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The Political Economy of Reconciliation: A Theoretical Primer

Abstract

Conflicts end. Often though, the roots of future conflict remain in fertile soil. The process of reconciliation among erstwhile enemies may be a way to deter future conflagrations; we have witnessed a number of examples such as in Rwanda or South Africa. However, to be sustainable and effective, this process may require cultural change. We use evolutionary game theory to model this process of cultural change. We postulate three cultures in a population – Conciliatory, Non-conciliatory, and Reciprocative. We then use the replicator dynamic to identify evolutionary stable outcomes. People in our population are boundedly rational. They may, therefore, "belong" to a particular culture. However, they learn to adopt other cultures if it is beneficial. We find first that people can learn to be Non-conciliatory even when Conciliation provides very real benefits. However, a population can learn the reciprocative culture to facilitate reconciliation. Whether it does or not depends on the initial distribution of the population among the three cultures and how people feel about the future. These results are well known in the Evolutionary Game Theory literature. However, to our knowledge, this is the first time these results have been applied to provide insights into post-conflict reconciliation processes.

JEL-Codes: D780, H120.

Keywords: conflict, reconciliation.

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The Political Economy of Reconciliation: A Theoretical Primer

Introduction

Conflicts end. Often though, the roots of future conflict remain in fertile soil. The process of reconciliation among erstwhile enemies may be a way to deter future conflagrations; we have witnessed a number of examples such as in Rwanda or South Africa, but also to a lesser extent in reunified Germany.

These are complicated issues since causality, and feedback mechanisms are difficult to disentangle. There is more concretely a lack of understanding of the relationship between socio-economic developments, conflict, reconciliation, trust, and peace. Is economic growth beneficial for peace and reconciliation? How do inequality, unemployment, and poverty enter this equation? Or is reconciliation a prerequisite for economic and social development?

In economics, the topic of reconciliation is so new that there is no proper tool to measure reconciliation. A preliminary conclusion observing these processes is that to be sustainable and effective, a reconciliation process may require cultural change. We use evolutionary game theory to model this process of cultural change. We postulate three cultures in a population – Conciliatory, Non-conciliatory, and Reciprocative. We then use the replicator dynamic to identify stable evolutionary outcomes. People in our population are boundedly rational. They may, therefore, "belong" to a particular culture. However, they learn to adopt other cultures if it is beneficial.

The remainder of this paper is organized as follows. We first take a look at the literature on the economics of conflict to understand the causes of conflict and to outline the main research agenda with respect to reconciliation. This overview is then used to map out a theoretical framework within which we analyze the process of reconciliation within a society. To model this process, we introduce an evolutionary game. Conclusions round off the paper.

Causes of conflict

Economics has dealt with conflict, peace, and reconciliation in a somewhat asymmetric manner. Whereas conflict has been investigated with respect to its causes, consequences, and ways to end it, reconciliation as a process has almost found no interest. Thus, we give a short overview of the

literature on conflict before we use its results to develop a theoretical primer of a political economy of reconciliation. We concentrate on causes and ways to stop conflict, but also consider other social sciences than economics.

Following the theoretical literature on the causes of conflict and violence, underdevelopment can end in civil conflicts. In this context, one can argue in terms of the so-called opportunity costs. When people live under bad economic conditions, their opportunity costs of becoming a rebel are smaller than for people living in an environment of a stable and good economy. That is if people have low income or even no access to income-generating activities, then rebel groups can easily convince them to take part as they have not much to lose (Collier 2006).

Other researchers have shown that inequality, first interpreted as horizontal inequality between ethnic groups within a country (Langer et al. 2013) is contributing to civil conflict. A line of argument related to horizontal inequality argues that ethnic diversity adds to civil conflicts (Basedau and Pierskalla 2013, Buhaug et al. 2011). The second aspect of inequality is placed on the micro-level (Brück et al. 2020); it may also be interpreted as vertical inequality between social groups or individuals (Fjelde and Østby 2014). It also contributes to civil conflict in theory. In addition to ethnic tensions, conflicts may also arise between members of different religions (Svensson 2012).

A fundamental origin of civil conflict is resource wealth, in combination with these arguments when the resource rents do not reach the poor but are instead concentrated by political elites. It is theoretically convincing that the conflict evolves out of the fight over the access to the scarce resources, which might even be essential for survival. So it is not by chance that the empirical picture is quite clear. Civil conflict in developing countries is often driven by resources and the competition for the revenues (Collier and Höffler 1998 and 2002; for a survey, see Freytag and Langlotz 2014).

Political Economy of Reconciliation

This leads to the question of how to stop conflict and to start a process of reconciliation. The first observation is that most economic analyses are concentrating on ways to stop the conflict and do not take into account the procedural nature of both conflicts and their endings. An exception is Basuchoudhary, Sen, and David (2019), who model the process of civil conflict (and implicitly the end of it) as an evolutionary game.

In the empirical literature, they are several main drivers to end the conflict. Religion may play a role here again (Svensson, 2012). Toft (2010) discusses the endings of civil conflicts and shows the fundamental role of internal negotiations to create peace. This is supported by Dyrstad et al. (2011). Sami (2005) and Toft (2020) also show that third-party involvement is not a guarantee for the sustainability of peace-keeping measures. However, none of these studies directly addresses reconciliation as a process.

There is still a lack of understanding of the relationship between socio-economic developments, conflict, reconciliation, trust, and peace. Is economic growth beneficial for peace and reconciliation? How does inequality enter this equation? Or is reconciliation a prerequisite for economic and social development? In fact, these are complicated issues, since causality and feedback mechanisms are difficult to disentangle. The first tasks will be (1.) to define the term reconciliation in a concise and consistent manner and (2.) to search for ways to measure as far as possible conditions, attitudes, practices, and effects of reconciliation.

In reconciliation studies, most scholars evolved towards a consensus to work with a double definition of socio-political reconciliation (Appleby 2000, Leiner 2012). Reconciliation in the broader sense means the process of establishing good or at least "normal" relationships between states, groups and individuals after gross human rights violations such as genocides, mass-killings in Wars and Civil Wars, imprisonments and killings without legal basis or with a basis in Law which does not respect human rights, torture, forced displacement, enslavement, apartheid, discrimination, and similar acts.

Reconciliation in a narrower sense requires, within that process, to work through the past though legal procedures, through establishing historical truth and creating a just and peace-oriented memory culture, to do what is possible to repair the damages of the victims (compensations, trauma work, affirmative action, etc.), to restore the relationships through direct contact, apologies and if possible forgiveness and to create a new culture of trust, security, cooperation, respect and if possible friendship between former enemies. This new culture is necessarily forward-looking, a point we will come back to in our model.

This definition allows us to refer to the concept of opportunity costs again. When opportunity costs of violence rise, the chance for a reconciliatory process also increases. However, we claim that this process is also dependent on other contextual drivers. These drivers are rooted in the distribution of learned behaviors, i.e., cultural phenotypes in society and how individuals who adhere to these

phenotypes view the future. The interactions among these phenotypes after a conflict ends determine the likelihood that a process of reconciliation will succeed. In the next section, we develop our theoretical model to analyze these interactions. Each phenotype has a payoff that depends on other phenotypes, i.e., the societal context. These payoffs are not necessarily monetary and may include, for example, moral payoffs from "doing the right thing."

The model

Our base prisoner's dilemma model is quite standard in the conflict literature (see, for example, Lumsden, 1973, and more recently, Luo, et al. 2009). We, however, use the prisoner's dilemma as our model of reconciliation. It is, therefore, in effect the mirror image of how this model is used to study conflict, we focus on how it may be possible to achieve the Cooperative/Reconciliation outcome instead of the more well-known Defection or conflict outcome.

Table 1. The basic game[3]

	D	C
D	3,3	8, 1
C	1, 8	5, 5

It is by now well known that institutions that facilitate cooperation by building trust are essential policy tools to reduce conflict (Basuchoudhary et al. 2018), and increase economic output (Rodrik, 2007. pp 153-183). Cooperation is synergistic because it allows individuals to have more capabilities than they would otherwise have on their own, by emphasizing the logic of comparative advantage. This logic explains the payoff of 5 to each agent when they both cooperate. Of course, in a post-conflict setting, cooperation is the very essence of reconciliation. We will, therefore, make no distinction between cooperation and reconciliation going forward. In these models, nevertheless, agents have an incentive to gain at others' expense, as noted in the top right and the bottom left cells. The winner, in this case, has a payoff of 8 while the loser has a payoff of 1. Of course, such a dynamic in the absence of any enforcement mechanism means that both agents will fail to commit

[3] Based on Harrington (2009, pp. 522).

to cooperation and defect, leading to a payoff of 3 to each. The relative symmetry of the payoffs suggests a power equivalence that may not exist in the real world in many cases. The critical issue here, though, is that the defect or conflict outcome is inevitable as long as each player's preference ordering is maintained.

We apply a standard evolutionary game theory model (McElreath and Boyd, 2008) to study the evolution of civil conflict. We have a large population of players. We assume, as is usual in evolutionary games, that in each population, there is a distribution of strategies or phenotypes. Rather than choose optimal strategies, individuals "inherit" or just have these strategies. Individuals with these strategies interact in pairs with individuals with other strategies in the population. This interaction determines the payoff or fitness of each strategy. The individuals then observe their average payoffs from their strategy relative to the average payoffs from other strategies. They then learn to emulate strategies with higher payoffs. Thus, strategies with higher average payoffs are "replicated." We use this approach to determine stable outcomes in our example.

In our evolutionary stage game, a proportion x of the population are Conciliatory (C) types, y, is Reciprocative (R) type. Therefore, the Non-Conciliatory (NC) type is $1 - x - y$ proportion of the population.

- R types represent people who assume strangers will cooperate and, consequently, themselves cooperate upon meeting a stranger. However, after the initial interaction, they will only reciprocate with cooperation if the stranger turns out to be a cooperator in that first interaction. Thus, R types may want to reconcile with others; however, whether they continue to do so or not depends on how others behave. The reader will note that this strategy is really Tit for Tat or TFT repurposed to be consistent with our narrative.
- C types are people who will reconcile no matter what.
- Similarly, NC types never want to reconcile.

This delineation of strategies changes the game in Table 1, if only in terminology and the number of outcomes. We represent this new evolutionary stage game in Table 2.

The shadow of the future may resolve the prisoner's dilemma. In this telling, repeated interaction allows the possibility of future punishment to deter current bad behavior. Bad behavior triggers some kind of punishment. Thus, credible trigger strategies may enforce good behavior. TFT is a

well-known punishment strategy (Axelrod, 1980) that can maintain cooperation and falls in the class of strategies that Ostrom refers to as "conditional cooperators." These conditional cooperators can help sustain cooperative norms. This then explains why we have included R as a strategy. In fact, our model can be interpreted as a sort of horse race among three norms – C, NC, and R. Which one will win, and why?

The payoff structure is rooted in the numbers we presented in Table 1. The distinction now is in the nature of the interaction among people who follow each type of strategy/norm. Since agents are boundedly rational in our model, we evaluate whether a norm or strategy is itself successful rather than focus on hyper-rational individuals evaluating and then choosing a particular strategy. That is to say, for the R norm, there is a y chance of meeting another R type. We evaluate the payoff for this sort of interaction forever since our agents are bound to an endowed strategy rather than have a capacity for calculating infinitesimal cost benefits ad infinitum. We repeat this sort of evaluation for the remaining two interactions for R. A similar process works to generate payoffs for the NC and C types as well. We can then calculate the expected payoff for each norm/strategy. A larger proportion of the population will learn norms with a higher expected payoff – this, then, is the rational part of our boundedly-rational agents. Notice, this is not an individualized sort of rationality. It is more like a wiki-rationality. It is this sort of rationality that enables group selection in biology where the outcome is a more direct benefit from having more progeny. Thus, in this paper, we disavow the hyper-rational Homo Economicus model for a more realistic setting where we recognize that people can adhere to behaviors with no immediate benefit to them. However, behaviors that are beneficial on average will be learned over time, and the proportion of people adhering to the new behavior will increase. These new payoffs are presented in Table 2.

Say the likelihood of repeated interaction in the future is δ. This δ is a measure of patience where a higher δ represents a higher willingness to wait for the future because it means life is potentially improving in the future, a lower δ rather shows high uncertainty about the future. In the lexicon of reconciliation δ, therefore, captures whether a new culture of trust, security, cooperation, and respect can actually happen. Of course, on the flip side, it also captures whether a norm following agent will care about the likelihood of punishment if s/he does not reciprocate kindness. In fact, we will show that it is this latter feature that enables the former. As a practical matter, real interest rates used to discount the future may be a good proxy for δ. Thus, even though individuals may have very different estimates of whether the future is something to wait for (Lengwiler, 2005), it is well known

that discount rates as captured in market-clearing interest rates may be a good proxy for patience because they leverage the market's information processing mechanism (Olivola & Wang, 2016). Other more direct experimental approaches can also be used to measure patience (e.g., Rambaud & Torrecillas, 2016).

Following the context described above, individuals following each strategy/norm interact. When C types meet other C types and have a repeated interaction, then they start and continue to cooperate with each other. Thus, based on the numbers of Table 1 the C norms payoff is $\frac{5}{1-\delta}$. Similarly, when NC types meet another NC type, they start of defecting, and each NC type has a payoff of $\frac{3}{1-\delta}$. Recall that we have assumed that R types start off giving their partner the benefit of the doubt and assume that their partner is a C type. This is fine when the partner is a C type, leading to payoffs as if they were both C types. When R types meet the NC types, however, things get interesting. The R type assumes at first the other agent is a C. Unfortunately, for her since this is not the case, she receives a payoff of 1 while the NC type gets a payoff of 8. This experience sours the R type, and true to the norm she follows (and not as a matter of free will), she defects the next period while the NC type remains true to his norm and continues to defect. Thus, the R norm will have a payoff of $1 + \frac{3\delta}{1-\delta}$ while the NC norm will have a payoff of $8 + \frac{3\delta}{1-\delta}$. Of course, when agents belonging to the C norm meet agents belonging to the NC norm, the C norm gets a payoff of $\frac{1}{1-\delta}$ while the NC type lucks out and receives a payoff of $\frac{8}{1-\delta}$. When agents following the R norm interact with other agents following the R norm, they continue to receive the cooperative payoff since both start by cooperating and therefore have no reason to defect. All this is represented in Table 2.

Table 2. The Evolutionary Stage Game

	C (x)	NC (1-x-y)	R (y)
C	$\frac{5}{1-\delta}, \frac{5}{1-\delta}$	$\frac{1}{1-\delta}, \frac{8}{1-\delta}$	$\frac{5}{1-\delta}, \frac{5}{1-\delta}$
NC	$\frac{8}{1-\delta}, \frac{1}{1-\delta}$	$\frac{3}{1-\delta}, \frac{3}{1-\delta}$	$8 + \frac{3\delta}{1-\delta}, 1 + \frac{3\delta}{1-\delta}$
R	$\frac{5}{1-\delta}, \frac{5}{1-\delta}$	$1 + \frac{3\delta}{1-\delta}, 8 + \frac{3\delta}{1-\delta}$	$\frac{5}{1-\delta}, \frac{5}{1-\delta}$

Now we calculate the expected payoff to each norm/strategy. This will allow us to compare these expected payoffs and help us understand the context in which reconciliation can happen.

Model Outcomes

We will calculate the expected payoffs for each norm and show when a particular norm is most likely to prevail in the population.

The expected payoff to the C norm, i.e., conciliatory behavior at any circumstances, is:

$$E(C) = \frac{5x}{1-\delta} + \frac{1-x-y}{1-\delta} + \frac{5y}{1-\delta} \qquad (1)$$

The expected payoff to the NC norm, i.e., non-conciliatory behavior under any circumstances, is:

$$E(NC) = \frac{8x}{1-\delta} + \frac{3(1-x-y)}{1-\delta} + \left(8 + \frac{3\delta}{1-\delta}\right)y \qquad (2)$$

The expected payoff to the R norm, i.e., reciprocating behavior, is:

$$E(R) = \frac{5x}{1-\delta} + \left(1 + \frac{3\delta}{1-\delta}\right)(1-x-y) + \frac{5y}{1-\delta} \qquad (3)$$

In the next step, we compare these outcomes in a pairwise contest to find out the probability of reconciliation in society. If E(C) or E(R), respectively, are higher than E(NC), we can expect that society tends to support reconciliation. If E(NC) beats both alternatives, reconciliation is impossible in the theoretical setting. We show the results of these pairwise comparisons for a large, and then a small δ in the simulations below. In these graphs (Figures 1 through 6), the vertical axis measures the proportion of R types in a population while the horizontal axis measures the proportion of C types in the same population. The proportion of the NC type in the population is, therefore, implicit. Each of the pairwise comparisons tells us something about which type of norm, C or R, is beneficial overall – as shown in the shaded regions. If there is no shaded region at all, it implies that both C and R norms are superseded by the NC norm.

Comparison 1: E(C) is a more beneficial norm for individuals than E(NC) if (1) > (2). This relation implies that the C norm is likely to be replicated relative to the NC norm. This inequality is true only when

$$(\delta - 1)(2 + x + y - 5y\delta) > 0 \qquad (4)$$

Simple algebra reveals this is a null set for x and y for a small δ (say 0.2). This is a very reasonable result. If the population is only interested in short-term benefits and does not care about the future, "investment" into stable relationships with former opponents in conflict is not perceived as helpful. However, if δ is large, say 0.8 then the C norm will be replicated over the NC norm for values of R and C in the shaded region A.

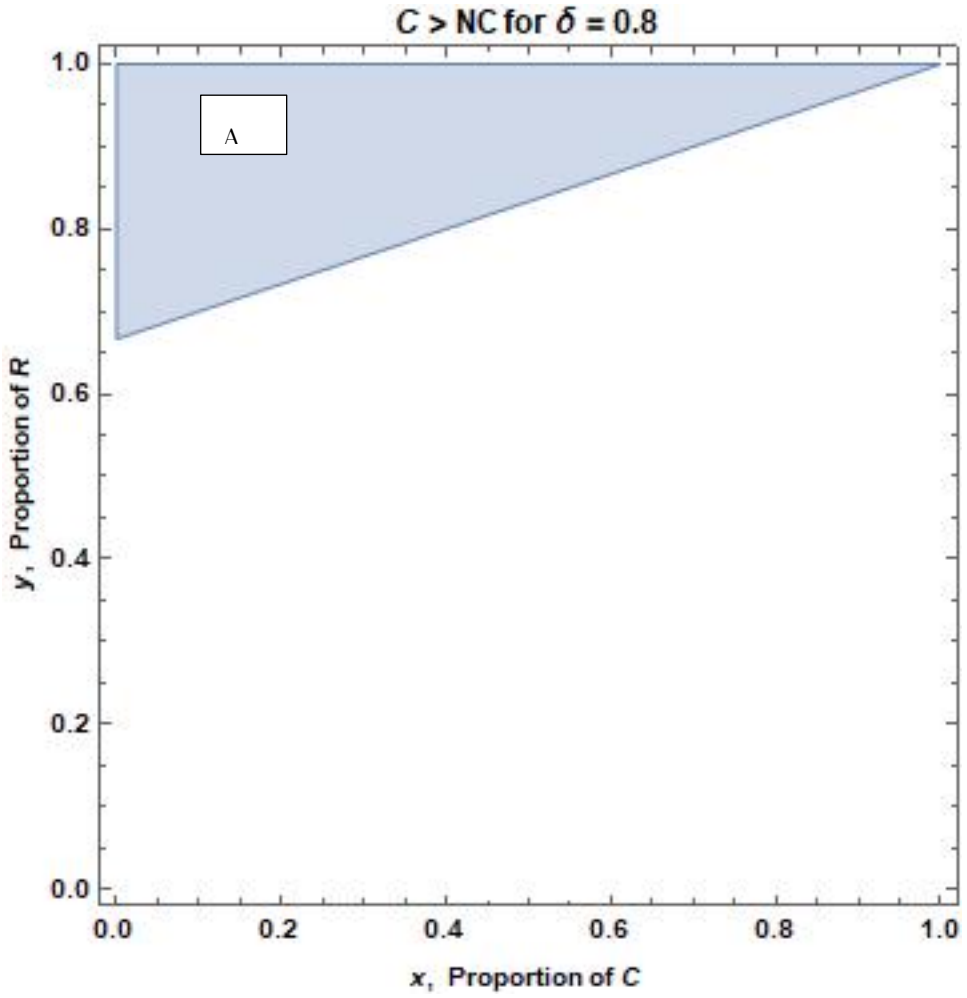

Figure 1. E(C) > E(NC) for a large δ

Comparison 2: NC is the replicated norm relative to (R) if (2) > (3). This statement is true when

$$(\delta - 1)(2 + x + y - 2\delta - 2x\delta - 3y\delta) < 0. \qquad (5)$$

For a small δ = 0.2 we notice that (5) is always true as shown in the shaded region in Fig 2.

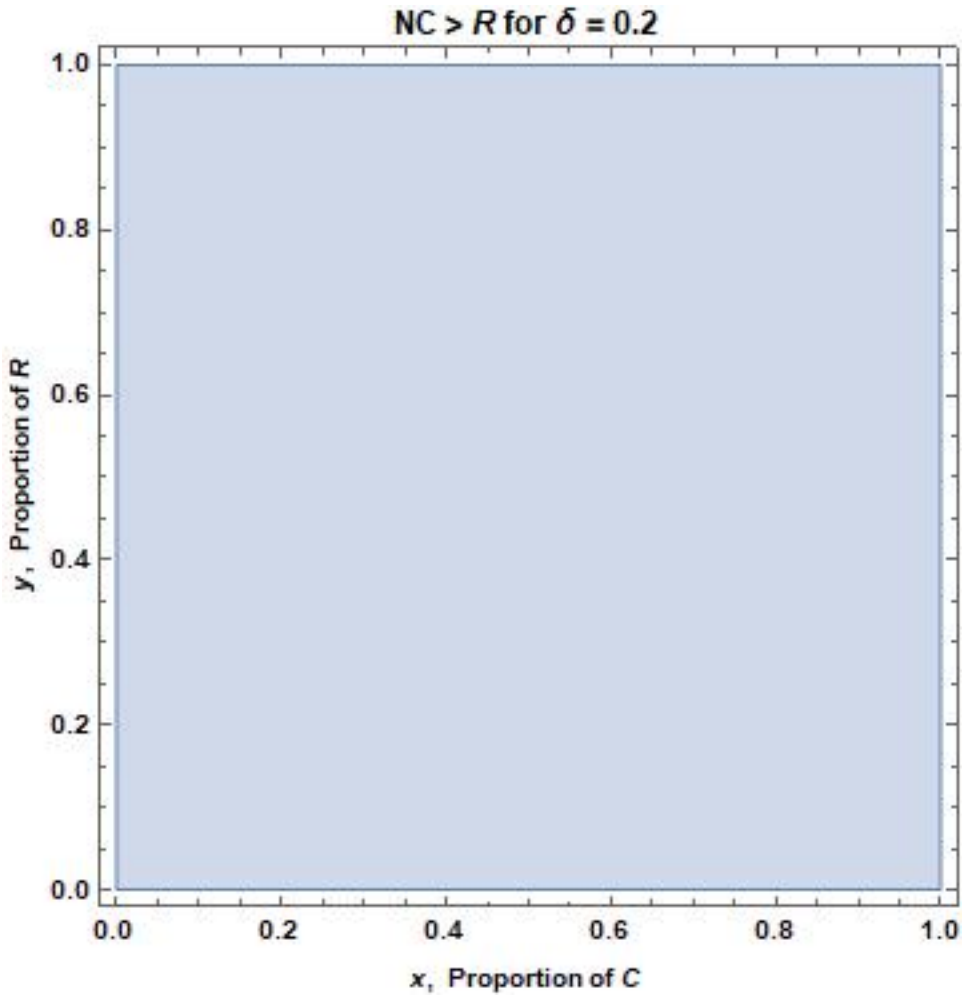

Figure 2. NC is bigger than R for a small δ.

Thus, for a small δ the NC norm always prevails over the R norm for any value of R and C. For a large δ = 0.8, however, there are values of R and C for which the R norm will prevail (the unshaded region B in Fig 3) over NC.

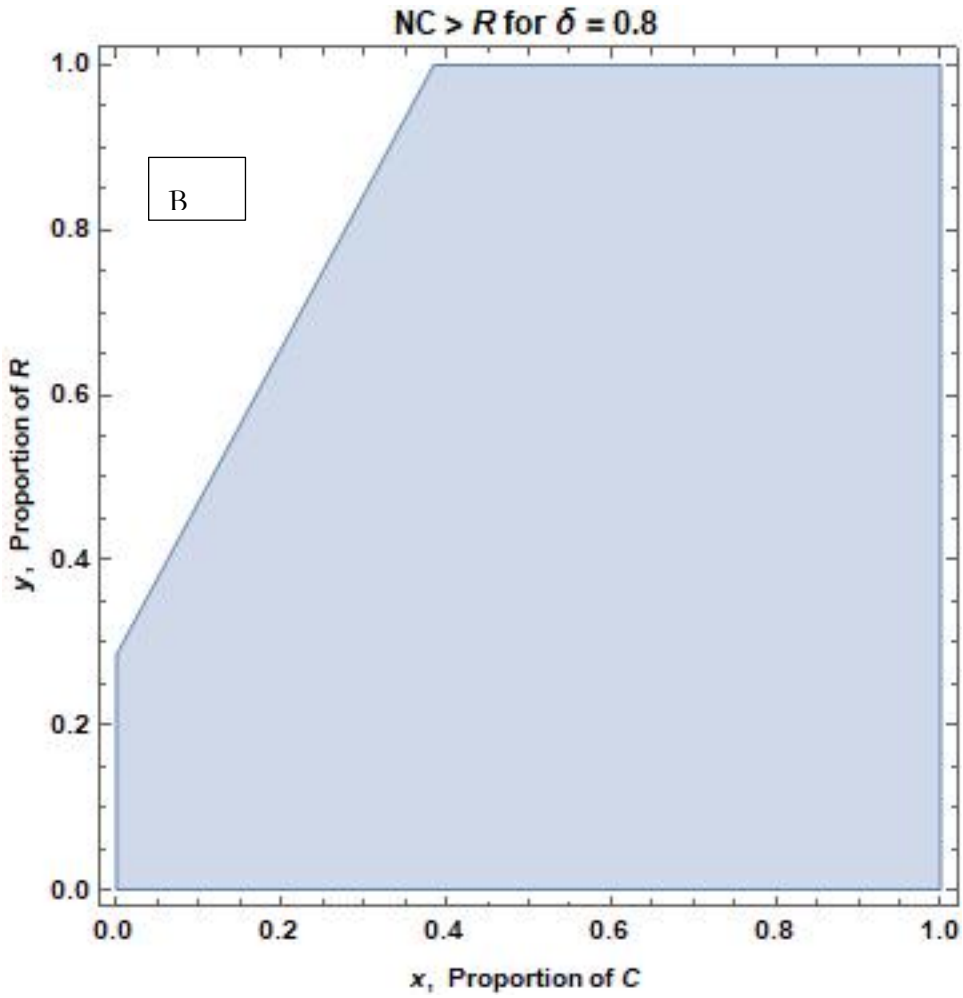

Figure 3. NC is bigger than R for a large δ.

Comparison 3: Last, let us compare (3) and (1), i.e., R and C. R will be replicated relative to C if (3) > (1). Simplifying this relationship leads to

$$\delta(\delta - 1)(x + y - 1) > 0 \qquad (6)$$

Now for a small δ = 0.2, there is a clear shaded region E where R is the replicated norm relative to C. We show this in Figure 4. Surprisingly this fact does not change for a large δ = 0.8.

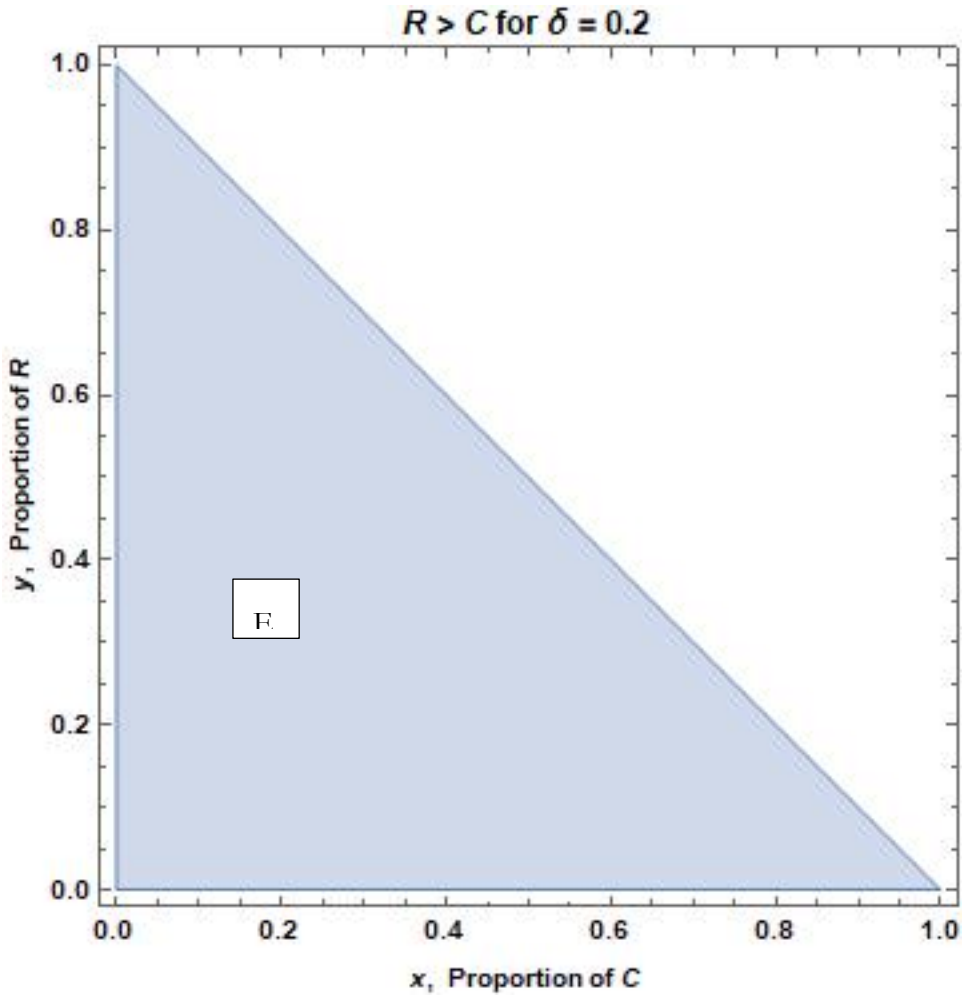

Figure 4. R is bigger than C for a small δ.

What happens when we bring all three relationships together, one for a large δ and again for a small δ? The outcomes are noted in Figures 5 and 6, respectively.

In Figure 5, we can infer the following. Recall that for δ = 0.2, there are no values of R and C for which C is replicated over NC, the NC norm always prevails over R for all values of R and C, and R is replicated over C in the region E. It logically follows that NC is the most replicated norm over the R and C space. That is to say, the proportion of people who follow the R and C norms will dwindle to 0. As mentioned above, this result suggests that reconciliation may be impossible for short time horizons.

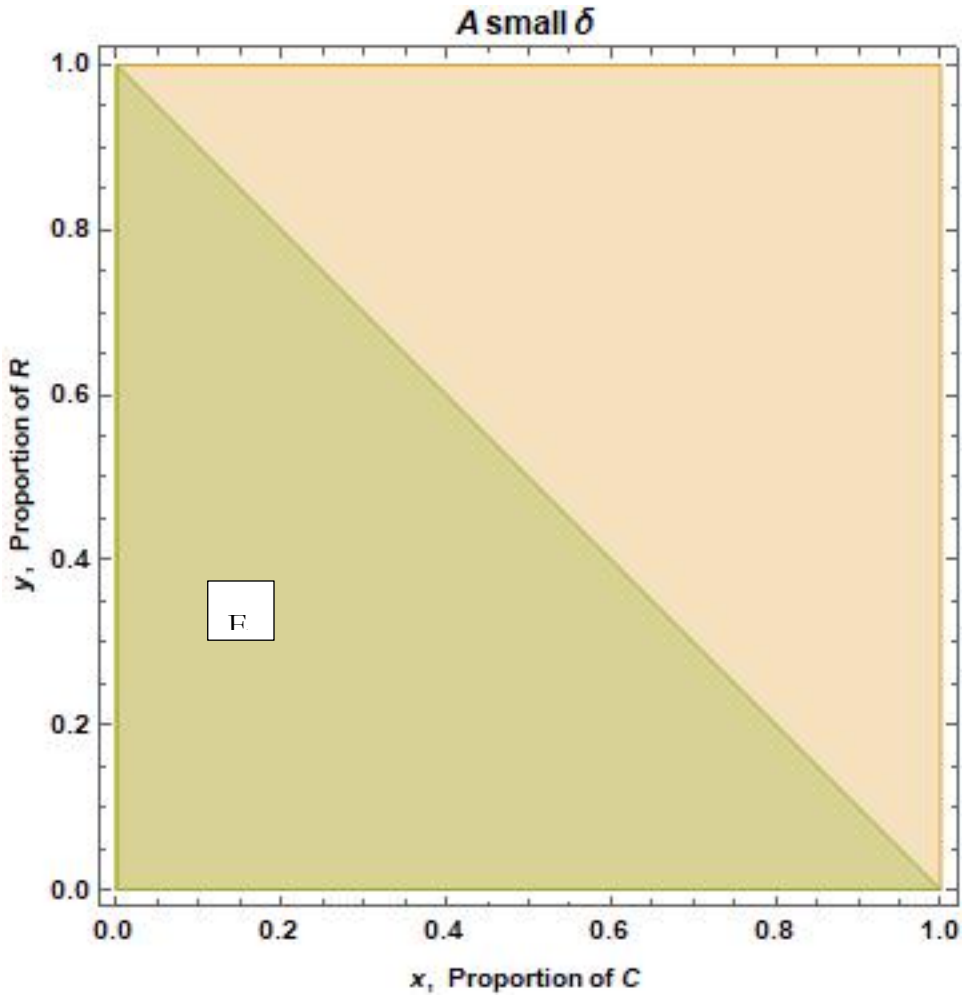

Figure 5. NC prevails when δ is small.

We repeat the exercise above for a large δ, as noted in Figure 6. We label areas F through K. Then, based on the information contained in Figures 1 and 3, we do a logical test of the most replicative norm in each region.

- In region F, we note that NC will be replicated more often than C or R, and R will replicate more often than C. Thus is region F, NC is the most replicated norm.
- We repeat this exercise for each region to find that NC will be the most replicated norm in region G.
- C will be the most replicated norm in regions H and I.
- R will be the most replicated norm in regions J and K. These results tell us something about the evolution of norms.

If the initial population distribution of norms is in region F or G, then there is no possibility of reconciliation. In regions H and I, C types will prevail. However, and this is critical, *only because the proportion of R types are high*. Even so, as the proportion of C types rises in this region, if R types do not rise as well, the system may tilt into G, and then, once again, reconciliation may become impossible. This is less likely in regions K, J, and I. In regions K and J, the proportion of people who follow the R norm will rise. Since R types start off assuming everyone else is a C type, reconciliation is guaranteed in this region, even if there are no C norm people around. The region I poses a bit of a problem. Here the C type norm is incentivized. But as the proportion of cooperators rises, the system may move to H. Then, once again, if, for example, the proportion of C types rises faster than the proportion of the R types, the system may once again tip into G.

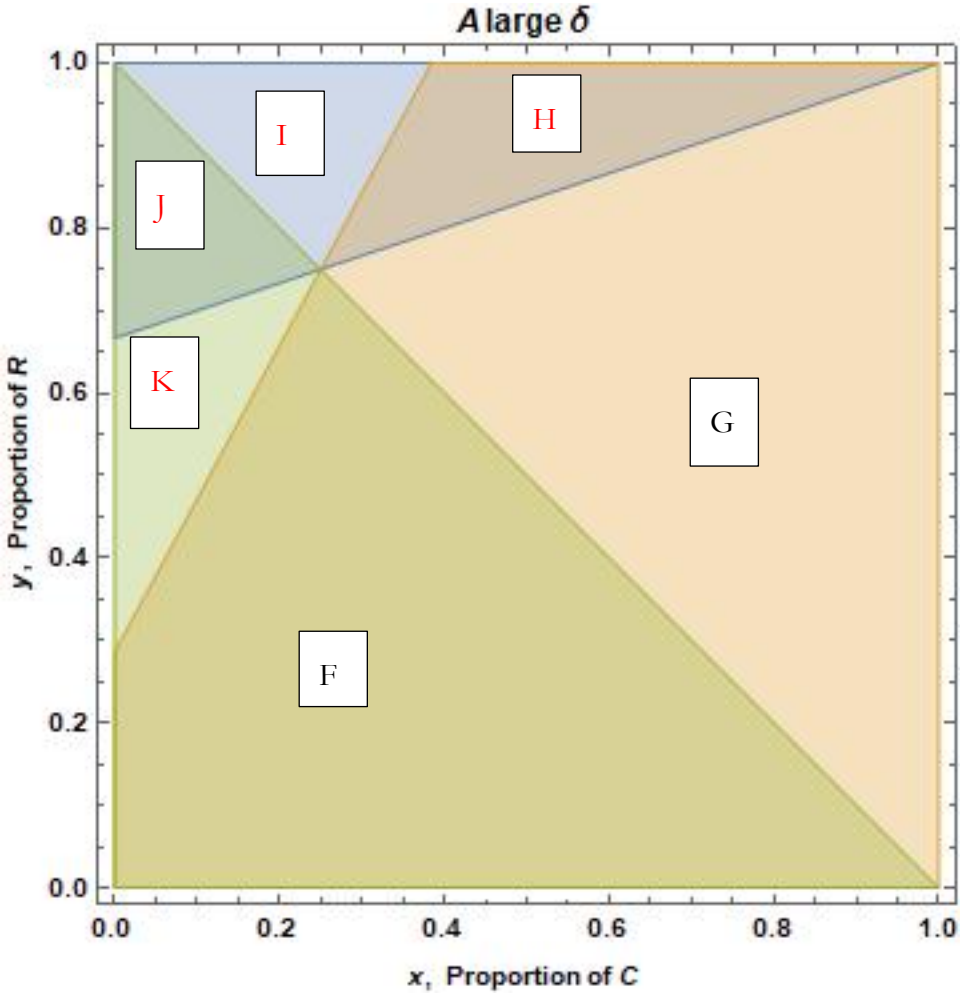

Figure 6. Regions (Red letters) where cooperation is possible

What do we learn here? First of all, note the implicit nature of the model where people have to interact with each other. Without this interaction, it is impossible to learn about different norms and evaluate whether reconciliation is even possible. Second, reconciliation is impossible if the future is uncertain; i.e., δ is too small. In our model, then for reconciliation to happen, people have to be willing to wait for a better future. This is only plausible if they believe that a better future is possible.

Further, looking at the logical statements we derived earlier for a large δ, it appears that reconciliation is only possible if a large proportion of the population is of the R type. That is to say, NC types tend to overshadow the C types when there aren't enough R types around. This is consistent with experimental evidence noted by Ostrom that suggest conditional cooperation is necessary for evolving norms that prevent resource depletion. Last, the dynamics of learning matters. Thus, if the rise in the proportion of C type people in region H is not matched by a rise in the proportion of R types, the system may shift to region G, and then the fires of conflict may not be stamped out. There is hope here, though. Differential rates of learning norms may be such that even as the number of cooperators falls in region F, they may fall in a way that kicks the system into region K.

Conclusions

The learning dynamics that move the system from one region to another can be analytically resolved. We feel that such a resolution is outside the scope of this paper and, from a very practical perspective, meaningless. After all, the sort of fine-tuned social engineering required to move a population from one norm to another with the sort of precision demanded by formal mathematical analysis requires both omniscience and omnipotence – a task best left for God. Nevertheless, we do learn something of practical import. Reconciliation becomes more likely if people can learn to be patient in an interactive milieu. This requires stable, credible governance that provides individuals with security for life and property so they can safely interact with each other and have a shared belief in a better future.

Moreover, engaged people who are willing to trust while verifying that others are trustworthy as well are critical for reconciliation to work. South Africa's Truth and Reconciliation Commission (TRC) may be chosen to demonstrate our considerations in practice, without the claim to predict any

outcome. The TRC was meant to reconcile the South African Society by bringing together victims of the Apartheid regime and the perpetrators (Maluleke 2015). The second objective is to find a balance between reparation for the victims and punishment or amnesty for the perpetrators. The legal arrangements and willingness to engage in this process could be modeled with our variable δ; the higher it is, the more the South African citizens engage in the work of the TRC. The variables C, NC, and R describe the share of people who want to engage or not in principle. Our model suggests that if the TRC is to be truly transformative, then the relative proportions of people who follow these norms matter. Last but not least, to forgive perpetrators may be a divine imperative. Still, it is the willingness to punish people who break the reconciliation compact in the future that allows reconciliation to happen in the here and now.

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