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Diffusion in the Study of Civil Wars: A Cautionary Tale¹

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This essay reviews diffusion as studied in large-*N* civil war research. In doing so, a number of pitfalls and lacunae are identified. First, the definition of diffusion as a process—whereby internal conflict in one location alters the probability of internal conflict erupting in another location at a later point in time—entails a number of difficulties for empirical modeling. Researching such a process involves an attempt to study a phenomenon that, in essence, is unobservable. It also creates difficulties in identifying relevant units of analysis, because the process involves at least two units. Second, diffusion is customarily identified based on correlations within a spatial and temporal proximity. Classifying it in this way risks simultaneously over- and underestimating cases of diffusion, which in turn generates uncertainty regarding the main determinants of diffusion. With these observations in mind, this essay ends with a word of caution for policymakers, with relevance extending beyond diffusion of civil war.

A great deal of research demonstrates that civil wars² are often connected: for instance, the wars of decolonization in Africa and, more recently, the civil wars fought in West Africa, the Great Lakes region, and the Caucasus. Practically all “internal” conflicts have consequences that transcend international borders, by, for example, producing refugee flows or hampering economic growth regionally. An ongoing civil war may also influence the onset of a new war in another location, through diffusion. This observation raises a set of questions: When is a civil war likely/unlikely to diffuse across borders? Which countries are most/least susceptible to becoming “infected”? What are the conditions and who are the actors that drive/block diffusion? And what are the spatial and temporal domains of diffusion? This review serves to summarize and evaluate the existing literature on civil war diffusion to address these and several other related questions.³

The first section of this essay reviews different definitions and conceptualizations of diffusion in quantitative civil war research. Thereafter, the second

¹*Author's note.* Several of the ideas presented in this review build on a decade-long discussion with my colleagues at Uppsala University, whom I thank collectively. In particular, Mats Hammarström has engaged in my dealings with defining and finding ways to study diffusion. For being a brilliant discussion partner, for supporting me over the years, and for providing excellent comments on this manuscript, I am grateful to Mats. I am also grateful for helpful comments from three reviewers and to Holly Guthrey for excellent proof-reading. Lastly, this manuscript benefited greatly from comments and discussion during an authors' workshop in Berlin, 5–6 July 2013. I thank all participants of the workshop, in particular Tanja Börzel, Etel Solingen, Aida Hozic, Detlef Jahn, Thomas Risse, and Arthur Stein.

²Civil war is defined as a situation where the government of a state and a nonstate opposition movement have a declared incompatibility and the parties use violence to achieve their goals results in at least 25 annual fatalities (Pettersson and Themnér 2012). The terms “internal conflict,” “civil conflict,” and “civil war” are used interchangeably.

³The studies reviewed are limited to those based on large-*N* analyses that deal with transnational diffusion. For an excellent recent qualitative account of diffusion, see Bakke (2013).

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section summarizes the main potential determinants of diffusion, as suggested by this literature. Finally, the third section synthesizes the first two sections by highlighting that a lack of a shared understanding of diffusion and a dearth of robust findings have produced a set of knowledge gaps. As this review will show, there is little consensus on how to conceptualize diffusion. Empirical analyses have produced few (if any) robust findings, and there are non-trivial methodological problems to overcome, especially regarding how to capture the phenomenon empirically over a cross-section of relevant cases. The last section offers some conclusions for research and policy.

What Is “Diffusion”?

When defining and conceptualizing diffusion in the context of civil war research, one is struck by the lack of consensus regarding what to study and what concepts to use. A plethora of terms are used to describe the phenomenon, or sub-categories of it, including contagion, infection, bandwagoning, imitation, emulation, and horizontal escalation. Sometimes, concepts are used interchangeably, while at other times they describe different types of phenomena. Yet other times, they are hierarchically arranged, such as diffusion as the larger category under which demonstration effects fall.

A common definition of diffusion is that an event or transition in one place affects the likelihood of a similar event or transition happening at another place at a later point in time, hence indicating that diffusion is a process rather than an outcome (Strang 1991; Elkins and Simmons 2005). For instance, in research on interstate war, Most and Starr (1990:402) define “spatial diffusion” as a process in which “events of a given type in a given polity are conditioned by the occurrence of similar events in other polities at prior points in time.” Applied to civil war, diffusion is thus a process whereby internal conflict in one location alters the probability of another internal conflict erupting in another location at a later point in time.

An initial problem for the study of diffusion is to exclude the possibility that conflict in state B erupted after conflict in state A not because of diffusion, but because of shared structural circumstances, or due to an event or process that affects both and makes them correlate. Several studies demonstrate that having one or several neighboring states with ongoing civil war is an important predictor of civil war in a given country (for instance, Sambanis 2001; Ward and Gleditsch 2002; Hegre and Sambanis 2006; Salehyan and Gleditsch 2006; Gleditsch 2007; Buhaug and Gleditsch 2008). However, this finding may be generated by two distinct processes. On the one hand, conflicts may cluster spatially as a consequence of a corresponding grouping of the factors that are related to conflict, such as poverty. On the other hand, the clustering of civil wars may be explained by diffusion, that is, that the existence of a conflict renders the outbreak of another conflict in a neighboring country more likely.⁴ With the seminal contribution by Buhaug and Gleditsch (2008), which demonstrates that civil wars are partly determined by neighborhood conflict even when taking into account the spatial clustering of the relevant country characteristics, it seems that statistical

⁴Ross and Homer (1976) provide an illustrative example of this phenomenon. Conditions relating to weather, such as average temperatures and precipitation, are clustered geographically and the technologies used for farming are clustered in a similar manner. However, the fact that farmers adopt similar technologies may not necessarily be a consequence of them mimicking each other (diffusion) but may simply be the result of the farmers being faced with the same conditions favoring a specific technique. This difficulty in distinguishing between diffusion and spatial clustering is sometimes termed Galton’s Problem (Galton 1889; for a recent application, see Jahn 2006).

evidence indeed suggests that civil conflict sometimes spreads from one country to another.

With the conclusion that diffusion takes place, the next natural step is to probe its determinants. To do so, one has to first determine how to conceptualize diffusion: should one focus on what makes a conflict more likely to spread or what makes a country more susceptible to infection, given that a conflict has started somewhere else? The fact that diffusion is defined as a process and involves two units—one with conflict (a potential source or initial stimulus for diffusion) and one that is potentially affected (a target of diffusion)—has led different studies to apply fundamentally different conceptualizations and empirical foci. Most previous studies focus on the potential target of diffusion, attempting to determine whether a certain conflict is explained partly by conflicts anywhere in the neighborhood (Salehyan and Gleditsch 2006; Gleditsch 2007; Buhaug and Gleditsch 2008). A different approach, suggested by Forsberg (2008, 2014) and adapted by Black (2012, 2013) instead starts from the source of diffusion, that is, the conflict country which is suggested to potentially trigger conflict elsewhere. The aim of this approach is to determine its diffusion effects on certain countries.⁵ Different conceptualizations of diffusion have implications for which empirical strategy to choose, which in turn influences the results. This will be discussed further below.

What Do We Know about Diffusion of Civil Wars?

The following sections review evidence from large-*N* studies⁶ on what affects the probability of diffusion. I discuss three clusters of conditions: those that make a conflict more or less likely to produce diffusion effects; those that make a country more or less susceptible to diffusion; and those related to links between the two countries. These conditions work as potential mediums (a context/structure) and involve social agents that can either facilitate or block (as so-called “firewalls”) diffusion (Solingen 2012).

Conditions Related to the Source of Diffusion

Previous research suggests that several factors related to the characteristics of a civil war affect its likelihood to spur new conflicts across borders. First, Buhaug and Gleditsch (2008) argue, and support empirically, that separatist conflicts are more likely to lead to diffusion compared to wars fought over government power. This is because such conflicts typically involve regional ethnic groups that have ties to kin across borders, who are more likely to act on demonstration effects. Second, Buhaug and Gleditsch (2008) suggest that more intense conflicts, in terms of fatalities, make diffusion more likely because they produce more externalities. However, empirical analysis does not support this claim. One possible interpretation of this finding is that while high-intensity conflicts create more direct spillover, they may also horrify rather than inspire potential insurgents in other countries.

Third, it has been suggested that diffusion is more likely when the rebel side is successful, supposedly due to more inspiration effects (Hill and Rothchild 1986; Hill, Rothchild, and Cameron 1998). Related to this, there is a widespread supposition that territorial concessions granted to separatist groups may spur other

⁵Mekouar (2014) follows a similar logic. He starts with the 2011 Tunisian revolution and seeks to identify which among the proximate countries were increasingly susceptible to revolutionary diffusion.

⁶These studies use either data on countries or ethnic groups, generally with a global coverage, and with a time-series starting in 1946 or later.

proximate ethnic groups to demand similar concessions. Within states, Walter (2003, 2006) has found evidence of such domino effects. However, until recently, there has been very little investigation of the cross-border effects of granting territorial concessions. Using new data with global coverage, Forsberg (2013) finds no evidence of domino effects either across or within borders; territorial concessions granted to rebel groups do not appear to inspire other groups to rebel. Thus, appeasing separatists by granting autonomy may not be as risky a strategy as often articulated by policymakers. Last, Beardsley (2011) has identified peacekeeping as a factor that decreases the risk of diffusion. Peacekeeping operations are frequently deployed with the specific purpose of preventing diffusion by securing borders, preventing large-scale refugee flows, and assisting repatriation. His analysis supports the notion that peacekeeping indeed decreases the risk of diffusion.

Conditions Related to the Potential Target of Diffusion

Arguments and findings in previous research also point to a set of conditions that makes countries more or less likely to be “infected.” As pointed out by Lake and Rothchild (1998), conflict primarily spreads to those states which are already at risk of conflict and is, conversely, less likely to spread to countries with no latent grievances. First, countries with higher levels of state capacity are suggested to be less susceptible to diffusion, which is supported empirically (Braithwaite 2010). As noted by Braithwaite, state capacity includes “stability, control, protection from predation, the extraction of resources, and the ability to adapt and respond to unexpected crises” (2010:313). Thus, highly capable states have the tools to confine domestic unrest to legal action rather than rebellion. Also, such states are arguably better equipped to set up “firewalls” through efficient border control and thus prevent some of the spillover of war externalities, such as the transfer of arms and mercenaries across borders. Second, regime type may have an impact on a state’s susceptibility to diffusion. As suggested by Maves and Braithwaite (2013), among authoritarian states, those with elected legislatures are increasingly receptive to diffusion because they may breed latent opposition groups.

Lastly, in addition to institutional features, the ethnic composition of states may matter. Findings in Forsberg (2008) suggest that countries that are ethnically polarized, in the sense that there are a few roughly equally strong contenders, are more susceptible to diffusion. Such societies supposedly form a delicate balance in which the input of a potentially inspirational conflict next-door may create the momentum required for a group to challenge its own state with rebellion.

Conditions Related to Links between Source and Target

Existing literature on civil war diffusion also points to a number of dyadic conditions. First, proximity stands out as the primary medium in which diffusion operates. Countries in the near proximity of a country involved in civil war are arguably more exposed both to spillover externalities and to demonstration effects (Lake and Rothchild 1998; Buhaug and Gleditsch 2008; Maves and Braithwaite 2013). However, spatial proximity has typically not been treated as an important determinant, but as a selection criterion, which has hampered inference about its relative importance—a point to which I will later return.

Second, several researchers point to the relevance of transnational ties based on ethnicity (for example, Ayres and Saideman 2000; Saideman and Ayres 2000; Salehyan and Gleditsch 2006; Gleditsch 2007; Buhaug and Gleditsch 2008; Forsberg 2008, 2013, 2014; Cederman, Girardin, and Gleditsch 2009) and religion (Fox 2004). In these studies, it is suggested—and generally supported empirically—that the involvement in conflict by a group in one country increases the

TABLE 1. Potential Determinants of Civil War Diffusion

Source	Source—Target Links	Target
Separatism (+)	Proximity (+)	State capacity (–)
High-intensity conflict (+)	Ethnic ties (+)	Repressive capacity (–)
Rebel success/concessions (+)	Religious ties (+)	Border control (–)
Peacekeeping (–)	Refugee flows (+)	Authoritarian regime with elected legislature (+)
	Arms flows (+)	Ethnic polarization (+)
	Mountainous border (–)	
	Long border (+)	

likelihood of conflict erupting in a nearby country that shares the same group, the rationale being that such groups are more likely than other groups to be inspired to increase their own demands.

Third, refugee flows may contribute to the spread of civil conflict by upsetting the demographic balance in the host state or by exacerbating competition over scarce resources. This is supported empirically by Salehyan and Gleditsch (2006). Fourth, when conflict is underway in one state, it often leads to an increased availability of arms. When border control is insufficient, these arms may be transferred to neighboring states where aggrieved groups may be willing to initiate violent conflict as soon as they have the ability to do so. The inflow of weapons at knockdown rates may provide them with such capacity. Data scarcity has so far made it difficult to test this claim.

Fifth, characteristics of the border between the conflict country and a neighbor have been suggested to affect the likelihood of diffusion. If the two states share a mountainous border, it may make spillover less likely because this would hamper the movement of, for instance, arms and mercenaries from the conflict state to the neighboring state. However, empirical evidence does not support this suggestion. It has also been suggested that spillover is more likely when two states share a long border (Buhaug and Gleditsch 2008). A long, shared border is more difficult to monitor and is hence associated with an increased likelihood that weapons and armed groups move from the conflict state to its neighbor. However, as with a mountainous border, evidence that supports this proposition is lacking.

Table 1 summarizes the variables identified in previous studies. The most commonly suggested direction of the effect is put in parentheses. However, note that these are generally not considered robust and some even lack systematic empirical scrutiny.

Remaining Knowledge Gaps

Based on the evidence produced by a set of quantitative studies and substantiated with a set of clear examples of diffusion, we can conclude that diffusion sometimes takes place. We can also conclude that conflict does not spread all the time and to any location. However, we are still a long way from fully answering the questions of when, where, and how diffusion takes place and through which mechanisms. This section aims to identify some of these lacunae.

Identifying the Agents and Mechanisms of Diffusion

Structures and Agents

As is evident from the above review, many of the conditions arguably linked to an increased or decreased probability of diffusion are structural factors, such as

characteristics of the initial conflict and state capacity. However, structural conditions cannot in and of themselves cause diffusion, but merely work as enabling factors, or mediums (Solingen 2012). Some explanations for diffusion focus on potential actors, such as transnational ethnic groups and refugees, but are usually tested empirically using country-level data.

Also, as pointed out by Black (2012), much of the existing scholarship disregards the role of state action in driving or blocking diffusion. To address this gap, he advances an explanation that suggests that diffusion is unlikely to take place without deliberate state action. However, deliberate action by regimes may also block diffusion, as suggested by Braithwaite (2010). Also, other social agents may be important. For instance, third parties may (strive to) impede diffusion through mediation, coercive diplomacy, intervention, sanctions, or other means. However, with the important exception of Kathman (2010, 2011), who finds that states intervene to prevent diffusion to high-interest regions, such attempts have been under-studied thus far.

In sum, more research is needed on the agents that could potentially drive or block diffusion. There is a need for more precise theoretical accounts of the social agents involved in diffusion to properly model these actors empirically.

Direct and Indirect Diffusion

Existing explanations for diffusion can be further categorized as either direct or indirect. Direct diffusion takes the form of tangible factors such as arms, refugees, and other factors relating to the direct spillover of conflict externalities across borders. Also, a civil war in one country affects the economy of the surrounding states. As noted by Murdoch and Sandler (2002, 2004), civil wars may lead to a reduction in trade and investment in proximate countries, which in turn heightens the probability of conflict. Such spillover processes (linked to, for example, movement of arms and rebels or economic decline) would be interesting to study further. However, a major obstacle to the study of direct diffusion is the lack of data. An important avenue for future research is thus to systematically collect data on the direct spillover of conflict. This could include the movement of arms and mercenaries from one conflict to another. In addition, systematic information about DDR (Demobilization, Disarmament & Reintegration) processes would be helpful as a failed DDR process could lead to diffusion due to a sudden increased availability of arms and unemployed rebels. In terms of data collection, recent efforts to trace the ethnicity of refugees (Rüegger and Bohnet 2012) and the location of refugee camps (Bohnet, Cottier, and Hug 2013) are also promising in terms of assessing whether and how refugee flows create diffusion effects. Such data may, for instance, enable a test of the assertion that refugees may cause conflict to spread when ethnic balances are upset (Lake and Rothchild 1998; Salehyan and Gleditsch 2006), which as of yet has only been tested using proxies. Salehyan's (2009) effort to collect data on external rebel bases is a welcome contribution to the existing literature.

Indirect diffusion is the intangible process whereby conflict in one country provides lessons, inspiration, and clues for actors in other countries. This may occur in the form of strategic learning (for example, Hill et al. 1998; Elkins and Simmons 2005; Bakke 2013) or conflict in one location may cause groups in other locations to perceive an increased likelihood of success (for instance, Lake and Rothchild 1998). As such, conflict in one state may inspire one or more groups in another state to increase their own demands and decide to pursue demands using violent means (see also Byman and Pollack 2008). While the lack of data is one of the obstacles for assessing the impact of direct diffusion, indirect diffusion suffers from the difficulty in observing most of its manifestations. Indirect explanations for diffusion in the form of cognitive processes, such as learning, have generally been inferred only by proxies. Although difficult, an

avenue to pursue may be to collect survey data on how individuals respond to, among other things, learning.

Ethnic and Non-ethnic Conflicts

A third categorization of previous research relates to the types of conflict that may create diffusion effects. Previous research puts a great deal of emphasis on explanations for diffusion of *ethnic* conflict. Conflicts are thus, for instance, suggested to spread because of transnational bonds between subgroups of the same ethnicity or because the ethnic balance of a country is disrupted. One reason for this focus is that identifying actors in the spread of non-ethnic conflict faces significant hurdles because it is significantly more difficult to pinpoint potential targets of diffusion (that is, to identify potential rebel groups before they exist). When limiting the study to the diffusion of conflict between ethnic groups, it is more straightforward to pinpoint potential targets. As ethnic conflicts are usually self-limiting and constrained by regions (Fearon 1998; Lake and Rothchild 1998), a focus on proximate countries is also more appropriate.

An avenue for future research is to further examine whether other types of civil conflicts also spread, and if they do so under different circumstances than ethnic conflict. This may include the spread of militant Islamist movements or communal conflicts not involving governments.

Identifying the Spatial and Temporal Domains of Diffusion

As noted previously, there is a lack of consensus regarding the definition and use of the concept of diffusion. Even if we agree on the definition above,⁷ it is still difficult to clearly discern when conflict in one place led to the onset of a new conflict somewhere else (and when two conflicts are not linked). One reason is that, at least in a quantitative setting, diffusion is in essence unobservable. What we *can* observe is that conflict in one place is followed by conflict in another place. We draw conclusions about diffusion based on correlations, proximity in time, and proximity in space. However, as noted by Black (2012, 2013), such a strategy will risk both under- and overestimating occurrences of diffusion. First, given that diffusion is counted whenever two conflicts show a statistical association—one conflict is followed by another conflict in a proximate location—the number of cases of diffusion will be overestimated, as many of these are unrelated. Second, the tendency to trace diffusion only between spatially proximate units is likely to underestimate instances of diffusion. This is because diffusion could potentially travel beyond immediate neighborhoods. One can add a similar argument pertaining to temporal proximity: just because two conflicts happened several years apart, one cannot rule out the possibility that the first had an effect on the other. In pioneering research, Black (2013) scrutinized a large set of conflicts that correlate in space and time and excluded those that, upon closer inspection, appeared to be unrelated. This is a great effort in minimizing the risk of overestimation. However, even when such close examination indicates that events in the first state contributed to the events in the second state, we still cannot fully account for the counterfactual—would conflict have also erupted in the absence of conflict in the first state? Because researchers seem to agree that conflict only spreads to those places that are already at risk for conflict, there is a high likelihood that conflict would have erupted even in the absence of the first conflict. In addition, such a sample will omit cases of diffusion which are further apart in time and/or space.

⁷That is: “a process whereby internal conflict in one location alters the probability of internal conflict erupting in another location at a later point in time.”

It is evident that both researchers and policymakers have strong preconceptions about the importance of proximity (in both time and space) for diffusion. The Arab Spring provides an example. It is sometimes questioned why the protests in Iran in the summer of 2009 did not spur additional protests in other places in the way they did in the Arab world starting in late 2010. However, it is questionable whether we can really rule out the possibility that the protests in Iran did *not* inspire demonstrations in the Arab world. Such conclusions must rely on temporal proximity. In parallel, it appears that the Arab Spring may have had repercussions beyond the immediate neighborhood often focused upon, which indicates that the spatial proximity criterion ought to be relaxed as well. For instance, some reports suggest that the governments in China and Myanmar reacted preemptively to the events. Also, after the fall of Gaddafi, many heavily armed and well-trained Malian Touareg fighters who had been involved in the civil war in Libya (most on Gaddafi's side) returned to non-neighboring Mali, provoking further destabilization in the region.

One explanation for the predominant use of spatial and temporal proximity in civil war diffusion studies may be that these studies have grown out of the diffusion research on interstate conflict and war (such as Siverson and King 1979; Most and Starr 1980; Starr and Most 1983; Houweling and Siccama 1988; Siverson and Starr 1990, 1991; Vasquez 1992; Hammarström 1994; Starr and Siverson 1998), establishing that diffusion is customarily confined to contiguous countries. This legacy lives on in large-*N* civil war research where the prevalent fix is to add short-term spatial and temporal lags, which disregard interdependence that travels further in time and space.

While spatial proximity may be relevant for direct forms of diffusion, such a restriction may be of less relevance when studying indirect diffusion, as processes of inspiration and strategic learning can travel longer distances. In addition, the temporal dimension of diffusion is a challenge for future scholarship, both theoretically and in terms of statistical modeling. For instance, a standard time-lag of any kind would miss several of the cases which regional experts would consider to be diffusion.

Identifying Relevant Units of Analysis

Existing scholarship is divided concerning the use of monadic or dyadic units of analysis. The most common approach in quantitative studies is to use the standard *monadic* country-year approach (see, for instance, Ward and Gleditsch 2002; Hegre and Sambanis 2006; Salehyan and Gleditsch 2006; Gleditsch 2007; Buhaug and Gleditsch 2008). In these studies, neighborhood conflict is either collapsed into a dichotomous variable (a spatial lag) or a summary measure of some kind (for example, a weighted index of conflict in the neighborhood). An alternative strategy is to use a *dyadic* setup, consisting of a state with conflict and one cross-section for each state considered at risk for diffusion (Forsberg 2008, 2014; Black 2012). This allows for testing explanations for diffusion that vary across dyads. For instance, it has been suggested that refugees fleeing from a conflict to a neighboring country may cause conflict diffusion. With the dyadic setup, it is possible to examine the number of refugees fleeing from the conflict country to an at-risk country, rather than aggregating all refugees hosted by a given state with no reference to their origin.

As these two strategies follow different conceptualizations of conflict diffusion, they are liable to generate different findings. For instance, Buhaug and Gleditsch (2008) find that countries are more susceptible to civil war onset if there are separatist conflicts in the neighborhood, as compared to conflicts over government power. In contrast, when probing the same factor but studying pairs of states, where the first state has an ongoing internal conflict and the second is at

risk for diffusion, empirical analysis fails to reproduce this finding (Forsberg 2008, 2014). Since diffusion is a process involving a chain of events and at least two units, there may not be one perfect modeling strategy. However, future work should strive to identify the unit of analysis that best captures diffusion, while being cognizant of the inherent methodological challenges.

Another aspect relating to units of analysis—related to the previous point about agents—is whether to study countries or groups. For a better assessment of the actor-level theoretical arguments upon which most accounts of diffusion are based, the empirical model could be significantly improved. Assessing such arguments using country-level data may not be the most adequate strategy. Hence, more systematic research on groups rather than countries is imperative.

Conclusions

This review discussed some of the inherent obstacles researchers face when studying diffusion of civil wars. Some of the pitfalls and problems identified stem from the difficulties in identifying relevant units of analysis and an appropriate dependent variable when we study a process rather than an outcome. By reviewing different empirical conceptualizations of diffusion and the main findings in existing literature, it also becomes evident that a consequence is that findings are inconclusive and contradictory. Thus, using the findings from civil war diffusion research as a backbone for policy advice may be a risky enterprise. Because findings should be considered weak, so also is our ability to identify warning signs and prevent diffusion. Policy advice should thus be formulated with great caution.

Moreover, many of the pitfalls analyzed here—including diffusion being in essence unobservable; a process difficult to model empirically; and with uncertain temporal and spatial boundaries—are not limited to civil war diffusion, but are equally problematic for studying diffusion of many other phenomena.

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