Clash of Brothers in a Contagious World: Wars to Avoid Diffusion

Akos Lada*

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Abstract

Does sharing the same religion, civilization or racial proximity lead to more peaceful relations between countries? This paper argues that cultural similarity can actually *cause* wars, which occur to combat diffusion. This new theory of war combines the models of Acemoglu and Robinson (2006) and Fearon (1995), and shows that cultural similarity can lead to more warfare when old elites are afraid of losing their position to a newly inspired citizenry, as these elites try to destroy the external source of inspiration. The microfoundation for inspiration is derived from revealed information about the income level under given institutions, which are assumed to have positive correlation with cultural proximity. Thus the prototypical war will be between two countries, such as North and South Korea, which are culturally close but institutionally apart (e.g. one democracy, one dictatorship) as long as regime change would occur without a war, leading to a commitment problem.

*Graduate student in the Political Economy and Government Program at Harvard University. Email: alada@fas.harvard.edu. Phone number: 217-972-9157. I am very grateful for comments on this paper and earlier versions to James Robinson, Matthew Baum, Alastair Iain Johnston, Muhammet Bas, Robert Bates, Andrew Coe, Richard Evans, James Feigenbaum, Nils Hagerdal, Nahomi Ichino, John Marshall, Robert Schub, Dustin Tingley, Miklos Toth, George Yin and workshop participants in Harvard's political economy and international relations workshops.

1 Introduction

On Christmas Day in 1914 British and German soldiers climb out of their trenches and and join together in Christmas carols. Can this unusual event point to something fundamental about wars that we have so far overlooked? Can cultural similarity (such as sharing the same religion or civilization) make two countries more likely to wage war? I will describe a mechanism how it can. It involves two culturally-similar countries that have opposing political institutions - such that one is a dictatorship and the other a democracy. In this case, the dictator will seek to eliminate the democracy, lest the dictator's citizens learn democratic ideals from their brothers. The rigorous model that I build to explore this mechanism helps explain four primary stylized facts in international relations simultaneously: wars are rare between two democracies (democratic peace); yet democracies overall are just as war-prone as dictatorships; wars are more likely to occur between countries close by; and institutionally similar countries (e.g. democracies) are clustered together in space.

The driving idea behind the model is to consider two identity dimensions simultaneously. One dimension is cultural and the other is institutional. Which country-pair will be the most war-prone? At first blush, countries which are similar in their domestic characteristics all seem less likely to fight each other. Two democracies are less likely to fight each other (e.g. Doyle 1986, Maoz and Russett 1993, Oneal and Russett 1997, Doyle 2005), similar degree of financial openness (Gartzke 2007), or human rights records (e.g. Peterson and Graham 2011), even voting patterns in the United National General Assembly (Gartzke 1998) reduce war incidence. However, I argue that the country-pair with institutional difference and cultural *similarity* is most war-prone. Huntington (1996) derived a clash of culturally different countries because he merged *both* institutions and less malleable features such as language, history, religion and customs into 'civilization' (p43).[1] As Table 1 shows, I predict those dyads to be the most war prone which share an unchangeable characteristic (same culture)[2] but differ on a changeable one (institutions) whenever there is a threat of contagion along the latter dimension (high domestic pressure) in the dyad. The theory's predictions are contrary to structural realists (who expect

[1]Huntington did distinguish however between the adoption of economic institutions (modernization: industrialization, urbanization, increasing levels of literacy, education, wealth and social mobilization) and that of political institutions coupled with culture (westernization).

[2]When we talk about cultural similarity, we mean similarity in religion, value systems and/or traditions that makes economic and social policies have similar outcomes, have a desire for the same type of public good and/or enhances communication. Religious similarity is a good example or Huntington's civilizational similarity. Ethnic and linguistic similarity should also capture some effects.

no pattern)[3] evolutionists (who expect all 'ethnically close' dyads to be equally likely to go to war as they may have more issues to fight over),[4] liberal similarists or republican liberals (who expect all 'regime different' to be equally likely to go to war),[5] constructivist similarists (who expect all 'ethnically distant' to be more likely to go to war)[6] and clash-of-civilizationists (who expect 'ethnic distant' (and 'regime different') to go to war).[7] The theory in this paper can be said to be of 'constructive realist' flavor as realist-minded elites reconstruct identity rationally using hard power. It is an attempt to rigorously integrate identity into a realist model.

TABLE 1 ABOUT HERE

The model analyzes wars in the shadow of regime change. We will use the terms 'institutions' and 'democracy/dictatorship' interchangeably but institutions could also mean communism, sharia or other systems. Using a simplified Acemoglu-Robinson (2000, 2001, 2006) framework, the revolutionary threat in a dictatorship ebbs and flows and the elite may democratize in order to gain credible commitment to redistribute income. The war lessens domestic pressure on the old elite by eliminating the outside inspirational and informational source for the domestic opposition, thereby reducing the opposition's bargaining power.

The enhanced bargaining power for the opposition only leads to a war when without the war the elite would lose power. Otherwise, a peaceful bargaining solution between the two countries exists. This peaceful solution disappears when domestic pressure is high enough to cause democratization without a war, because after democratization the citizens cannot commit to redistribute to the newly powerless old elite. This means that there is a discontinuous fall in the elite's utility function at the values of domestic pressure where they would need to give up power, which can be greater than the costs of war.[8] Thus, for instance, relations between democratic Washington and autocratic Riyadh can be cordial because the democratizing pressure by Saudi citizens is low, while Tehran will work at eliminating Western presence in its region

[3]For instance, Waltz 1979, Mearsheimer 2001.

[4]For this approach see Spolaore and Wacziarg 2012

[5]For instance, Moravcsik 1997.

[6]In political economy, Tabellini 2008, Bisin and Verdier 2001 also fall into this category. In international relations constructivism is difficult to categorize here, but Wendt 1999 argues that states can see each other as enemies, rivals, and friends. The theory here can be thought of adding microfoundations to this claim.

[7]Huntington 1993, and (1996) are the most famous citations here.

[8]For previous applications of the commitment problem see Powell 1999, Garfinkel and Skaperdas 2000, Powell 2006 and Garfinkel and Skaperdas 2007 (Part 5). In my model the commitment problem does not arise from growth directly but through information revelation: picking a policy that leads to a certain growth rate reveals valuable information to culturally similar countries, which the domestic opposition can count on.

since the democratic pressure in Iran is high.[9]

How does a democracy in B enhance the power of the democratic opposition in A? By answering this question we seek micro-foundations for inspiration and soft power.[10] I derive the mechanism behind inspiration between two culturally-similar countries from revealed information about the income level under the same economic policies. The mere knowledge (or perception) of having a culturally-similar democratic neighbor already raises the income expectations of the citizenry if they rose up to take power, since they know that the other country will have started to experiment with policies. This makes them more likely to revolt and less likely to accept concessions from an autocratic elite. But in this case, the elite may find it more beneficial to start a war rather than yield power to the citizens through democratization. Income realizations under the policy are not only uncertain but correlated between A and B, and the correlation coefficient increases with cultural similarity.

Beyond cultural proximity, other factors increase war-proneness in the model too. One is uncertainty over policy outcomes (e.g. untried policies due to institutional innovation).[11] Another is a longer shadow of the future (high discount factor), as the commitment problem becomes worse. Finally if domestic pressure is less likely to be high again in the future, again the probability of wars increases since citizens are more difficult to be bought off with transfers today.

The scope of the theory should be quite broad, with applications beyond international relations. The outcome variable is roughly war or peace, or more precisely enmity ('clash') or peaceful coexistence. Elites will sometimes try to choose enmity without a physical war for the rally-around-the-national-flag effect, especially when minor countries are facing major ones. North Korea tried a hot war in 1950 as Kim Il-sung felt to be an 'incomplete dictator' without the South (Halberstam 2007, p.48). Since then its provocations (e.g. Cheonan sinking in 2010) are probably not aimed at starting a real war, just at keeping a cold-war atmosphere. Yet enmity can be a slippery slope as nationalism may spiral out of control and lead to a real war.[12] The theory should be particularly applicable when different institutions compete in a region along

[9]For a recent study that indeed found that less religious Muslim countries as well as those with less political competition between secularist and religious groups are more anti-American see Blaydes and Linzer 2012.

[10]For soft power, see Nye 1990 and Nye 2004. This paper shows how soft power can be a soft problem rather that leads to wars.

[11]There might even be international sources of this volatility, for instance coming from unmodelled international aid donors. Along the lines of Tingley 2010, it could be revealed to the citizens how much aid their democratic government could expect to get and how useful that aid would be for growth.

[12]See Jervis 1976 for a spiral of hostility and Baliga and Sjostrom 2012 for how even cheap talk can co-ordinate actors on mutual hostility.

one another, each with the potential to outperform the other. Wars even among democracies are possible as long as one of them is less perfect than the other in some way.[13]

The non-mathematical theories of Walt (1996) and Owen (2010) are related to my model. But there are a number of differences. Walt is less general (he only considers the aftermath of revolutions). He also argues that diffusion is much less of a phenomenon than my model assumes (pp.41-2), while he does emphasize that actors overestimate its importance. My model shows that diffusion may actually be rare exactly because actors realizing it act to avoid it (they start a war). Owen shows how what he calls the clash of different 'ideas' (e.g. communism, fascism, liberalism) helps explain a multitude of wars over the last five centuries.[14] My model goes beyond his work. First, the source of conflict in Owen is forcible regime promotion rather than fear of peaceful diffusion. Given Owen's mechanism the question arises why any actor would need to have an exogenously given 'ideological' motivation for regime promotion. Math helps us clarify what entirely self-interested actors' incentives and strategies are.[15] Second, Owen does not address why the target could not buy off the purveyor of the new ideas. A bargaining theory of war should address why an inefficient war occurs in the first place.[16] Third, Owen observes that most 'forcible regime promotions' occur in a country's backyard. I argue that in fact his inference is wrong because this is only due to culturally-close dyads being clustered together. Fourth, introducing math also leads to sharper results, in particular when it comes to the micro-foundation for inspiration. Owen argues a transnational ideological polarization ends when one regime turns out to be manifestly superior (p.72). I show this is not true, the conflict ends when *uncertainty* over a regime's growth rate evaporates, rather than its expected growth falls or rises.[17]

[13]Think of one imperfect democracy restricting the voting rights to richer citizens, like Britain still did in 1812, and it can enter into war with a more democratic polity, like the US at that time (Owen 1994).

[14]Owen's mechanism is similar to mine, but he argues the conflict is triggered by a revolution that can have demonstration effects (pp.38-9) abroad and is therefore attacked, rather than the country with 'regime crisis' attacking.

[15]Without game theory, Owen runs into a circular logic. Transnational regime contest leads to transnational ideological polarization, which in turn leads to forcible regime promotion (p.71). The feedback loop is started by an exogenous regime crisis or great power war, but what incentive rational actors have to start such a feedback circle is unclear.

[16]Fearon 1995 challenged neorealism on its own ground, therefore his paper was looking for explanations with unitary actors. I include other actors, and rephrase the commitment problem that has been popular with rational war explanations (e.g. Powell 1999, Powell 2006).

[17]But despite these differences, it is worth noting that Owen builds a striking dataset of 209 cases over the last five centuries where forcible regime promotion played a part, suggesting that connecting diffusion networks and war is an important idea. Furthermore, by definition, Owen's 'forcible regime promotion' could not include wars where the objective was annihilation.

2 Game-Theoretic Model

2.1 Setup

Let us have two countries, A and B. For simplicity, we only have three actors altogether: elite of A (A_E), citizens of A (A_C), and citizens of B (B_C), each aggregated into a representative actor. We assume that by the start of the game B_C has taken power over in B (e.g. Communists in 1917, American liberals in 1776), but in A it is still the old elite that rules. Institutions in the model simply tell us who (which group's representative agent) is in power and gets to pick their country's policy in a given period t ($I_A(t) \in \{A_E, A_C\}$,$I_B(t) = B_C$).

In each period the three actors need to divide up a resource worth $S_A + S_B + g(p_A, A, t) + g(p_B, B, t)$ among themselves, where S_A and S_B capture the size of the two countries, while growth $g(p, \cdot, t)$ denotes the extra income achieved in a country in period t given some policy. So utilities are given by:

$$V_{A_E} = \sum_{s=t}^{\infty} \beta^{s-t} p_A(t),$$
$$V_{A_C} = \sum_{s=t}^{\infty} \beta^{s-t} p_C(t) = \sum_{s=t}^{\infty} \beta^{s-t} (S_A + S_B + g(p, A, t) + g(p, B, t) - p_A(t) - p_B(t)),$$
$$V_{B_C} = \sum_{s=t}^{\infty} \beta^{s-t} p_B(t)$$

The common discount factor is β.

The important assumption about policy is that each country has a single policy to pick over which A_E and A_C have opposing preferences. The original Acemoglu-Robinson (2006) model builds on the Meltzer-Richard (1981) framework,[18] whereby the decision is over a linear tax rate (with lump-sum redistribution). Since the elite's representative agent is richer (or more productive) than the citizens', he would opt for less redistribution. But when it comes to international conflict this kind of issue indivisibility may not always be over fiscal policy between the rich and the poor, so our framework is more general. There is a growing literature on how a single public good should be decided over and the further apart preferences are in a given country, the less it will be supplied and the more likely secession will be (e.g. Alesina and Spolaore 1997, Alesina, Baqir and Easterly 1999). Thus $g(p_A, A, t)$ may capture how much

[18] Which in turn builds on (Romer, 1975). Distortionary taxation arises from labor-leisure choice of agents of different productivity and preferences satisfy the single crossing property over the redistributive tax rate.

public good is produced in A with policy p_A (e.g. one ethnic group may be better at providing education). It is possible therefore that distributional conflict in one country is along a different dimension than in the other. In that case there is little social learning going on but this is also exactly the case when the two countries are different in preferences, so are culturally distant.

In case of an interstate war the distribution of material power is equal to relative sizes S_A and S_B, so that the war leads to the destruction of A with probability $\frac{S_B}{S_A+S_B}$ and that of B with probability $\frac{S_A}{S_A+S_B}$. The winner takes over all resources of the loser, as is standard in the literature.[19] We normalize the size of A to 1 without loss of generality. However war is costly: I_A needs to pay $\frac{c_A}{1-\beta}$ and $I_B = B_C$ needs to pay $\frac{c_B}{1-\beta}$ in a war regardless of outcome (c_A and c_B are the amount of resources getting destroyed in a war). We allow for a bargaining solution by assuming B can make any transfer to A at the start of each period.

In the original Acemoglu-Robinson framework the domestic interaction is determined by the threat of revolution (de facto power of A_C) which ebbs and flows. Let this be captured through $1-\mu$, the amount of total income destroyed through the revolution, which at any time t may be high or low. This parameter captures how easy it is to organize collective action. It is modeled as being $\mu_H \in (0,1)0$ with probability h and $\mu_L = 0$ with probability $1-h$ (i.e. no threat). After a revolution, all income in the economy is forever taken over by the citizens but as $1-\mu$ is destroyed, $\frac{1-\mu}{1-\beta}$ is the cost of revolution. $\mu(t) \in \{\mu_H, 0\}$ is therefore a measure of domestic pressure at time t in A.

Now let us add γ ($\gamma \geq 0$) as a measure of cultural proximity between A_C and B_C. It captures how much the presence and leadership of B_C enhances the de facto power of A_C. Thus if B_C is alive in period t and there is high revolutionary pressure in A in t then the cost of revolution is not $1-\mu_H$ but $1-\mu_H-\gamma$ (assume $\mu_H + \gamma < 1$), thus revolution becomes less costly as citizens gain additional de facto (bargaining) power through having a democratic neighbor. For simplicity, in case of low revolutionary pressure ($\mu_L = 0$), the citizens would still get 0 after a revolt even with a democracy next door.

What are the microfoundations for γ? An interesting and deep mechanism is when γ captures information revelation about income levels, which can be a rational reason for 'inspiration' (other mechanisms are derived in the appendix). There is uncertainty surrounding policy choice outcomes and B_C's realization can reveal information about this to A_C. A country with a

[19] In the conflict literature we usually think about dividing up the resource. However if we want to ground the analysis here in the Meltzer-Richard (1981) framework where issue indivisibility is over linear taxation, this condition simply says that whoever is the winner will determine policy (alone) in the newly acquired country.

Confucian system achieving high growth under a given policy (e.g. Lee's Singapore) may reveal more to Deng Xiaoping about what a similar policy would achieve in China than to Fidel Castro in Cuba. And even if the same policy under the same institutions would achieve the same outcome in Iran as in Singapore, social learning is much harder with cultural distance: Deng Xiaoping could send tens of thousands of Chinese to learn Lee Kuan Yew's policy but the Venezuelans may have to learn Chinese first and Venezuelans can be also assumed to be less keen to spend a long time in a country with such a foreign culture.[20] γ captures the expected value of $g(A_C)$ knowing that B_C will survive into the next period arising from better growth expectations for some policy with which B_C have already experimented:

$$\gamma = E[g_A(p^*(A_C, I_B), A, t)|I_B(t+1) = B_C] - E[g_A(p^*(A_C, I_B), A, t)|I_B(t+1) = \emptyset].$$

How does war cut down γ from the opposition's de facto bargaining power? The simplest interpretation of the model is that the elite in one country eliminates the other physically in a war. However, even if this does not happen, a war can still force the citizens of the first country to focus on the fact that they are nationals of their country rather than citizens along the cross-national identity dimension. A lot of research in social psychology[21] suggest people are social creatures and are prone to promptly set up in-group and out-group categories. In sociology and political science it is an old idea that conflict with an outside group solidifies ingroup cohesion (Coser 1956, Simmel 1955).[22] Gellner 1983 Snyder 2000 and de Figueiredo and Weingast 1999 argue rational elites provoke nationalism to strengthen their position, and Schrock-Jacobson 2012 shows on a large-n dataset that nationalism can lead to interstate war. Bueno de Mesquita and Dickson 2008 argues that terrorist groups attempt to provoke outsiders to gain support from their own people.

A second reason why enmity may cut down on information flowing from B_C to A_C even without eliminating B_C is by making information transmission more difficult. For instance, if because of the negativity extremely democratic citizens either leave the country or will not reveal this piece of information about themselves[23] then there will be a lower probability that

[20] Indeed, (Simmons, Dobbin and Garrett, 2006) find that social learning is an important channel of diffusion, this arises endogenously in our model.

[21] Seminal studies include Sherif et al. 1961 and Tajfel and Turner 1979.

[22] Some recent field experiment evidence is in Gilligan, Pasquale and Samii (2011), Bellows and Miguel 2009 and Blattman 2009.

[23] War could lead to what Van Evera (2001) calls minority-oppressing as opposed to minority-respecting nationalism. Enmity could encourage this minority-oppressing nationalism, reducing communication between A_C and immigrants from B_C so A_C would expect to know less about the policy outcome of B_C.

the success of B_C's economic policy will be revealed. Furthermore citizens of B_C may themselves not visit country A_C or it may be burdensome for members of A_C to keep up relations with members of B_C.

Why would A_C be willing to believe B_C is the enemy if the elite A_E starts a (maybe propaganda) war? The literature argues that because the fear is rational (de Figueiredo and Weingast 1999) as long as there is some probability that B_C may indeed be a danger.[24] The mechanism described in the paper should therefore be stronger if there was a history of A on B conflict especially with past horrors for which B_C did not apologize (van Evera 2001) so that elites find it easier to alienate A_C and B_C. Similarly, it is easier given the lack of 'truth squads': a strong free press and free universities which regards mythbusting as a mission (van Evera 2001) or when the 'marketplace of ideas' can be easily captured (Snyder and Ballentine 2001). Furthermore, a war against an outside enemy could make it more acceptable to round up individuals who may sympathize with the outside country thereby shifting the median citizen.

The timing of the stage game of $\Gamma(\infty)$ in period t is as follows. International-level decisions are made first, then domestic-level decisions occur. Due to the logic of backward induction this means international decisions have domestic reasons. There is an international stage, where wars are going to take place if the bargaining range is empty. Then domestic allocative decisions in countries alive are made, followed by a potential revolt. The outcome of the domestic policy decisions (income) are then realized and revealed. Finally if a regime had been overthrown in this period, the new agent can pick a policy, the results of which are then realized and revealed.

- Either A_E or A_C is in power in A ($I_A(t) \in [A_E, A_C, \emptyset]$), B_C is either alive or not: ($I_B(t) \in [B_C, \emptyset]$). I_A gets S_A, I_B gets S_B units of resources (based on size)
- The shock $\mu(t)$ ($\in \{\mu_L, \mu_H\}$) is realized in A (no shock in B). The triple consisting of the shock $\mu(t)$, the agent in power in A and B build the state vector: $\{\mu(t), I_A(t), I_B(t)\}$.
- International interactions:
  - B_C (if alive) can make any positive transfer τ to whoever is in power in A.[25]
  - Whoever is in power in A (I_A) can attack B_C.

[24] Glaeser 2005 argues that ethnic hatred is aroused through hate stories spread by the elite so that citizens wish to pauperize an ethnic group, which they can do through voting for the elite-favored redistribution policies.

[25] The exact bargaining protocol is unimportant here, this closed rule with one round of proposals is the easiest choice. If an efficient Coasian bargaining solution exists, we want it to occur. with A's agent in power making the first offer so that he can extract all the bargaining surplus (see e.g. Schelling 1960, Fearon 1995, Powell 1999). If the bargaining range is empty, one of the sides will attack.

- B_C (if alive) can attack.

- Domestic interactions:

  - Whoever is in power in A may transfer political power to the other domestic actor (A_E may democratize in order to avoid a revolution).
  - Agents in power make domestic decisions: whoever is now in power in A (I_A) makes an allocative decision p_A (offer), while if alive, B_C chooses policy p_B.
  - The citizens' representative agent A_C decides whether to revolt or not.
  - (in the stochastic version of the game) $g_A(p_A, A, t)$ is revealed and so is $g_B(p_B, B, t)$ if B_C is alive.
  - If there was a revolt, I_A picks p'_A and (in the stochastic version of the game) $g_A(p'_A, A, t)$ is revealed.

We justify this timing structure because the success of B should reveal additional information to A_C even if B_E picked the exact same policy as A_C.[26]

Note that what the war does is cutting domestic pressure on A_E by γ, which leads to a lower transfer to A_C, while the flow costs of war are c_A and c_B. We assume:

Assumption 1. $\gamma < c_A + c_B$.

This assumption says that the war's costs exceed its benefits. This is the standard 'war is costly' assumption.[27] We will analyze the game under this assumption and show that they can occur even with it.

2.2 Modeling Social Learning

Now we will derive γ through social learning. This is probably the most profound and mathematically most interesting mechanism, however it should not be the only one. In the appendix I explore two additional mechanisms that account for γ. One is emigration: since the individuals who would leave A_C for B_C are the most productive, the domestic pressure on A_E falls by less

[26] Another way of justifying this is to consider the commitment problem. Assume there are investment projects that only pay off if a country is run by A_C or B_C but not in one run by A_E because only then can the policy be guaranteed to be the same (good for the investment project) in both periods. The additional information from observing B_C can then come from payoffs from these projects.

[27] Wars in Jackson and Morelli (2007) arise when this assumption does not hold, so that war is a positive-sum enterprise for the 'politically-biased' leaders.

than the economy's income loss, making immigration a pain for A_E. Another mechanism is altruism, whereby citizens of B_C transfer money and resources to A_C whenever that raises A_C's expected utility - which only happens in periods with high domestic pressure. Crucially all these mechanisms have two characteristics in common. First, all of them capture how domestic pressure in A can rise by γ through higher growth in B_C. Second, in all cases γ depends positively on cultural proximity.

Now let us derive:

$$\gamma = E[g(A_C)|I_B(t+1) = B_C] - E[g(A_C)] = E[g(A_C)|I_B(t+1) = B_C].$$

To understand the mechanism of the model, this subsection can be skipped.

We assume that different policies lead to different income levels under different cultural systems.[28] We will make a host of non-essential unrealistic assumptions to keep the model sharp and clean. First, we are assuming that the country's income level given a policy p_A only depends on culture, but not on institutions: $g(p_A, A_C) = g(p_A, A_E)$. So it is the information A_C gets from B_C's adopted policy that makes citizens abroad valuable, therefore no matter whether that information will be bad or good, the ex ante expected income rises for A_C *knowing* that B_C will be there and will have started 'experimenting' with the expected ideal policy of A_C. If that policy is confirmed to work, A_C will be able to adopt it, while if it is shown not to work, A_C will be able to choose a different policy.

Next we assume that growth $g_A(p_A)$ and $g_B(p_B)$ are random variables that can take up only two values: $g^H(p_A, A, t)$ or $g^L(p_A, A, t)$ and $g^H(p_B, B, t)$ or $g^L(p_B, B, t)$. We also assume that only the variance of policies differ: $E[g_I(p_I, t)] = E[g_I(p'_I, t)] = 0, \forall p_A, p'_A \in [0, 1], I \in \{A, B\}$. and that $g_I(p_I)$ $\forall I \in \{A, B\}$ is a martingale over time: $E[g(p_I, t+1)|g(p_I, 1), ..., g(p_I, t)] = g(p_I, t)$, where $g(p_I, t)$ is finite $\forall t$. So the democratic relative only conveys information in the time period of the revolt. We will assume that policies within countries are uncorrelated, so if $g(p_B)$ is revealed to be bad then $g(p_B - \epsilon)$ still has the same expected value.

Let the correlation coefficient between $g_A(p, t)$ and $g_B(p, t)$ be $C(p, t) \geq 0$ and constant across policies and time ($C(p, t) = C$). Let $\pi(p, A, t) = \text{Prob}(g_A(p, t) = g^H(p, A, t))$ and $\pi(p, B, t)$ be the prior probabilities that growth is high at time t for policy p in A and B, while $\tilde{\pi}(p, A, t)$ is the posterior probability conditional on growth being high in B for the same policy p: $\tilde{\pi}(p, A, t) =$

[28] The approach is related to Mukand and Rodrik (2005) and Brender and Drazen (2007), who both have a one-country model.

$\text{Prob}(g_A(p,t) = g^H(p,A,t) | g_B(p,t) = g^H(p,B,t))$.

Lemma 1. *The posteriors relative to the priors are given by:*

$$\tilde{\pi}(p,A,t) - \pi(p,A,t) = \frac{C}{\pi(p,B,t)} \sqrt{\pi(p,A,t)(1-\pi(p,A,t))} \sqrt{\pi(p,B,t)(1-\pi(p,B,t))}.$$

The lemma says the information from high growth next door is greater when there is higher correlation between the two growth rates, when there is greater uncertainty over the growth rate of A and less over that of B. Note that uncertainty is greatest when $\pi(p,A,t) = \frac{1}{2}$. Therefore if B is expected to have a high growth rate with a very high probability ($\pi(p,B,t)$ is high) then B is less valuable to reveal information (in fact $\lim(\tilde{\pi}(p,A,t) - \pi(p,A,t)) \to 0$ as $\pi(p,B,t) \to 0$). It is not a high expected growth rate that makes B poisonous for A_E but an uncertain growth rate that ex post carries a lot of information for A_C.

If B_C is alive then after the revolt A_C will have already had time to observe the outcome of B_C's policy. As B_C cannot commit ex ante to pick any p_B to prevent war, he will simply have picked $p_B = 1$. Thus having B_C next door reveals information about good growth strategies (or even about what not to try). Note that the flipside is not true: A_E will not want to keep B_C to prove it to A_C that they are bad at being in power. For instance, North Korea is not deliberately maintained to scare the world away from being nostalgic about communism. The reason is that if B_C produces a bad outcome by a policy thought to be optimal by A_C, that helps A_C because they know now better which policy does *not* work. In our sharp framework, A_C picks $p_A = 1 - \epsilon$ in the bad case and ends up with the same expectations as at the start of the game (expects to produce 1).

The production of B_C is only revealed if it is not killed off in an attack by A_E. Given the success of the policy chosen by B_C, A_C can expect the same policy to be more effective. The expected probability of B_C being beneficial to A_C is thus $\pi(p,B,t)$. Therefore if B_C is not killed off then the expected total income in A under the rule of A_C is equal to:[29]

$$v_{A_C} = 1 + \pi(p,B,t)\Big((\tilde{\pi}(p,A,t) - \pi(p,A,t)(g^H(p,A,t) - g^L(p,A,t)) \Big),$$

[29]

$$v_{A_C} = 1 + \pi(p,B,t)\Big((\tilde{\pi}(p,A,t) g^H(p,A,t) + (1-\tilde{\pi}(p,A,t)) g^L(p,A,t) \Big)$$
$$+ (1-\pi(p,B,t))\Big((\pi(p,A,t) g^H(p,A,t) + (1-\pi(p,A,t)) g^L(p,A,t) \Big),$$

and use $\pi(p,A,t) g^H(p,A,t) + (1-\pi(p,A,t)) g^L(p,A,t) = 0$.

plugging in Lemma 1 we get

$$v_{A_C} = 1 + C\sqrt{\pi(p,A,t)(1-\pi(p,A,t))}\sqrt{\pi(p,B,t)(1-\pi(p,B,t))}\Big(g^H(p,A,t) - g^L(p,A,t)\Big),$$

instead of 1. Thus B_C is overall more useful for A_C if cultural similarity is higher so that policies have similar outcomes and if there is greater uncertainty over $p = 1$ in either A or B.

Therefore:[30]

$$\gamma = C\sqrt{\pi(p,A,t)(1-\pi(p,A,t))}\sqrt{\pi(p,B,t)(1-\pi(p,B,t))}\Big(g^H(p,A,t) - g^L(p,A,t)\Big).$$

Thus γ inspirational-leadership support to A_C is increasing in the correlation of policy outcomes (and cultural connections and communication between A_C and B_C). And interestingly γ is higher the higher the uncertainty about policy outcomes either in A or B is.

A good current example of the mechanism described here is how China reacted to the gradual opening in Myanmar. When Myanmar abolished its central propaganda authority, the Chinese authorities attempted to censor the news of this. But no such attempt can succeed fully. Chinese citizens who grabbed hold of the information expressed envy, but also debated whether China was ready for a similar step.[31] Other internet users criticized the Chinese government for not acting similarly.[32] No doubt Myanmar's political path will be monitored closely.

2.3 Analysis

We will look for the Markov Perfect Equilibrium (MPE) of the infinitely-repeated game. The broad logic here is that commitment problems can be solved either through yielding power to the domestic opposition through institutional reform or through destroying the outside entity that helps the domestic opposition. Let us have a look at how A_E behaves when revolutionary pressure is high in the present ($\mu(t) = \mu_H$). If revolutionary pressure is instead low then A_E

[30] Observe that in high periods of revolt pressure (when collective action can get organized), A_C would demand at least

$$\frac{\mu_H + C\sqrt{\pi(p,A,t)(1-\pi(p,A,t))}\sqrt{\pi(p,B,t)(1-\pi(p,B,t))}\Big(g^H(p,A,t) - g^L(p,A,t)\Big)}{1-\beta} = \frac{\mu_H + \gamma}{1-\beta}$$

instead of $\frac{\mu_H}{1-\beta}$.

[31] http://www.bbc.co.uk/zhongwen/simp/world/2013/01/130125_burma_censorship_dissolve.shtml, retrieved: 1/25/2013.

[32] http://www.chinese.rfi.fr/%E4%B8%AD%E5%9B%BD/20130126

should never start a war since it can always wait until $\mu(t) = \mu_H$ to do so and expects to pay a discounted cost of war.

The elite considers starting a war against the alternative of either democratization or transfers. Which of the latter two is possible depends on whether the citizens A_E can be bought off with transfers to prevent a revolution.

Lemma 2. *If μ_H is low enough that A_C can be bought off with transfers without the presence of B_C: $\mu_H \leq 1 - \beta(1-h)$, i.e. the 'commitment constraint' is not binding, then the utility of A_E from war is:*

$$V^w_{A_E}(\mu = \mu_H) = \frac{1-\mu_H}{1-\beta} - \frac{c_A + c_B}{1-\beta}. \tag{1}$$

Proof in the appendix.

Lemma 2 has a simple interpretation: after a war the expected utility to be divided up between A_E and A_C is $\frac{1}{1-\beta} - \frac{c_A+c_B}{1-\beta}$ and A_C is given just enough of this to be brought to the level of its outside option, the revolt: $\frac{\mu_H}{1-\beta}$, while the rest goes to A_E. c_B appears because B_C would always be willing to transfer this much to A_E to avoid war, thus it is an opportunity cost of war from the point of view of A_E.[33]

We start by realizing when war will never occur. First if democratization needs to follow a successful war because μ_H is high enough that the commitment constraint binds: $\mu_H \geq 1 - \beta(1-h)$ then war should never take place as A_E gains nothing (and nor does B_C) since his utility from democratization is:

$$V^d_{A_E}(\mu = \mu_H) = 0,$$

since forever A_C will take the whole unit resource. This payoff would be $V^d_{A_E}(\mu = \mu_H) = -\frac{c_A+c_B}{1-\beta}$ with a war.

The second instance when war does not occur is when the the commitment constraint is not binding even with B_C present: $\mu_H + \gamma \leq 1 - \beta(1-h)$. In this case A_E needs to compare giving transfers to A_C or starting a war against B_C. A_E starts a war if $V^p_{A_E} \leq V^w_{A_E}$ [34] or:

$$\frac{1-\mu_H-\gamma}{1-\beta} \leq \frac{(1-\mu_H)-(c_A+c_B)}{1-\beta}$$

[33] With more precision we should write the two equations as $V^w_{A_E} = \frac{1-\mu_H}{1-\beta} - \frac{c_A}{1-\beta}$ and $V^p_{A_E}(\mu = \mu_H) = \frac{1-\mu_H-\gamma+\tau}{1-\beta}$ with τ being the transfer from B which takes on a maximal c_B value.

[34] It is straightforward to derive $V^p_{A_E}$ like in Lemma (2). Exactly a $\frac{\mu_H+\gamma}{1-\beta}$ amount of income needs to be guaranteed to A_C.

or

$$\gamma \geq c_A + c_B,$$

which in view of the standard war-is-costly assumption (Assumption 1) never happens. In other words, if the commitment constraint is not binding then war will never occur.

This is quite a striking result: as long as A_E can avoid democratization, it will not attack B_C. The reason is a simple efficiency of transfers arguments: we have allowed all relevant transfers between actors, thus A_E will always be able to transfer some resource to A_C and B_C to A_E to avoid war. Thus we have allowed efficient bargaining and as a straight consequence overall efficiency holds up.

FIGURE 1 ABOUT HERE

However when the question is between democratization and war, commitment problems enter the scene. The source of war is that there is a discontinuity in the utility of A_E as a function of μ_H and the discontinuity occurs where the commitment constraint starts to bind. Once we start increasing μ_H then up until the point where the commitment constraint becomes binding, transfers still yield a positive utility to A_E since in all low periods it can keep the whole unit resource. Therefore at the point where the commitment constraint starts to bind[35], it would keep $\frac{\beta(1-h)}{1-\beta} > 0$ (as long as $h < 1$), yet a further increase yields 0 as in democracy the citizens would never have any incentive to redistribute anything to the old elite.

The commitment problem arises because after democratization the citizens cannot credibly commit to ever redistribute any income to the old elite. In the original Acemoglu-Robinson (2006) model, the elite has no way of getting around this discontinuity.[36] Here however at a cost of $\frac{c_A+c_B}{1-\beta}$, $\mu_H + \gamma$ can be cut to μ_H so that if $\frac{c_A+c_B}{1-\beta}$ is less then the discontinuous jump and μ_H again leads to the slackness of the commitment constraint, a war is efficient from the perspective of A_E.

All this means that we have the following Markov Perfect Equilibria:

Proposition 1. *The (essentially unique) MPE of the infinite game $\Gamma(\infty)$ is as follows. Whenever $\mu = \mu_L$ or A_C is in power, no war or democratization occurs, whoever is in power in A keeps the whole resource and no transfers between A and B occur. Whenever $\mu = \mu_H$ and A_E is in power, the equilibrium is as follows:*

[35] $\mu_H = 1 - \beta(1-h)$ or $\mu_H + \gamma = 1 - \beta(1-h)$ depending on the regime of A.

[36] They do add the possibility of repression in a later version of their workhorse model.

- *If the commitment constraint* ***never binds****, not even with B_C present ($\mu_H+\gamma \leq 1-\beta(1-h)$) or B_C is not present and the commitment constraint is not binding ($\mu_H \leq 1-\beta(1-h)$) then there is no war or regime change,* ***redistribution*** *of $\hat{\mu}_{H\gamma} = \frac{\mu_H+\gamma}{1-\beta(1-h)}$ from A_E to A_C occurs with transfers from B_C to A_E up to $\frac{c_B}{1-\beta}$.*

- *If the commitment constraint* ***only binds with*** *B_C* ***present*** *($\mu_H \leq 1-\beta(1-h)$ and $\mu_H+\gamma \geq 1-\beta(1-h)$) then:*

  - *If B_C is present and war is better than democratization for A_E ($V^w_{A_E} \geq V^d_{A_E}$):*[37]

$$\mu_H \leq 1-(c_A+c_B),$$

    then there is ***war*** *to avoid democratization, after war there is redistribution.*

  - *Otherwise there is* ***democratization****.*

- *If the commitment constraint* ***always binds****, $\mu_H \geq 1-\beta(1-h)$, even without B_C present then there is* ***democratization*** *to avoid a revolution.*

We see mathematically what we have discussed verbally, that there is a number of conditions that need to be satisfied jointly for war to happen. War only occurs if and only if:

- first, it is *needed to avoid* democratization (necessary)
- second, it *can indeed avoid* democratization (sufficient)
- third, it is *not too costly.*

A_C is thus better off with B_C around as long as its presence actually tip the balance into democratization. War and democratization are substitutes.

FIGURE 2 ABOUT HERE

Solving the model has led us to our main result. Increasing cultural proximity γ will eventually lead to either war or regime change (democratization). At low levels, however, having a culturally similar B_C is effective to give some support (larger transfers from A_E) to A_C, to influence dictatorships where domestic democratizing pressure is still low. Then as A_C gets closer to gaining power (higher μ), a high γ becomes detrimental, leading to war. It is not surprising then

[37] $\frac{(1-\mu_H)-(c_A+c_B)}{1-\beta} \geq 0$

that countries that are challenging the US today such as Iran are the ones where democratic pressure is high, while more peaceful Saudi Arabia (where repression keeps democracy a much more distant prospect) has become a reliable US ally. Yet if war is too costly or the domestic pressure μ has reached a very high level, a culturally-close democratic neighbor can be effective by tipping the regime into democracy (think of the revolutions of 1989).

Additional comparative statics can be derived with respect to the other variables. A high discount factor β (long shadow of the future) makes wars more likely as the commitment problem worsens. Similarly,a low frequency of high pressure h makes wars more likely. Citizens know today there is a one-off opportunity to overthrow the elite and thus are difficult to be bought off. This could help explain why new weakly-institutionalized democracies are war prone (Mansfield and Snyder, 2005): after a regime change, the group which had just lost power has a one-off opportunity to gain that power back, which is again a new explanation.

2.4 Empirical Predictions

There are three hypotheses to test. The main hypothesis is that when coupled with institutional difference, cultural similarity makes a country pair more war-prone. A second hypothesis is that this is a primary channel through which identity matters, so dyads characterized by institutional difference and cultural similarity are the *most* war-prone out of all possible dyads. A third hypothesis is that the channel through which identity matters is domestic pressure arising from information revelation about potential growth under a different institutional system. We measure domestic pressure by excess growth rates in culturally similar but institutionally different countries for each country in each year. Our third hypothesis is therefore that this new measure of domestic pressure increases the coefficient on the interaction of institutional difference and cultural similarity.

3 Summary

In this paper I have proposed that cultural similarity can actually lead to wars. However, it should only do so when institutional difference is coupled with cultural similarity. The main mechanism described is based on social learning. Cultural proximity eases information transmission. It also ensures that information about growth rates in one country is applicable in the other one too. The main mathematical result is that ex post inefficient wars only occur

if domestic pressure is high enough that without a war the old elite would be forced to give up power, as in this case a commitment problem enters the scene that can be solved through warfare.

On a deeper theoretical level, the model has two novelties in its approach. First it attempts to tie domestic politics to international politics in a new way. It breaks up the almost ubiquitous unitary actor assumption and assumes that domestic political interests drive foreign policy. It also assumes that foreign policy objectives of different institutional actors (elite/citizen) can be completely different, breaking new ground in international relations.

Second, the model here is of a behavioral flavor, as it takes culture and malleable identity to be core concepts. By assuming ingroup-outgroup differences the model therefore integrates psychological findings into macro-politics. In this sense it belongs to the subfield of behavioral economics, although there is little research yet in this genre in formal political economy.

The policy relevance of the paper lies in its attempt to model soft power. The theory shows that soft power can actually be detrimental if the old elite decides to wage a war to defeat its effects. The model shows that soft power is best directed at countries where the opposition forces are either very week or are on the cusp of taking power and a further little push would tilt the balance over to their side. In between the old elite finds it optimal to seek enmity or start a war in order to hang on to power. Therefore soft power needs to be studied more deeply.

A Tables and Figures

	CULTURALLY CLOSE	CULTURALLY DISTANT
REGIME SAME	peace Britain-France	peace Britain-Portugal
REGIME DIFFERENT	war/regime change Britain-Germany	peace Britain-Russia

Table 1: The model's predictions cross-sectionally during the First World War. In the case of culturally-close but institutionally-distant pairs of countries regime change should occur if domestic pressure is very high and war should occur if it is high but manageable, while peace occurs if it is low.

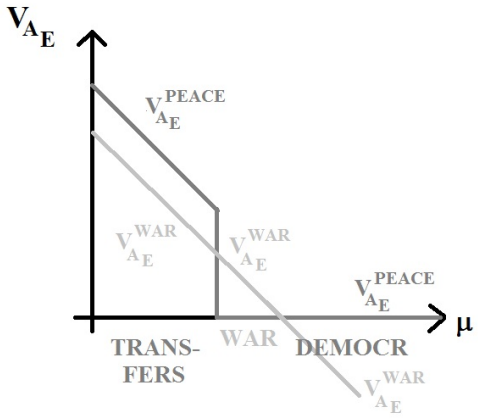

Figure 1: Under the assumption that war is costly (Assumption 1) we have that for low levels of domestic pressure $V_{A_E}^{WAR} = V_{A_E}^{PEACE} - \frac{c_A - c_B}{1-\beta} + \frac{\gamma}{1-\beta} < V_{A_E}^{PEACE}$. However when the commitment constraint starts to bind, $V_{A_E}^{PEACE}$ jumps discontinuously down, while $V_{A_E}^{WAR}$ is still continuous, making it possible that there is a mid-region between democratization and transfers where war occurs.

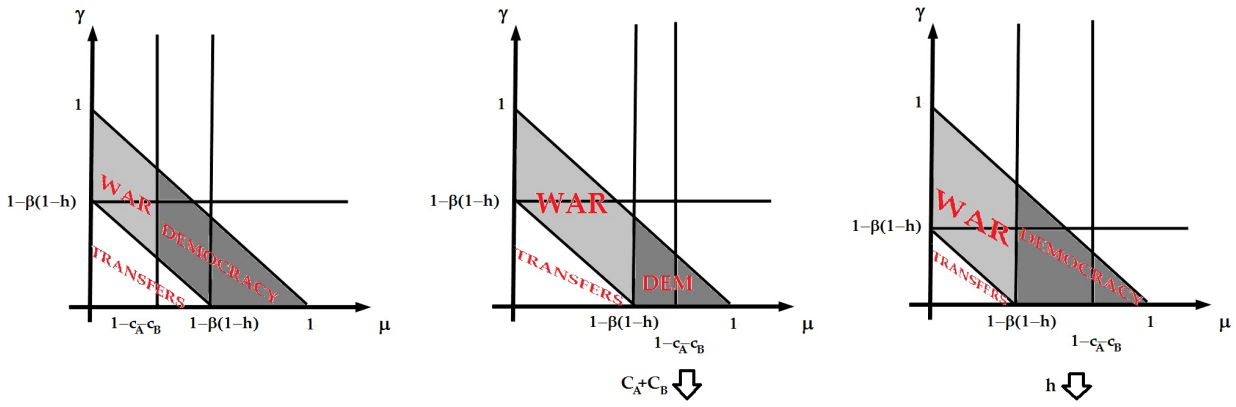

Figure 2: Outcomes and some comparative statics

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B Proof of Lemma 1

Transform $g_A(p,t)$ and $g_B(p,t)$ to get $a = \frac{g_A(p,t)-g^L(p,A,t)}{g^H(p,A,t)-g^L(p,A,t)}$ and $b = \frac{g_B(p,t)-g^L(p,B,t)}{g^H(p,B,t)-g^L(p,B,t)}$ to get two Bernoulli random variables. Notice that the correlation coefficient between a and b is still C (since $cov(c_1x+c_2, c_3y+c_4) = c_1c_3 \cdot cov(x,y)$ for c_1, c_2, c_3, c_4 constants). Then a and b both take on 1 and 0 with $E[a] = \pi(p,A,t)$ and $E[b] = \pi(p,B,t)$. ab takes on 1 and 0 too, and $\text{Prob}(ab=1) = \text{Prob}(g_A(p,t) = g^H(p,A,t), g_B(p,t) = g^H(p,B,t)) = \tilde{\pi}(p,A,t)\pi(p,B,t)$, where the last equation follows from Bayes' rule.

Then writing out C:

$$C = \frac{cov(a,b)}{\sqrt{var(a)}\sqrt{var(b)}} = \frac{E[ab]-E[a]E[b]}{\sqrt{var(a)}\sqrt{var(b)}} = \frac{(\tilde{\pi}(p,A,t)-\pi(p,A,t))\pi(p,B,t)}{\sqrt{\pi(p,A,t)(1-\pi(p,A,t))}\sqrt{\pi(p,B,t)(1-\pi(p,B,t))}}$$

or

$$\tilde{\pi}(p,A,t) - \pi(p,A,t) = C\sqrt{\pi(p,A,t)(1-\pi(p,A,t))}\sqrt{\frac{1}{\pi(p,B,t)}-1}.$$

C Proof of Lemma 2

We use backward induction. After a (victorious) war, how much will A_E need to transfer to A_C to avoid a revolution? With a revolution the utility of A_C would be:

$$V^r_{A_C}(\mu = \mu_H) = \frac{\mu_H}{1-\beta}, \tag{2}$$

so A_E needs to give a transfer $\hat{\mu}_H$ today to A_C which brings A_C to an expected utility of $\frac{\mu_H}{1-\beta}$. Is A_E able to do this?

The maximum transfer that A_E can offer is $\hat{\mu}_H = S_A = 1$. If A_C accepts this then he knows that A_E is not able to commit to give any transfer at all in non-revolutionary periods, which means:

$$V^p_{A_C}(\mu = \mu_H) = \frac{1}{1-\beta} - \frac{\beta(1-h)}{1-\beta}, \tag{3}$$

where in a proportion of $1-h$ periods A_C gets nothing and in the rest they get everything.[38] Since no more than $S_A = 1$ can be transferred to the citizens, buying the citizens off is not always possible. Whenever the citizens cannot be bought off with transfers ($V^r_{A_C}(\mu = \mu_H) \geq V^p_{A_C}(\mu = \mu_H)$) we say that the 'commitment constraint' is binding:

$$\frac{\mu_H}{1-\beta} \geq \frac{1}{1-\beta} - \frac{\beta(1-h)}{1-\beta}, \tag{4}$$

or

$$\mu_H \geq 1 - \beta(1-h), \tag{5}$$

Note that when the commitment constraint is not binding, the minimum amount of transfer to avoid a revolution is $\hat{\mu}_H = \frac{\mu_H}{1-\beta(1-h)}$,[39] so that the higher is the probability of having high revolutionary pressure in the future, the lower this transfer needs to be because there is a higher chance in the future that A_C will demand transfers again. We can call this $\hat{\mu}_H$ amount a sort of dynamic revolutionary pressure.

Now let us turn to the war. In a war the total resource sized $S_A + S_B$ is taken over by probability $\frac{S_A}{S_A+S_B}$. In the victorious case $\hat{\mu}_H$ needs to be transferred to A_C in high periods. From the point of view of B, the whole resource S_A+S_B is taken over with probability $\frac{S_B}{S_A+S_B}$, leading to expected utility $S_B - \frac{c_B}{1-\beta}$. Therefore the maximum amount of transfer from B to A_E to avoid a war is $\frac{c_B}{1-\beta}$.

Note that if the commitment constraint is not binding the war yields a net expected utility:

$$V^w_{A_E}(\mu = \mu_H) = \frac{S_A}{S_A+S_B}(S_A+S_B)\left((1-\hat{\mu}_H) + \beta\frac{h(1-\hat{\mu}_H) + (1-h)1}{1-\beta}\right) - \frac{c_A+c_B}{1-\beta}, \tag{6}$$

This can be rearranged to (using $S_A = 1$):

$$V^w_{A_E}(\mu = \mu_H) = \frac{1}{1-\beta} - \frac{(1-\beta(1-h))\hat{\mu}_H}{1-\beta} - \frac{c_A+c_B}{1-\beta}, \tag{7}$$

which has a nice interpretation: the first term is giving all of the unit resource to A_E forever; the second term is how much is expected to be needed to be given to A_C in order to avoid a revolution (if $h = 1$ this term is $\frac{-\hat{\mu}_H}{1-\beta}$ since it is given every period, if $h = 0$ the term is $-\hat{\mu}_H$ because it is given only in this period); the third term is the cost of war. This war cost is the combined cost of war $c_A + c_B$,

[38] This follows similar logic to Powell 2006: we are looking for an upper bound and the elite is willing to redistribute all to the citizens today to avoid a revolution but cannot credibly commit doing so in the future too.

[39] This is not simply μ_H because the citizens know that they have some de facto power in the future h share of the time. The elite wants to give the citizens so much transfers τ to get the citizens' utility to $\frac{\mu_H}{1-\beta}$, knowing that (we are looking at MPE's) he will give the same τ in any high period in the future: $\frac{\tau}{1-\beta} - \frac{\beta(1-h)\tau}{1-\beta} = \frac{\mu_H}{1-\beta}$, from which: $\tau = \frac{\mu_H}{1-\beta(1-h)}$. If there is no future high period ($h = 0$), this transfer is logically $\frac{\mu_H}{1-\beta}$, if there are always high periods in the future then it is μ_H.

which is just an accounting trick: we are taking the opportunity cost c_B into consideration here, since this is the amount of transfer B_C would be willing to make to A_E to avoid being attacked. Substituting in for $\hat{\mu}_H$ yields:

$$V^w_{A_E}(\mu = \mu_H) = \frac{1-\mu_H}{1-\beta} - \frac{c_A + c_B}{1-\beta}. \tag{8}$$

D Additional Mechanism: Modeling Emigration

We will find other types of microfoundations for γ here. Compared to social learning, the second mechanism is much easier mathematically. It simply stipulates that if B_C has a higher income, then citizens of A may leave A to seek a better life in B. This mechanism is again is part of the microfoundations of soft power, since the appeal of B_C is what makes citizens of A leave. Interestingly, the 'exit' option (Hirschman 1970) increases domestic pressure rather than lowers it. Let us investigate the mechanism.

Assume that citizens have different productivity levels, ranging from low y^L to high y_H with some cumulative distribution $F(y)$. Citizens' incomes add up to 1: $\int_{y^L}^{y^H} = 1$ (we assume the elite produces nothing). Now assume that there is some uniform cost c for each individual of moving or escaping to B_C, which should increase with cultural distance. For instance, a Muslim moving to a Christian country might not find a mosque there, might be discriminated against on the job market, and so on.

Assume away all income uncertainty. Then when pressure is high, the expected utility of A^i_C is

$$V^{stay}_{A^i_C} = \frac{\mu^H}{1-\beta} y^i,$$

while through emigration, the individual can keep their income in all subsequent periods, leading to a utility of

$$V^{emigr}_{A^i_C} = \frac{1}{1-\beta} y^i - c.$$

We assume that it is worth emigrating only for a subset of individuals:

$$\frac{\mu_H}{1-\beta} y^H > c > \frac{\mu_H}{1-\beta} y^L.$$

This means that the individuals who are going to emigrate have the mass: $1 - F\left(\frac{1-\beta}{1-\mu_H} c\right)$ which means that domestic pressure falls by this amount. However aggregate income in A falls by more than this as the productive individuals are the ones to emigrate, who we assume only to be more productive in working not generating domestic pressure. Therefore the average income of emigrants is higher than overall average income:

$$\int_{\frac{1-\beta}{1-\mu_H} c}^{y^H} y^i dF(i) \geq \int_{y^L}^{y^H} y^i dF(i),$$

Thus domestic pressure on A_E falls by more than the rent it earns in a dictatorship. Thus Walter Ulbricht did all in his power to prevent East Germans from fleeing into the West, and even erected the Berlin Wall on August 13 1961 for this purpose.

Through emigration the utility of the elite drops from:

$$V_{A_E}^{stay} = \frac{1-\mu^H}{1-\beta},$$

to

$$V_{A_E}^{emigr} = \frac{1 - \int_{\frac{1-\beta}{1-\mu_H}c}^{y^H} y^i dF(i) - (\mu^H - 1 + F(\frac{1-\beta}{1-\mu_H}c))}{1-\beta}.$$

Notice that just as the elite cannot credibly commit to leave income at its producer, it cannot credible promise not to redistribute income from high-productivity individuals who forego emigration.

Therefore stemming the migration of A_C is worth a flow benefit of γ to the elite A_E:

$$\gamma = \int_{\frac{1-\beta}{1-\mu_H}c}^{y^H} y^i dF(i) - (1 - F(\frac{1-\beta}{1-\mu_H}c)) > 0.$$

In words: the benefit of the war in this case is that in periods when the elite takes wealth away as domestic pressure is low, it will benefit from being able to take the income of both high as well as low productivity individuals. The bigger the income difference between A and B, the stronger this pressure should be as the bigger is the incentive for high-productivity A_C's is to emigrate. Notice that in this mechanism too, cultural proximity leads to a higher γ. This is because lowering the cost of emigration will lead more individuals to immigrate, which again lowers the domestic pressure by less than the potentially taxable income the elite loses.

E Additional Mechanism: Modeling Altruism

Another mechanism through which γ can be captured is through altruistic motives. We should think of this in terms of transfers, money, or aid directed at citizens A_C from B_C which B_C cannot commit not to send. This could be because of family ties or cultural closeness. We can model altruism by assuming that for each unit of income consumed by B_C they have an immediate need to have A_C consume $\alpha \in (0,1)$ units of income. Thus:

$$V_{B_C} = \min(u_{B_C}, \frac{1}{\alpha}u_{A_C}),$$

to which the optimum is found by allocating x to B_C and αx to A_C. I assume that α increases in cultural proximity.

Now we can see that a transfer of $\frac{\alpha}{1+\alpha}S_B$ will be sent from B_C to A_C, however notice that this will only occur in high-domestic pressure periods. The reason is the usual commitment problem: any transfer from B_C to A_C in low pressure periods would be confiscated immediately by A_E, not raising the utility of B_C by anything. On the other hand in high-pressure periods by using the transfers to raise domestic pressure, A_C can ensure getting more of the pie. But this means that domestic pressure rises exactly by the transfers:

$$\gamma = \frac{\alpha}{1+\alpha}S_B,$$

which increases in α. Therefore altruism can lead to war in this case and leave the citizens A_C actually worse off. The reason is again that if the elite's commitment problem can be defanged by destroying B_C, the costs of this destruction could be outweighed by the benefits.

An example here may be the Korean War 1950-53. Both the leaders of the North (Kim Il-sung) and the South (Syngman Rhee) were fervently nationalistic and wished to rule over the whole of the Korean people, one through communism, the other through authoritarianism (Sandler 1999). Thus the cultural, linguistic and ethnic ties precipitated the Korean War.

F Subgame Perfect Nash Equilibria instead of Markov Perfect Nash Equilibria

Since many of our results depend on commitment problems, it could be a legitimate concern that this commitment problem only arises because we focus on past-independent MPE and once we extend our horizon to the larger set of subgame perfect equilibria, where infinite punishment strategies are allowed, we should lose the possibility of war. Nevertheless, results are not driven by the restricted equilibrium concept. Indeed punishment is allowed in SPNE, however the elite still cannot commit to redistribution perfectly because if it deviates, punishment cannot occur immediately as it deviates in low revolutionary periods.

The structure of the MPE resembles that of the SPE with different cutpoints. Mathematically a deviation to no redistribution in the low revolutionary period yields:

$$V_{A_E}^{dev}(\mu = \mu_L) = 1 + \beta(1-h) + \beta^2(1-h)^2 + \beta^3(1-h)^3 + ... = \frac{1}{1-\beta(1-h)},$$

where the flow of payments only keeps on going through period n if there are n consecutive low periods. Now for incentive compatibility, if the elite redistributes τ_H in high periods and τ_L in low periods that

should yield a higher utility than $V_{A_E}^{dev}(\mu = \mu_L)$ in low periods:

$$1 - \tau_L + \beta \frac{h(1-\tau_H) + (1-h)(1-\tau_L)}{1-\beta} \geq \frac{1}{1-\beta(1-h)}, \tag{9}$$

with the other incentive compatibility constraint (for citizens to avoid revolution) being:

$$\tau_H + \beta \frac{h\tau_H + (1-h)\tau_L}{1-\beta} \geq \frac{\mu_H}{1-\beta}. \tag{10}$$

Now what we need for war to be possible is that there exists a pair τ_H, τ_L that satisfies (9) and (10) but for paramaters of μ_H and γ, no pair of transfers exists which satisfy (9) but does not satisfy:

$$\tau_H + \beta \frac{h\tau_H + (1-h)\tau_L}{1-\beta} \geq \frac{\mu_H + \gamma}{1-\beta}. \tag{11}$$

To see that we can find such a case, assume that we cannot. That means that for a given pair of transfers that are incentive compatible for the elite, we cannot set $\mu_H + \gamma$ high enough for it not to satisfy:

$$\tau_H + \beta \frac{h\tau_H + (1-h)\tau_L}{1-\beta} \geq \frac{\mu_H + \gamma}{1-\beta}. \tag{12}$$

Let us try doing this. To minimize the incentive for the elite to deviate set τ_L as low as possible since in high periods it will not deviate anyways, so we can have $\tau_H = 1$. Then τ_L should be given by:

$$\frac{(1-\beta+\beta(1-h))(1-\tau_L)}{1-\beta} = \frac{1}{1-\beta(1-h)}, \tag{13}$$

or or:

$$\tau_L = \beta(1-h). \tag{14}$$

Now plug these values τ_H and τ_L in to the citizen revolution-avoiding (commitment) constraint:

$$1 + \beta \frac{h + (1-h)\beta(1-h)}{1-\beta} \geq \frac{\mu_H + \gamma}{1-\beta}, \tag{15}$$

which means that

$$1 - \beta + \beta(h + (1-h)^2\beta) \geq \mu_H + \gamma, \tag{16}$$

where the left-hand side is less than 1 since $h + (1-h)^2\beta$ is less than 1 because $(1-h)^2\beta$ is less than $1-h$. So we can in fact always find a μ_H and γ so that $\mu_H \leq 1 - \beta + \beta(h + (1-h)^2\beta) < \mu_H + \gamma$. Therefore war will be a possibility in the model.

Therefore extending the analysis to SPNE changes the cut-off points and gives more commitment power to the elite (transfers in low periods may be positive $\tau_L \geq 0$), which makes both democratization

and war less likely but for a smaller range of values we still have the equilibrium structure described in the case of MPE's.

G Extension: Two-Sided Inspiration

So far we have considered only inspirational links between one culturally close elite A_E and opposition B_C, however it is natural to think that enhanced domestic pressure can go both ways: during the early Cold War, both democrats in the Soviet Union A_C and communists in the West B_E could look to the other country for inspiration and information. Extending the model shows us two results. First, the one-sided MPE described above remains unchanged with adding a domestic level to B as long as the commitment constraint in B is not binding (so that redistribution solves the issue) or regime change in B is unavoidable (commitment constraint binds even with $A = A_C$), therefore the result is quite general. Second when war can solve both A_E's and B_C's commitment problem[40] war becomes easier: $\mu_H^A + \mu_H^B \leq 2 - (c_A + c_B)$ as the combined cost of war $\frac{c_A+c_B}{1-\beta}$ is now covered by not one benefit term[41] but two.[42]

With two-sided inspiration our standard benefits-not-greater-than-costs assumption modifies to:

Assumption 2.

$$\gamma_A + \gamma_B < c_A + c_B$$

Let us start with $\mu^A(t) = \mu_H^A$ and $\mu^B(t) = \mu_H^B$, when pressure is high in both countries. The commitment constraint is not binding in A if $\mu_H^A + I(B = B_E)\gamma_C \leq 1 - \beta(1 - h_A)$ and similarly, it is not binding in if $\mu_H^B + I(A = A_E)\gamma_E \leq 1 - \beta(1 - h_B)$, where $I(\cdot)$ is just the indicator function used for notational simplicity. In this case redistribution is possible in both countries. The minimal amounts of redistribution to avoid revolutions are $\hat{\mu}_H^A = \frac{\mu_H^A}{1-\beta(1-h_A)}$ and $\hat{\mu}_H^B = \frac{\mu_H^B}{1-\beta(1-h_B)}$ respectively.

A war yield the usual expected benefits, except for now let us not account for the opportunity cost of receiving a transfer from abroad ($-c_B$) in A_E's value function. Then:

$$V_{A_E}^w = p\frac{1}{p}\left(\frac{1 - \hat{\mu}_H^A}{1-\beta} + \beta\frac{(1-h_A)\hat{\mu}_H^A}{1-\beta}\right) - \frac{c_A}{1-\beta},$$

where the second term again reflects the capital gain whenever $\mu^A(t) = \mu_L^A$ and:

$$V_{B_C}^w = (1-p)\frac{\frac{1}{p}}{\frac{1-p}{p}}\left(\frac{1 - \hat{\mu}_H^B}{1-\beta} + \beta\frac{(1-h_B)\hat{\mu}_H^B}{1-\beta}\right) - \frac{c_B}{1-\beta},$$

[40] $\mu_H^A \leq 1 - \beta(1 - h_A)$ but $\mu_H^A + \gamma_A \geq 1 - \beta(1 - h_A)$ and $\mu_H^B \leq 1 - \beta(1 - h_B)$ yet $\mu_H^B + \gamma_B \leq 1 - \beta(1 - h_B)$

[41] $V_{A_E}^w - V_{A_E}^p = \frac{1-\mu_H^A}{1-\beta}$

[42] $(V_{A_E}^w - V_{A_E}^p) + (V_{B_C}^w - V_{B_C}^p) = \frac{(1-\mu_H^A)+(1-\mu_H^B)}{1-\beta}$

, where B_C gains a territory of size $\frac{1}{p}$ instead of size $\frac{1-p}{p}$ if he wins, which happens with probability $1-p$. These expressions again can be simplified to:

$$V^w_{A_E} = \frac{1-\mu^A_H}{1-\beta} - \frac{c_A}{1-\beta},$$

and

$$V^w_{B_C} = \frac{1-\mu^B_H}{1-\beta} - \frac{c_B}{1-\beta},$$

since both A_E and B_C need to give just enough to their domestic opposition to avoid a revolt.

Therefore once again we can see that if no commitment problem is present, war is never an equilibrium-path outcome, since $V(A_E)^w + V(B_C)^w < V(A_E)^p + V(B_C)^p$:

$$\frac{2-\mu^A_H-\mu^B_H}{1-\beta} - \frac{c_A+c_B}{1-\beta} < \frac{2-\mu^A_H-\mu^B_H}{1-\beta} - \frac{\gamma_A+\gamma_B}{1-\beta},$$

where the inequality arises from the war-is-costly assumption.

War only happens if it helps solve at least one of the commitment problems. The case with one-sided inspiration earlier was exactly the case when B's domestic conflict could be ignored because the commitment constraint there was not binding, so reanalyzing that case is futile. Let us turn instead directly to the case where the commitment constraint is binding in both countries. It is easy to see that if a war would still lead to regime change in *both* countries, again it is suboptimal and will not occur. How about the case when a war saves A_E from democratization but not B_C (from a coup)? This is the case when $\mu^A_H \leq 1-\beta(1-h_A)$ but $\mu^A_H + \gamma_A \geq 1-\beta(1-h_A)$ and $\mu^B_H \geq 1-\beta(1-h_B)$. Then $V^w_{A_E} + V^w_{B_C} \geq V^p_{A_E} + V^p_{B_C}$ becomes $\frac{(1-\mu^A_H+0)-(c_A+c_B)}{1-\beta} \geq 0$, which is the same condition $\mu^A_H \leq 1-c_A+c_B$ that we had for war in the one-sided case. Therefore the one-sided equilibrium describes the conditions fully when the domestic conflict in B is such that war is either not necessary to solve it (redistribution solves it) or war is not sufficient to solve it (regime change in unavoidable).

Finally, let us look at the case when both commitment problems can be solved by a war: $\mu^A_H \leq 1-\beta(1-h_A)$ but $\mu^A_H + \gamma_A \geq 1-\beta(1-h_A)$ and $\mu^B_H \leq 1-\beta(1-h_B)$ yet $\mu^B_H + \gamma_B \leq 1-\beta(1-h_B)$. War happens if $V^w_{A_E} + V^w_{B_C} \geq V^p_{A_E} + V^p_{B_C}$ or:

$$\frac{((1-\mu^A_H)+(1-\mu^B_H))-(c_A+c_B)}{1-\beta} \geq 0$$

or

$$\mu^A_H + \mu^B_H \leq 2-(c_A+c_B).$$