp. 71-106.

12. For a recent overview of the historians' non-contribution to the research on the causes of war see Nelson, Keith L. and Spencer C. Olin (1979), *Why War? Ideology, Theory of History*, Berkeley: University of California Press.

13. Schelling, Thomas C. (1960), *The Strategy of Conflict*, Harvard: Harvard University Press.

14. See for instance Singer, J. David (ed.) (1979), *The Correlates of War, I: Research Origins and Rationale*, New York: Macmillan.

15. Choucri, Nazli and Robert C. North (1975), *Nations in Conflict: National Growth and International Violence*, San Francisco: Freeman and Company.

16. Singer, J. David and Melvin Small (1972), *The Wages of War: A Statistical Handbook*, New York: Wiley.

17. *Op. cit.*, p. 258.

18. *Op. cit.*, p. 286.

19. Hoffmann, Stanley H. (ed.) (1960), *Contemporary Theory in International Relations*, Englewood Cliffs: Prentice Hall, pp. 1-2.

20. From Richardson's finding that the observed distribution of outbreaks of war in time follows closely the Poisson distribution, the conclusion is frequently drawn that the series of war outbreaks follows an a-select or random sequence in time. Such a conclusion however is mistaken for three reasons: 1) analysis of time-units (years) does not address the time-ordering of data; 2) time-ordering of data can only be analysed through time series analysis; 3) a Poisson-distribution is compatible with a select ordering in time. See for an elaboration of these points Houweling, H. W. and J. G. Siccama, 'Geschiedenis in Oorlogvoering?' (History in Warfare?), In: *Transaktie* (Netherlands Journal on the Science in War and Peace), 6 (3), September 1977, pp. 152-178.

21. Cf. Pielou, E. (1969), *An Introduction to Mathematical Ecology*, New York: Wiley, pp. 81 ff.

22. The following contributions are basic to the arguments in this section: Mintz, Alexander and Milton L. Blum (1949), 'A Re-Examination of the Accident Proneness Concept', In: *Journal of Applied Psychology*, Vol. 33, pp. 195-22; Maritz, J. S. (1950), 'On the Validity of Inferences Drawn From the Fitting of Poisson and Negative Binomial Distribution to Observed Accident Data', In: *Psychological Bulletin*, Vol. 47, pp. 434-443.

23. Cf. Maritz (1950).

Table 1: National war participations 1816-1965

Code Number	Nation Name	Inclusive years in system	Total years in system	Participations in interstate wars	Participations in extrasytemic wars	Total number of particip. in internat. wars
2	United States	1816-1965	150	-1846 Mexican-American -1898 Spanish-American -1917 WW I -1941 WW II -1950 Korean -1939 WW II -1950 Korean	-1899 Second Philippines	6
20	Canada	1920-1965	46			2
40	Cuba	1902-1965	64			0
41	Haiti	1859-1965	107			0
42	Dominican Rep.	1887-1965	79			0
51	Jamaica	1962-1965	4			0
52	Trinidad-Tobago	1962-1965	4			0
70	Mexico	1831-1965	135	-1846 Mexican-American	-1815 Texan	3
90	Guatemala	1849-1965	117	-1862 Franco-Mexican		2
91	Honduras	1899-1965	67	-1885 Central American -1906 Central American		2
92	Salvador	1875-1965	91	-1906 Central American -1885 Central American		3
93	Nicaragua	1900-1965	66	-1906 Central American -1907 Central American		1

94	Costa Rica	1920-1965	46			0
95	Panama	1920-1965	46			0
100	Colombia	1831-1965	135	-1863 Ecuador.-Columbian -1951 Korean		2
101	Venezuela	1841-1965	125	-1863 Ecuador.-Columbian		0
130	Ecuador	1854-1965	112	-1866 Spanish-Chilean		1
135	Peru	1838-1965	128	-1879 Pacific	-1841 Peruvian-Bolivian	3
140	Brazil	1826-1965	140	-1851 La Plata -1944 WW II	-1864 La Plata	3
145	Bolivia	1848-1965	118	-1879 Pacific		2
150	Paraguay	1896-1965	70	-1932 Chaco		1
155	Chile	1839-1965	127	-1932 Chaco -1865 Spanish-Chilean -1879 Pacific		2
160	Argentina	1841-1965	125	-1851 La Plata		2
165	Uruguay	1882-1965	84			0
200	England	1816-1965	150	-1827 Navarino Bay -1854 Crimean -1856 Anglo-Persian -1914 WW I -1939 WW II -1950 Korean -1956 Sinai	-1865 La Plata -1817 Brit.-Maharattan -1823 First Anglo-Eurmese -1838 First Brit.-Afghan -1840 Second Syrian -1845 First Brit.-Sikh -1848 Second Brit.-Sikh -1857 Sepoy -1878 Second Brit.-Afghan -1879 British-Zulu -1882 Mahdist -1899 Boer -1945 Indonesian	19

Code Number	Nation Name	Inclusive years in system	Total years in system	Participations in interstate wars	Participations in extrasystemic wars	Total number of particip. in internat. wars
205	Ireland	1922-1965	44			0
210	Holland	1816-1940 1945-1965 ¹	145	-1940 WW II -1951 Korean	-1825 Javanese -1873 Dutch-Achinese -1945 Indonesian	5
211	Belgium	1830-1940 1945-1965 ¹	131	-1914 WW I -1940 WW II -1951 Korean		3
212	Luxemburg	1920-1940 1944-1965 ¹	42			0
220	France	1816-1942 1944-1965 ¹	148	-1823 Franco-Spanish -1827 Navarino Bay -1849 Roman Republic -1854 Crimean -1859 Italian Unification -1862 Franco-Mexican -1870 Franco-Prussian -1884 Sino-French -1914 WW I -1939 WW II -1951 Korean -1956 Sinai	-1882 Franco-Indochinese -1894 Franco-Madagascan -1925 Riffian -1925 Druze -1945 Indochinese -1947 Madagascan -1954 Algerian	19
225	Switzerland	1816-1965	150			0
230	Spain	1816-1965	150	-1823 Franco-Spanish	-1868 Ten Years	9

235	Portugal	1816-1965	150	-1859 Spanish-Moroccan -1865 Spanish-Chilean -1898 Spanish-American -1909 Spanish-Moroccan -1916 WW I	-1895 Cuban -1896 First Philippine -1921 Riffian	1
240	Hanover	1838-1866	29	-1866 Seven Weeks		1
245	Bavaria	1816-1879	55	-1866 Seven Weeks -1870 Franco-Prussian		2
255	Germany/Prussia	1816-1945 ²	130	-1848 First Schleswig-Holstein -1864 Sec. Schleswig-Holstein -1866 Seven Weeks -1870 Franco-Prussian -1914 WW I -1939 WW II		6
260	Germany/West	1816-1945 ²	11			0
265	Germany/East	1954-1965	12			0
267	Baden	1816-1870	55	-1866 Seven Weeks -1870 Franco-Prussian		2
269	Saxony	1816-1867	52	-1866 Seven Weeks		1
271	Württemberg	1816-1870	55	-1866 Seven Weeks -1870 Franco-Prussian		2
273	Hesse/Electoral	1816-1866	51	-1866 Seven Weeks		1
275	Hesse/Grand Ducal	1816-1867	52	-1866 Seven Weeks		1
280	Mecklenburg/ Schwerin	1843-1867	25	-1866 Seven Weeks		1
290	Poland	1919-1939 1945-1965 ¹	41	-1939 WW II		1

Code Number	Nation Name	Inclusive years in system	Total years in system	Participations in interstate wars	Participations in extrasystemic wars	Total number of particip. in internat. wars
300	Austria/Hungary	1816-1918	103	-1848 Austro-Sardinian -1849 Roman Republic -1859 Italian Unification -1864 Sec. Schleswig-Holstein -1866 Seven Weeks -1914 WW I	-1848 Hungarian -1878 Bosnian	8
305	Austria	1919-1938	30			0
308	Hungary	1955-1965 ¹ 1919-1965	47	-1919 Hungarian Allies ³ -1941 WW II		3 ³
315	Czechoslovakia	1918-1939 1945-1965 ¹	42	-1956 Russo-Hungarian -1919 Hungarian Allies ³		1 ³
325	Italy/Sardinia	1816-1965	150	-1848 Austro-Sardinian -1855 Crimean -1859 Italian Unification -1860 Italo-Roman -1860 Italo-Sicilian -1866 Seven Weeks -1911 Italo-Turkish -1915 WW I -1935 Italo-Ethiopian -1940 WW II ⁴	-1895 Italo-Ethiopian	12 ⁴

327	Papal States	1816-1860	45	-1943 WW II ⁴ -1849 Roman Republic -1860 Italo-Roman		2
329	Two Sicilies	1816-1861	46	-1849 Roman Republic -1860 Italo-Sicilian		2
332	Modena	1842-1860	19			0
335	Parma	1851-1860	10			0
337	Tuscany	1816-1860	45			0
338	Malta	1964-1965	2			0
339	Albania	1914-1939 1944-1965 ¹	47			0
345	Yugoslavia/Serbia	1878-1941 1944-1965 ¹	85	-1912 First Balkan -1913 Second Balkan -1914 WW I -1941 WW II -1897 Greco-Turkish -1912 First Balkan -1913 Second Balkan -1917 WW I -1919 Greco-Turkish -1940 WW II -1951 Korean	-1885 Serbo-Bulgarian	5
352	Cyprus	1960-1965	6			0
355	Bulgaria	1908-1965	58	-1912 First Balkan -1913 Second Balkan -1915 WW I -1941 WW II ⁴ -1944 WW II ⁴		5 ⁴

Code Number	Nation Name	Inclusive years in system	Total years in system	Participations in interstate wars	Participations in extrasystemic wars	Total number of particip. in internat. wars
360	Rumania	1878-1965	88	-1913 Second Balkan -1916 WW I -1919 Hungarian Allies ³ -1941 WW II ⁴ -1944 WW II ⁴		5 ^{3,4}
365	Russia	1816-1965	150	-1827 Navarino Bay -1828 Russo-Turkish -1853 Crimean -1877 Russo-Turkish -1904 Russo-Japanese -1914 WW I -1939 Russo-Japanese -1939 Russo-Finnish -1941 WW II -1956 Russo-Hungarian	-1826 Russo-Persian -1831 First Polish -1849 Hungarian -1863 Second Polish -1917 Russian Nationalities	15
366	Estonia	1918-1940	23			0
367	Latvia	1918-1940	23			0
368	Lithuania	1918-1940	23			0
375	Finland	1919-1965	47	-1939 Russo-Finnish -1941 WW II		2
380	Sweden	1816-1965	150			0
385	Norway	1905-1940 1945-1965 ¹	56	-1940 WW II		1

390	Denmark	1816-1940	145	-1848 First Schleswig-Holstein -1864 Sec. Schleswig-Holstein		2
395	Iceland	1945-1965	22			0
420	Gambia	1965-1965	1			0
432	Mali	1960-1965	6			0
433	Senegal	1960-1965	6			0
434	Dahomey	1960-1965	6			0
435	Mauritania	1960-1965	6			0
436	Niger	1960-1965	6			0
437	Ivory Coast	1960-1965	6			0
438	Guinea	1958-1965	8			0
439	Upper-Volta	1960-1965	6			0
450	Liberia	1920-1965	46			0
451	Sierra Leone	1961-1965	5			0
452	Ghana	1957-1965	9			0
461	Togo	1960-1965	6			0
471	Cameroun	1960-1965	6			0
475	Nigeria	1960-1965	6			0
481	Gabon	1960-1965	6			0
482	Centr. African Republic	1960-1965	6			0
483	Chad	1960-1965	6			0
484	Congo (Brazzaville)	1960-1965	6			0
490	Congo (Kinshasa)	1960-1965	6			0
500	Uganda	1962-1965	4			0
501	Kenya	1963-1965	3			0

Code Number	Nation Name	Inclusive years in system	Total years in system	Participations in interstate wars	Participations in extrasystemic wars	Total number of particip. in internat. wars
510	Tanzania	1961-1965	5			0
511	Zanzibar	1963-1964	2			0
516	Burundi	1962-1965	4			0
517	Rwanda	1962-1965	5			0
520	Somalia	1960-1965	6			0
530	Ethiopia	1898-1936 1941-1965 ¹	63	-1935 Italo-Ethiopian -1941 WW II -1951 Korean		3
551	Zambia	1964-1965	2			0
553	Malawi	1964-1965	2			0
560	South Africa	1920-1965	46	-1939 WW II		1
580	Malagasy	1960-1965	6			0
600	Morocco	1847-1911 1956-1965	74	-1859 Spanish-Moroccan -1909 Spanish-Moroccan		2
615	Algeria	1962-1965	4			0
616	Tunisia	1956-1965	10			0
620	Libya	1952-1965	14			0
625	Sudan	1956-1965	10			0
630	Iran	1855-1965	111	-1856 Anglo-Persian -1827 Navarino Bay -1828 Russo-Turkish -1853 Crimean -1877 Russo-Turkish	-1821 Greek -1831 First Syrian -1839 Second Syrian -1852 First Turko-	1 17
640	Turkey	1816-1965	150			0

645	Iraq	1932-1965	34	-1897 Greco-Turkish -1911 Italo-Turkish -1912 First Balkan -1913 Second Balkan -1914 WW I -1919 Greco-Turkish -1950 Korean	Montenegrin -1858 Second Turko- Montenegrin -1875 Balkan	0 0 1 0 0 0 0 0 1 2
651	U.A.R.	1937-1965	29	-1948 Palestine -1948 Palestine -1956 Sinai -1948 Palestine		0 0 1 1
652	Syria	1946-1958 1961-1965	17			1
660	Lebanon	1946-1965	20	-1948 Palestine		1
663	Jordan	1946-1965	20	-1948 Palestine		1
666	Israel	1948-1965	18	-1956 Sinai		2
670	Saudi Arabia	1927-1935	39			0
678	Yemen	1926-1965	40			0
690	Kuwait	1961-1965	5			0
700	Afghanistan	1920-1965	46	-1894 Sino-French -1894 Sino-Japanese -1931 Manchurian -1937 Sino-Japanese -1941 WW II -1950 Korean -1962 Sino Indian	-1956 Tibetan	0 0 0 0 0 8
710	China	1860-1965	106			0

Code Number	Nation Name	Inclusive years in system	Total years in system	Participations in interstate wars	Participations in extrasystemic wars	Total number of particip. in internat. wars
712	Mongolia	1921-1965	45	-1939 Russo-Japanese -1945 WW II		2
713	Taiwan	1949-1965	17			0
730	Korea	1888-1905	18			0
731	Korea North	1948-1965	18	-1950 Korean		1
732	Korea South	1949-1965	17	-1950 Korean		1
740	Japan	1860-1945 1952-1965	99	-1894 Sino-Japanese -1904 Russo-Japanese -1914 WW II -1931 Manchurian -1937 Sino-Japanese -1939 Russo-Japanese -1941 WW II		7
750	India	1947-1965	19	-1962 Sino-Indian -1965 Second Kashmir -1965 Second Kashmir	-1947 First Kashmir	3
770	Pakistan	1947-1965	19			1
775	Burma	1848-1965	18			0
780	Ceylon	1848-1965	18			0
781	Maldiva Isl.	1965-1965	1			0
790	Nepal	1920-1965	46			0
800	Thailand	1887-1965	79	-1951 Korean		1
811	Cambodia	1953-1965	13			0
812	Laos	1954-1965	12			0

Code no.	Name of nation	Participations in interstate wars	Participations in extrasystemic wars	Total number of particip. in internat. wars
816	Vietnam North	1954-1965	12	0
817	Vietnam South	1954-1965	12	0
820	Malaysia	1957-1965	9	0
830	Singapore	1965-1965	1	0
840	Philippines	1946-1965	20	1
850	Indonesia	1949-1965	17	0
900	Australia	1920-1965	46	2
920	New Zealand	1920-1965	46	1

1. System membership is counted for the full third subperiod, despite occupation.
2. In the analysis, West Germany is considered the successor-state of Germany/Prussia.
3. Participations in the war of the Hungarian allies (outbreak 1919), which are omitted in the analysis.
4. In the analysis counted as only one participation.

Table 2: National war experiences during three subperiods

Code no.	Name of nation	1816- 1866	1867- 1918	1920- 1965
2	United States	1	3	2
200	England	10	5	4
210	Holland	1	1	3
220	France	6	5	8
225	Switzerland	0	0	0
230	Spain	3	5	1
235	Portugal	0	1	0
245	Bavaria	1	-	-
255	Germany/Prusia	3	2	1
267	Baden	1	-	-
269	Saxony	1	-	-
271	Württemberg	1	-	-
273	Hesse Electoral	1	-	-
275	Hesse Grand Ducal	1	-	-
300	Austria-Hungary	6	2	-
325	Italy-Sardinia	6	3	2
365	Russia	7	4	4
380	Sweden	0	0	0
390	Denmark	2	0	0
640	Turkey	8	7	1
41	Haiti	-	0	0
70	Mexico	-	0	0
90	Guatamala	-	2	0
100	Colombia	-	0	1
101	Venezuela	-	0	0
130	Ecuador	-	0	0
135	Peru	-	1	0
140	Brazil	-	0	1
145	Bolivia	-	1	1
155	Chile	-	1	0
160	Argentina	-	0	0
211	Belgium	-	1	2
350	Greece	-	4	2
630	Iran	-	0	0
710	China	-	2	6
740	Japan	-	3	4
20	Canada	-	-	2
40	Cuba	-	-	0
42	Dominican Republic	-	-	0
91	Honduras	-	-	0
92	Salvador	-	-	0
93	Nicaragua	-	-	0
94	Costa Rica	-	-	0

Code no.	Name of nation	1816- 1866	1867- 1918	1920- 1965
95	Panama	-	-	0
150	Paraguay	-	-	1
165	Uruguay	-	-	0
212	Luxemburg	-	-	0
290	Poland	-	-	1
305	Austria	-	-	0
310	Hungary	-	-	2
315	Czechoslovakia	-	-	0
339	Albania	-	-	0
345	Yugoslavia/Serbia	-	-	1
355	Bulgaria	-	-	1
360	Rumania	-	-	1
375	Finland	-	-	2
385	Norway	-	-	1
450	Liberia	-	-	0
530	Ethiopia	-	-	3
560	South-Africa	-	-	1
700	Afghanistan	-	-	0
790	Nepal	-	-	0
800	Thailand	-	-	1
900	Australia	-	-	2
920	New Zealand	-	-	1