ALL POLITICS IS LOCAL: HOW SPATIAL CONTEXT SHAPES CIVIL CONFLICT

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ABSTRACT

ROB WILLIAMS: All Politics is Local: How Spatial Context Shapes Civil Conflict
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Existing studies using spatial data omit many crucial aspects of the conflicts under study. While all models must make simplifying assumptions, these models often reduce space to a simplistic notion of distance. Case studies of civil wars demonstrate how factors such as population density and transportation infrastructure shape the local spatial context of a conflict, and in turn influence the decisions made by combatants. Based on these observations, I discuss how future research can best use the information contained in spatial conflict data by combining it with a more nuanced understanding of the role space plays in the onset, progression, and resolution of conflict. As an example, I demonstrate how this spatial context approach can build upon current group focused investigations of rebel movement evolution by providing a more complete universe of potential rebel groups, leading to more robust conclusions.

TABLE OF CONTENTS

LIST OF FIGURES

Figure

INTRODUCTION

The Sierra Leone Civil War started on March 23, 1991 when the Revolutionary United Front (RUF) began a violent campaign to remove President Joseph Momoh from power. With the assistance of Charles Taylor's forces from neighboring Liberia, the RUF attacked the village of Bomaru near the border (Bangura and Mustapha 2010, 2). Following their initial success in battle against the military, the rebels were able to expand the conflict to surrounding areas in the Southeast. As the rebels took more territory, they moved to seize diamond fields in Kono District, and captured or destroyed the rutile and bauxite mines in Moyamba and Bonthe Districts (Zack-Williams 2012, 22-23).

The RUF chose to focus on these areas instead of other options because they were strategically valuable. The diamond fields were easily mined alluvial deposits which the group used to fund the purchase of arms and equipment (Campino 2003), vastly improving their fighting capacity. Although the RUF lacked the capital and connections to exploit the metals, the group's seizure of the mines deprived the state of one of its largest revenue sources (Bangura and Mustapha 2010), greatly hampering the state's ability to fight the rebels.

The territory held by the RUF increased its ability to prosecute the conflict while simultaneously reducing the state's. Some of the most intense battles of the war were fought in and around diamond production areas (Keen 2005, 51), demonstrating their importance. The strategic implications of geography drove the actions of each side as it tried to control these vital resources. If there were no diamond fields, the location of the individual battles would have been very different.

After seizing the ore mines, the RUF was able to win a string of battles in the center of the country, but were unable to immediately threaten the government. Eventually in 1995, they clashed with government forces near the city of Waterloo, approximately 20 miles

outside the capital of Freetown (**?**, 226), but were ultimately repulsed by the army (Keen 2005, 40). Two years later, the RUF was finally able to bring the war to Freetown (Keen 2005, 2).

Eventually, the government drove the rebels from the capital and recaptured many diamond mining areas from the RUF (**?**, 217).Without the funding generated by illicit diamond sales, the group was unable to continue to augment its fighting capability. Weakened relative to the state, it was precluded from trying to attack the capital or other 'hard' targets, and forced to pick easier battles far from the capital int he countryside. By 1999 the RUF managed to regroup and retake several diamond fields, and subsequently was able to attack and capture significant parts of the capital (Bangura and Mustapha 2010, 4). The resources of this land allowed the group to expand its goals and directly confront the government in the capital.

Faced with the RUF's recent military successes, the government of Sierra Leone began peace negotiations with the group. The two signed a ceasefire agreement in May, and the formal Lomé Accords peace agreement on July 7, 1999, but sporadic clashes continued for months afterward (Francis 2000). Despite continued fighting, the Accords were largely viewed as a success and were reinforced by the Abuja Agreement in late 2000 (Bangura and Mustapha 2010). The government eventually declared the war over in early 2002.

All of these complexities and dynamics are omitted from standard analyses of civil war. Underlying the conventional approach of treating the country, or conflict, as the unit of analysis is the unstated assumption that all variables included in a given analysis apply equally and uniformly to the entire area. If GDP per capita is used to proxy state capacity, then these models assume state capacity is uniformly distributed across a state's entire territory. Similarly, in a given year, there is either no conflict anywhere, or there is the same amount of conflict everywhere.

Microlevel spatial conflict analysis attempts to address this problem by disaggregating events in civil wars and allowing scholars to explore patterns and changes within individual civil wars. Recent work in this innovative research agenda has included investigating why conflict continually recurs in some areas of a country while others never experience

violence, and how violence which originates in one location spreads to other areas of a country. However, such studies often focus on these microlevel dynamics without fully considering how the spatial context of where events occur affects them.

The country-year level of analysis is akin to an elementary physics problems that models a car accident as a collision between two point masses. Many microlevel analyses are equivalent to modeling a car accident as a function of things like engine temperature or horsepower and completely omit the road where the accident occurs. The first approach is fine if we want to study every car accident in a month across an entire city, but inappropriate if we want to study every car accident in one week on a specific road. The latter approach is also inappropriate if we are interested in a week's accidents on a certain road, but is appropriate if we want to study an individual accident second by second.

Both the country-year and microlevel spatial analysis paradigms frequently omit vital information. As we continue to leverage new spatial data, we need to remain mindful of the context that wars are fought in. We must recognize that combatants will focus on specific areas over other potential targets because of their strategic value. However, we must also remain cognizant of the fact that a rebel group's strategic choices are shaped by their political goals. Each analytical approach discards vital information at the opposite end of the spectrum. If we wish to draw robust conclusions about factors that shape – or are influenced by – violent armed conflict, we need to draw on theoretically relevant variables rather than simply those that are simplest to include in our analyses.

If we are interested in the overall spatial character of a conflict, we cannot solely focus on first order spatial and temporal lags; we need to consider the broader spatial context of a conflict. Relying primarily on information about neighboring locations is fine if we are interested in studying the progression of violence in a single village. If we want to explain the evolution of an entire civil war, we need to include more large-scale spatial factors. The chance that violence reaches a previously peaceful city is probably determined by whether any nearby cities are experiencing violence. However, it is also likely determined by how strategically important that city is to the rebels. We need to try and explain conflicts, not just battles within them.

Currently, we view space as something that simply either hinders or bolsters the ability of rebel groups to achieve their political goals. Instead, what we must do is realize that space can directly influence these goals. Whatever their aspirations, groups must contend with the reality that space can limit the options available to them. Space sets the initial conditions that any rebellion must begin in, and constrains its actions throughout the conflict. By understanding this dynamic, differences in spatial context that we currently ignore can help us improve our understanding of why rebel movements make the choices they do, and why some succeed while others fail.

While this is certainly an ambitious project, it is also an achievable one. Fully exploring all of the implications of this expanded conception of space will take considerable time and effort, but even at this stage, concrete research questions emerge from this new perspective. If we understand how space can make certain actions easier or more difficult for rebel groups, we should logically ask whether different types of space are related to greater or lesser levels of rebel success. Given the importance of early successes and failures for the eventual fate of a group, do differences in the spatial context of where a rebel group emerges influence its long-term chances of seriously threatening the state? If these differences do have impacts on rebel success and failure, do they also hold implications for where we should expect to see rebel groups emerge?

To accomplish this goal, this thesis proceeds in five parts. First, I review the existing spatial conflict literature. This literature can largely be divided into work that explores the relationship between space and conflict onset, progression, and outcome. I focus especially on the conflict onset literature and highlight how a theory that links the spatial context of conflict onset with the fates of rebel groups builds upon the existing literature to improve our understanding of conflict. Second, I conduct in-depth case study analysis of the role of space in several civil wars. In each case, I explore how spatial factors influenced the decision-making of the actors and analyze how insights from the conflict relate to our broader systematic understanding of civil war. Next, I discuss the implications of these lessons for the overall spatial conflict research agenda. Subsequently, I demonstrate how we can use these insights to craft and test new theories which improve our understanding

of conflict. To conclude, I demonstrate the advantages of employing this more nuanced approach in microlevel conflict research by showing how a spatial context study of rebel group development can overcome many of the limitations in current group-centric work.

The Spatial Conflict Literature

The relationship between geography and conflict was first investigated by political scientists in the beginning of the 20th century.[1] Writing about the determinants of victory and defeat in interstate wars, Spykman (1938*a*) argues that geography needs to be considered in any analysis of conflict because it is a "permanent" factor. While geography is essential to understanding conflict, it is not deterministic. Instead, it "conditions" any actions taken by belligerents; it is thus the *interaction* between geographic and social factors that can explain conflict.

By the middle of the 20th century geography had largely fallen by the wayside as an explanation for interstate conflict. Just as the development of organized navies had changed the strategic impact of oceans in previous centuries (Spykman 1938*b*), the advent of nuclear weapons and air forces rendered geography largely irrelevant as an explanation for interstate conflict in the minds of many scholars (Zoppo and Zorgbibe 1985). The study of geography and interstate conflict has remained largely confined to investigation of contiguity and disputed borders (O'Loughlin 1986; Park and Colaresi 2014; Rider and Owsiak 2015).

However, the turn towards subnational conflict research has led to a renaissance of geographic conflict research.[2] Many civil wars are fought in weak states which frequently lack air forces and cannot easily project power far from the capital, while rebel groups almost never possess any form of air capability. In these situations, geography regains a more central role as an explanation for conflict dynamics because it constraints the participants to a larger degree.

[1] See (Diehl 1991) for a more thorough overview of this early geographic conflict literature.

[2] See (**?**) for an overview of this emerging research agenda.

The spatial civil war research program focused primarily on questions of conflict processes. Instead of asking how the geographic distribution of battles in a war can explain which side eventually emerges triumphant, it asks what factors make a previously peaceful village more likely to experience violence for the first time in a conflict.

These are important lines of inquiry, but not attempting to connect the geographic realities of wars with their origins or outcomes is a missed opportunity. In effect, we are discarding important information. This decision prevents us from even asking many interesting questions. Military history is rife with studies of the effect of geography on conflict outcomes (**?**Olson 2013), and while these works are often smaller in scope and do not seek generalizability, we would do well to learn from them. This literature is filled with examples of how small 'on the ground' realities can shape the direction and eventual outcome of a conflict. While we can simplify and abstract away these details in cross-national country-year studies, ignoring them does not make sense in the microlevel spatial conflict research paradigm. The whole purpose of this approach is to use smaller scale variation to explain observed patterns.

Yet this does not mean we need to abandon quantitative inquiry. Qualitative methods can help guide our thinking and provide insight for theory-building. In-depth case studies of specific civil wars can help us see how these spatial forces have shaped specific conflicts, and help us understand when they matter and when they do not. By taking the time to dive deeply into specific conflicts, we can learn how to more intelligently employ the vast amounts of spatial conflict data that exist. By putting theory first, we can ensure that our inquiry into how space affects conflict is systematic and rigorous.

Existing research on the spatial dimensions of conflict within political science can largely be divided into three main areas: conflict onset, conflict evolution, and conflict outcome. Onset research uses geographic factors such as the distribution of minority group populations to explain which states are most likely to experience a civil war, or which regions within a state are likely to be the starting point of a war. Evolution research typically uses event data to explore how conflicts diffuse and move over time, investigating which factors determine whether conflicts continually smolder in a few hot spots or rapidly engulf

large swathes of territory. Newly emerging, outcome research attempts to use the ways in which wars are fought to explain how or when they eventually end.

Although the conflict onset literature is most immediately relevant to the question of how initial spatial conditions affect group success, each stream of research is also important. Conflict progression influences the fate of rebel groups, so it can be seen as a moderating force between onset and organizational achievement. While the metric of group success avoids much of the strategic interaction inherent in conflict outcome, this literature still has important lessons for how space relates to group trajectory.

Conflict Onset

A prominent topic in onset research is the relationship between ethnicity and territory. Does territory provide ethnic groups with a homeland and reason to fight, or is it instrumentally important because of the population and resources it contains? By measuring the total area controlled by ethnic groups as well as how dispersed ethnic population centers are from one another, and then comparing this information with conflict onsets, Weidmann (2009) finds that territory itself does little to explain the likelihood of conflict, while the concentration of population within territory is more predictive.

Accordingly, the opportunity mechanism seems to better describe the relationship between geographic population distribution and conflict onset. Thus, other factors beyond population concentration that lower costs of rebellion may also make conflict more likely. The ability of territory to support population appears more important than any characteristics inherent to the territory. Crucially, this study looks at the importance of population distribution for ethnic conflicts. Ethnic identity may mediate some of these relationships, so the link between population and conflict risk may be different for other types of conflicts.

This approach has two significant shortcomings. First, it can only make predictions at the ethnic group level. It cannot predict *where* that conflict is most likely to break out, should it occur. Second, it is unclear how to translate these findings to non-ethnic forms of conflict. Ethnic groups make for easier analysis of conflict because they are pre-existing groups which are easily identified even before a conflict begins. Since many conflicts play

out along ethnic lines, it is easy to use them as the unit of analysis in onset risk studies. Doing so for other types of conflicts is significantly harder because potential rebel groups are often not easy to identify *ex ante*. A spatial context approach to conflict onset can overcome both these limitations because it uses spatial variation to predict where groups are more or less likely to emerge and we can collect geographic data on all areas within a country, yielding a more complete universe of cases.

Building on this work, others have combined geographic measures of ethnic group settlement with economic data. When economic inequalities are spatially distributed along ethnic lines and produce horizontal inequalities between groups, ethnic groups are much more likely to engage in violent conflict against the state (Cederman, Weidmann and Gleditsch 2011). Similarly, excluded ethnic groups are more likely to challenge the state if their population outnumbers the majority group or is located farther away from the capital (Cederman, Buhaug and Rød 2009), suggesting that the location of population also shapes the context these potential groups must operate within. Further extensions of this ethnic group model use satellite imagery of nighttime light emissions to measure economic inequality within groups and find that intragroup inequality lowers barriers to mobilization and makes conflict more likely (Kuhn and Weidmann 2015).

Recognizing that conflict events are not evenly distributed throughout a country, some scholars have investigated the risks of conflict onset at the subnational level. Regions farther from the capital and more politically excluded are more likely to be the site of the beginning of a conflict (Rustad, Buhaug, Falch and Gates 2011). This aligns with earlier work which finds that in politically capable states, civil wars are more likely to start far from the capital because the state is too powerful near the capital for rebel groups to emerge (Buhaug and Gates 2002; Buhaug 2010).

Sometimes scholars explore the ability of conflicts in one state to lead to civil war in a neighboring state. The presence of a civil war generates instability in the spatial neighborhood through mechanisms such as population displacement or battles that spill over international borders. The more capable a state is, the more able it is to resist the contagion of civil war from nearby states (Braithwaite 2010). The fact that weak states *are* vulnera-

ble to the spread of civil war means that there is some level of spatial dependence in the interstate spread of civil wars.

However, the work on spatial contagion of civil war risks overestimating the impact of violence in the neighborhood on conflict onset. Sometimes neighboring events happen for different reasons, and sometimes the same latent force can explain both. Failing to consider the causal pathway of how conflict begins means that we may identify clustering of civil wars as evidence of diffusion when in reality this pattern is driven by similarities in underlying risk factors across states (Black 2013). If civil wars in two countries are driven by the exclusion of ethnic groups and we do not include a measure of this exclusion, we might wrongly conclude that a civil war in one country was caused by a civil war in the neighboring state.

If we want to better understand how spatial context matters, we cannot exclude important explanatory factors in these models. A more accurate model of civil war contagion would also include major risk factors in each country to ensure that it addresses this potential endogeneity problem. Combining geocoded ethnic group data (Wucherpfennig, Weidmann, Girardin, Cederman and Wimmer 2011) with data on ethnic exclusion (Cederman, Weidmann and Gleditsch 2011) makes it easy for a spatial analysis to measure whether the same excluded group is present in both countries, reducing the risk of incorrectly concluding that conflict has diffused from one country to another.

We need to point the causal arrow in the correct direction. If we do not include relevant spatial information in analyses of spatial phenomena, we risk drawing the wrong conclusions. The omission of domestic information from some studies of civil war diffusion highlights the importance of rigorous theories that allow us to identify important factors. A spatial context approach facilitates the inclusion of this geographic ethnic group data, while current approaches' only spatial information would be the distance between the two nations' capitals.

Conflict Evolution

In contrast to onset research, conflict evolution work takes the existence of a civil war as its starting point, and asks how the distribution of battles changes over time. Evolution research tends to use conflict event data. These are point level data with individual battles as the unit of observation, and contain the geographic location and date of each event. They also frequently include related data such as the actors involved in each clash and the number of resulting fatalities.

The spatial diffusion of battles in civil war exhibits two distinct patterns: relocation and escalation. Relocation is characterized by shifting battle lines between two well defined forces with controlled rear territories; conflict moves from location to location and the number of contested areas in each time period remains relatively stable. Conversely, escalation is characterized by struggle for control over an expanding geographic scope; as the conflict continues, more and more areas will experience battles in each time period. Simulation based methods find that civil wars which are typically thought of as insurgencies exhibit escalation behavior while those thought of as more conventional civil wars display relocation behavior (Schutte and Weidmann 2011). However, these results come from comparing the observed locations of battles with hypothetical ones generated from a naive null model that assumes battles are equally likely in all locations.

Intuition tells us that while we may not know which factors shape the spatial distribution of conflict events, it is probably not truly random. We need to reach a better understanding of the factors that influence where conflict events actually happen so that more representative null hypotheses can be tested. It is not particularly interesting to demonstrate that the distribution of battles in a civil war is not completely random. What would be interesting is to explain why states sometimes *don't* try to defend land containing valuable primary commodities like oil or timber. Similarly, why do rebel groups target civilian populations in some areas but not in others? A spatial context approach to conflict evolution allows us to investigate how differences in space shape rebel decision-making.

Working at a slightly larger geographic scale, researchers have found that previous con-

flict in a municipality is a significant predictor of whether it will experience conflict again. Municipalities in Colombia are significantly more likely to experience violence in the future if they already have in the past because organizational legacies of violence, such as networks of underground contacts or rebel safe houses, make conflict easier to carry out in the future (Daly 2012). In addition, Daly argues that studies of conflict onset at the country-year level, such as Fearon and Laitin (2003) and Collier and Hoeffler (2004), are fundamentally flawed because conflict begins at the local level, in specific locations. As such, using national level measures of conflict covariates cannot hope to properly explain the occurrence of conflict. While we have made great strides in gathering micro-level data on the incidence of conflict, we still lack microlevel explanatory data. Spatial context studies can directly address this shortcoming by using geographic predictors such as population density which are locally varying.

Similar to the conflict onset tradition, some work has explored the underlying risk factors that make conflict more likely at specific locations once a war has begun. One of the most powerful predictors of which areas experience conflict events in a war is the local level of population (Raleigh and Hegre 2009). Local population appears to have a proportional effect on the frequency of conflict events, and conflict is most likely where populations cluster locally, suggesting that findings by Weidmann (2009) on the role of population concentration could apply on the micro level as well. Locations which experienced conflict in the previous year have a risk of another event 167 times greater than areas without any conflict history, aligning with findings by (Daly 2012). Additionally, conflict becomes less likely as the distance to the nearest previous conflict event increases, suggesting that the mechanisms at play are highly localized.

The distinction between terrorism and civil war is often a murky one (Sambanis 2004; Kalyvas 2004), and this confusion remains at the microlevel. Many terrorist attacks and civil war battles take place very near each other spatially, but the timing varies across conflicts (Findley and Young 2012). Geocoded terrorism and civil war data show that in Latin America terrorist violence tends to precede civil war, whereas it follows full scale conflict elsewhere in the world. These differences may be driven by the spatial context at a given

location. If a group wants to carry out an operation far from its base of support, it may be forced to employ lower cost terrorist tactics because it cannot support a large group of fighters that far afield. Similarly, in areas with low population density, groups may resort to terrorist attacks because their lower operational requirements are easier to meet when barriers to mobilization are high.

Other work has taken the study of conflict distribution and diffusion to the truly micro level. Analyzing the pattern of IED attacks in Baghdad with models from spatial criminology reveals that the majority of variation in the timing and location of events is explained by unobserved underlying environmental factors, rather than observable ones such as population or proximity to a coalition military base (Braithwaite and Johnson 2015). Including previous IED attacks and coalition operations results in a better fitting model, indicating strong dependence between previous and future events.

This finding is a direct critique of work which relies on an assumption that the appropriate null distribution of conflict is entirely random. However, even with the inclusion of previous events, a large portion of the variation is still explained by unobserved factors, indicating that a spatial context approach which tries to identify spatially distributed explanatory factors can improve our understanding relative to current techniques.

Some studies have focused locally and use individual villages or towns as the unit of analysis. Randomly directed Russian artillery fire reduces the likelihood of future insurgent violence in Chechen villages (Lyall 2009). However, a different study examining the effect of Russian troops in the same conflict finds the opposite effect. An epidemic model of violence diffusion along road networks indicates that military operations make future violence more likely in villages (Zhukov 2012). One explanation for these divergent results is simply differences in model specification. Zhukov uses a more accurate model that relies on road distances rather than 'as the crow flies' geodesic distance, better capturing the actual distances rebels and soldiers on the ground must travel.[3] However, the possibility remains that these disparate conclusions are the result of our failure to include relevant information.

[3] See (**?**) for a more general discussion of the importance of using theoretically relevant distance measures.

A spatial context approach that tries to measure important underlying spatial factors which can affect conflict progression can help us identify what is missing from existing models.

Unsurprisingly, Zhukov's analysis finds that closer villages are more likely to transmit conflict to one another. More interestingly, villages isolated from existing conflict are more likely to witness extended continuation of violence if conflict does manage to reach them. These isolated villages may be located far from other attractive targets, and so once they enter the conflict, they remain the focus of rebel attention due to the lack of alternative options. The focus on the spread of conflict from one village to another misses the bigger picture. Is the spread of conflict at a location influenced by how far that location is from a valuable natural resource? Is conflict more likely to persist in a village if it is located in the ethnic homeland of a group? Both of these potential influences fall under the umbrella of a spatial context approach.

Some work in conflict evolution focuses on rebel groups as the level of analysis, and explores how group attributes can shape the ways in which they fight. Conflicts where rebel groups do not have a strong tie to a well-defined ethnic group or are militarily weak relative to the state, frequently shift location (Beardsley, Gleditsch and Lo 2015). This study is innovative in spatial conflict research because it uses group attributes rather than national level attributes or patterns of previous conflict to explain future patterns of conflict.

However, there is also the possibility that group level attributes can interact with spatial ones. Different geographies can be more or less conducive to rebel group operations. Weak groups will suffer more from these limitations that strong ones. For example, a strong rebel group should be more able to carry out attacks even in unforgiving areas while a weak one may be constrained to operate within more permissive territory. This argument is illustrated by the experiences of the RUF in the Sierra Leone civil war. Once the group captured extensive diamond fields and bolstered their fighting capability, it was able to take on larger challenges and threaten the capital. The spatial context of the battles fought near the diamond mines boosted its fighting capability and subsequently altered the spatial context of areas it was able to operate in, demonstrating how spatial context and group level factors can interact.

Conflict Outcome

The newest branch of spatial conflict research tries to connect the ways wars are fought to their outcomes. Instead of simply arguing that conflict at a previous time explains patterns of conflict and not conflict at future times, it tries to connect differences in how wars are fought with divergent outcomes. Differences in anti-fascist killings in Italy during the waning days of World War II are strongly correlated with differences in left and right wing electoral support in postwar provincial elections (Costalli and Ruggeri 2015). This pattern may be the result of a deliberate effort to remove potential future constituents from the opposing side by eliminating them in the final phases of the Italian Civil War (Grandi 2013). The spatial patterns of conflict can also explain non-political post-conflict outcomes. Civil wars where the majority of battles are fought far from major commercial centers are associated with post-conflict economic growth, while those fought near important cities are more likely to lead to economic stagnation (Minhas and Radford 2016). Differences in where a conflict actually occurs can lead to significant differences in post-war outcomes, further highlighting the importance of being able to understand how spatial context influences where battles are fought and where they are not.

Other research has focused on how individual actions taken in war can lead to victory or defeat in the overall conflict. Capturing an opponent's capital in interstate conflict is strongly associated with victory in the conflict, demonstrating how different spaces have different impacts on the trajectory of the conflict (**?**). In the intrastate context, negotiations with rebels become significantly more likely as they are able to credibly threaten the state by rapidly advancing on the capital (Greig 2014). The faster the location of battles moves towards the capital, the more willing states are to negotiate because this ability to increase the pace of advances demonstrates strength. These studies suggest that proximity to sources of state power can be an important dimension of spatial context.

Another strain of work focuses on the role of population in irregular conflicts. The farther away from sources of state power citizens are, the harder it is for the state to project power into their lives (**?**). Building on the theory of reactive mobilization (Kalyvas 2006; Kalyvas and Kocher 2007), Schutte (2015) argues that as the distance from the state to a

population center increases, the state is forced to rely on increasingly indiscriminate forms of violence. As the bulk of the population in a country moves farther from the capital, defeat in irregular wars is more likely as indiscriminate violence mobilizes fighters against the government. This model cannot directly observe what tactics are used in a war, but by using distance as a proxy, it demonstrates that how a war is fought can influence who the eventual victor is. A spatial context approach can build on these findings by exploring how differences in the type of locations where a conflict is fought can explain outcomes.

The Way Forward

Future work needs to move beyond an understanding of space as simply the distance between events and begin to engage with the spatial context that events occur in. The conflict evolution literature convincingly demonstrates that local factors can indeed influence the progression of a conflict from a small-scale perspective, while the conflict outcome literature is beginning to show how such spatial factors can affect the direction of an entire conflict. A more accurate understanding of the role of space in conflict will incorporate both local and long distance spatial forces in our models.

Existing quantitative work has done an excellent job exploring the short range effects of space on conflict. However, it has left the question of broader impacts relatively unaddressed. In order to understand the larger scale and longer term effects of space on conflict, we need to delve deeply into specific conflicts. By tracing how these conflicts emerged, progressed, and resolved, and the effect of their respective spatial contexts at each stage, we can gain insight into when and how space matters. Just because one aspect of space matters at a certain point in a conflict does not mean it matters at all points of the conflict. The density of road networks matters in the midst of a conflict, but it may have no impact on the likelihood that a conflict begins in the first place. Similarly, the distribution of civilian killings can shape the post conflict government, but it may have no impact on the day-to-day movement and evolution of a conflict.

Rather than simply testing a host of hunches about how spatial context matters, we should look carefully to specific cases. By using the information from these conflicts to

construct logically consistent theories, we can be more sure of the conclusions of our eventual large-scale quantitative analyses. Most importantly, these cases can tell us when, and in what types of conflicts, the different aspects of space can shape combatants' strategic thinking. Once we have a sense of this influence, we can construct models that better reflect the actual impact of space on conflict by specifying under which conditions it matters most. The goal of these case studies is to understand when and how space affects the short-term immediate progression of a conflict, and when and how it can affect the long-term trajectory of a conflict.

Case studies are often used to supplement quantitative analyses to improve theories by exploring cases where models make the wrong prediction (Sambanis 2004). However, they can also be incredibly potent instruments of theory-building as well. In-depth analyses of situations can help uncover the different mechanisms at play in a given theory. At the same time, cases where the outcome is unexpected in light of what prevailing theories argue should happen provide us with puzzles that can guide the development of new theories.

I provide historical accounts of three different civil wars and discuss how the interaction between spatial and political forces guided the actions of each rebel group. The Nigerian Civil War illustrates how the distribution and allocation of valuable territory within a country can influence the course of a conflict, and even serve as a proximate cause of the entire conflict. Additionally, it suggests that the transportation infrastructure of a country, something usually confined to the most microlevel of analyses, can influence the overall strategic goals of a rebel movement. The experiences of the Democratic Karen Benevolent Army within Myanmar's long running civil war demonstrate how the location of ethnic groups in an ongoing civil war can affect a group's choices of which territory to target and their ultimate odds of success. Finally, the many reversals of fortune for Tuareg separatists in Northern Mali highlight how a group's overarching goal can affect its strategic decisions, and how the distribution of population may alter a government's willingness to reach a negotiated settlement with a rebel group.

Nigeria

A spatial context framework can improve our understanding of conflicts by shedding light on how space shapes the strategic incentives of the various actors involved in a conflict. Not all territory in a state is equally valuable, so if we want to employ spatial data in our analyses, we need an understanding of which areas are worth fighting for and which are less essential. Treating all territory as equally valuable risks drawing biased conclusions about the relationship between the factors of interest and conflict behavior. We need to be aware of how the geographic context of an area can affect a conflict's trajectory.

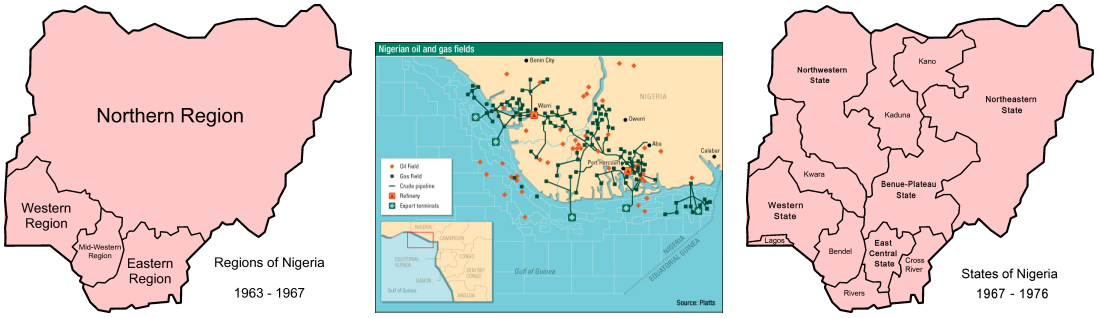
The Nigerian Civil War, sometimes referred to as the Biafran War, was an ethnic secessionist conflict fought between the Federal Military Government of Nigeria and the Igbo residents of the country's Southeast from July 6, 1967 to January 15, 1970. Independence ambitions arose in the wake of widespread violence against Igbo living in the north, leading to the declaration of the independent state of Biafra. The nascent state faced significant military opposition from the government and was subject to a brutal blockade. The Biafrans were eventually defeated militarily and surrendered to the Nigerian government on January 13, 1970. The locations of major battles and important areas in the conflict are presented in Figure 1.

The immediate causes of the Nigerian Civil War began with an attempted coup in January 1966. The plotters, primarily Igbo officers, were defeated and the military assumed control of the country in a counter-coup during the aftermath (Ekwe-Ekwe 1990, 52-57). As a result of the central role of Igbo officers in planning and carrying out the coup, public opinion in the Northern part of the country turned against Igbo residents living there. Military leaders and public officials spoke of them in dehumanizing terms and discussed the threat they posed to the nation (Keil 1970, 1-2). This rhetoric culminated in the "massacre" of Igbo citizens living in the North in May, 1966 with violence continuing into July when countless Igbo began an exodus to the Southeast (Vickers 1970, 630). This violence culminated with anti-Igbo Pogroms in September, 1966 killing over 30,000 people (Akinyemi 1972, 416-417). By October almost the entire Igbo population of the North had abandoned

Fig. 1: Key Locations in Nigerian Civil War

their homes and begun the journey to the Southeast (de St. Jorre 1972, 85).

The last train of refugees from the north arrived in October, 1966 and intensified pressure for secession from Nigeria. However, Chukwuemeka Ojukwu, the region's military governor, initially resisted these calls, fearing the consequences from the Federal government (Ekwe-Ekwe 1990, 73-75). The massive influx of population placed serious stress on the region's agriculture as thousands of displaced people arrived and needed to eat. Things eventually came to a head when Yakubu Gowon, the head of the Federal Military Government, redrew the borders of the national subdivisions on May 27, 1967 as seen in Figure 2. What had previously been four regions became 12 states, and the new divisions removed



(a) Regions pre-May, 1967 *(b)* Oil Installations *(c)* States post-May, 1967

Fig. 2: Distribution of Nigerian Oil Reserves

most of the country's extensive oil reserves from Igbo control. The former Eastern Region was responsible for 65% of oil production in the country, but when the regions were reorganized into states, the Igbo population was concentrated in the newly created East Central State which was responsible for less than 10% of national oil production (Uche 2008, 111-123). Three days later, Ojukwu declared the independence of the newly formed Republic of Biafra.

The Nigerian Federal Military Government enacted a wide-ranging embargo on the newly declared state and initiated a naval blockade (Stremlau 1977, 73), before declaring war on Biafra on July 6, 1967. The initial invasion targeted the towns of Enugu (the Biafran capital), Nsukka, and Abakaliki, all within 50 miles of the southern reaches of Federal territory (Obasanjo 1981, 15). The Federal Government's confidence led them to believe that the conflict would be "surgical" and little more than a "police action" with minimal resistance from the Biafran forces (Akpan 1972, 90). However, the Biafrans were relatively successful in repulsing the Federal attacks on these key towns, and even captured some territory from the Federal Government in Bendel, the former Mid-Western Region (Ekwe-Ekwe 1990, 81-82). On August 9, 1967, Biafran forces took the Mid-Western capital of Benin and numerous surrounding towns including the river ports of Sapele and Warri, and the oil facilities in Ughelli (de St. Jorre 1972, 153-160). The rebels had taken almost the entire state in the course of a single day (Stremlau 1977, 77).

While Biafrans were making advances to the West, things were going less well in the East. Less than a month into the conflict, the Federal Government captured Bonny Island on the Eastern coast. This island housed one of the main Shell-BP installations in Nigeria,

containing extensive storage tank farms and tanker terminals (Uche 2008, 131). The Biafrans were thus prevented from exporting any of the oil within their own territory in East Central State or from the captured territories to the West. However, this success for the government was short-lived as Biafran troops encircled the Federal forces on Bonny Island and prevented them from pressing their attack any further into Biafran territory (Ekwe-Ekwe 1990, 83). Towards the end of July, Federal troops seized Nsukka (Obasanjo 1981, 18) and used the facilities of the University of Nigeria to mount further attacks against Biafran forces (Akpan 1972, 91-92).

In the fall of 1967, the successes of the Biafrans in the West began to unravel. On August 17, their advance pushed as far West as Ore, within 135 miles of the capital of Lagos, but was stopped there by fierce resistance from the government (Stremlau 1977, 78). By the middle of September the Nigerian army was threatening to cut off the supply line from Benin City back to Biafra (de St. Jorre 1972, 160-166), and was gaining ground every day. The Biafran forces fled from the steady advance of the Federal Government troops, leaving many Igbo behind to be killed in the recapture of various cities (de St. Jorre 1972, 164-165). As defeats mounted, the Biafrans began a full-scale withdrawal from the West. On October 6, 1967 they crossed the Niger River at Onitsha and retreated to the core Igbo territories (Stremlau 1977, 78). Civilian killings continued, with Federal troops massacring hundreds of Igbo in the town of Asaba, directly across the Niger River from Onitsha from October 5-7 (Bird and Ottanelli 2014).

The defeat of the Biafrans in the West is unsurprising in light of the geographic context it occurred in. The sole road linking Onitsha to Benin to Ore, which enabled the Biafran's lightning offensive also made the defense of their gains nearly impossible. The Federal army was able to easily threaten Biafran supply lines because they ran along this single road; there were no other alternative routes so any convoys would be predictable targets. Figure 3 shows the dearth of roads in the West relative to Biafran territory in the East. This situation would have been less problematic if the rebels were stronger relative to the state, but they were significantly weaker with fewer than 1,000 fighters involved in the entire operation (de St. Jorre 1972, 154). A strong rebel group can afford to devote more troops

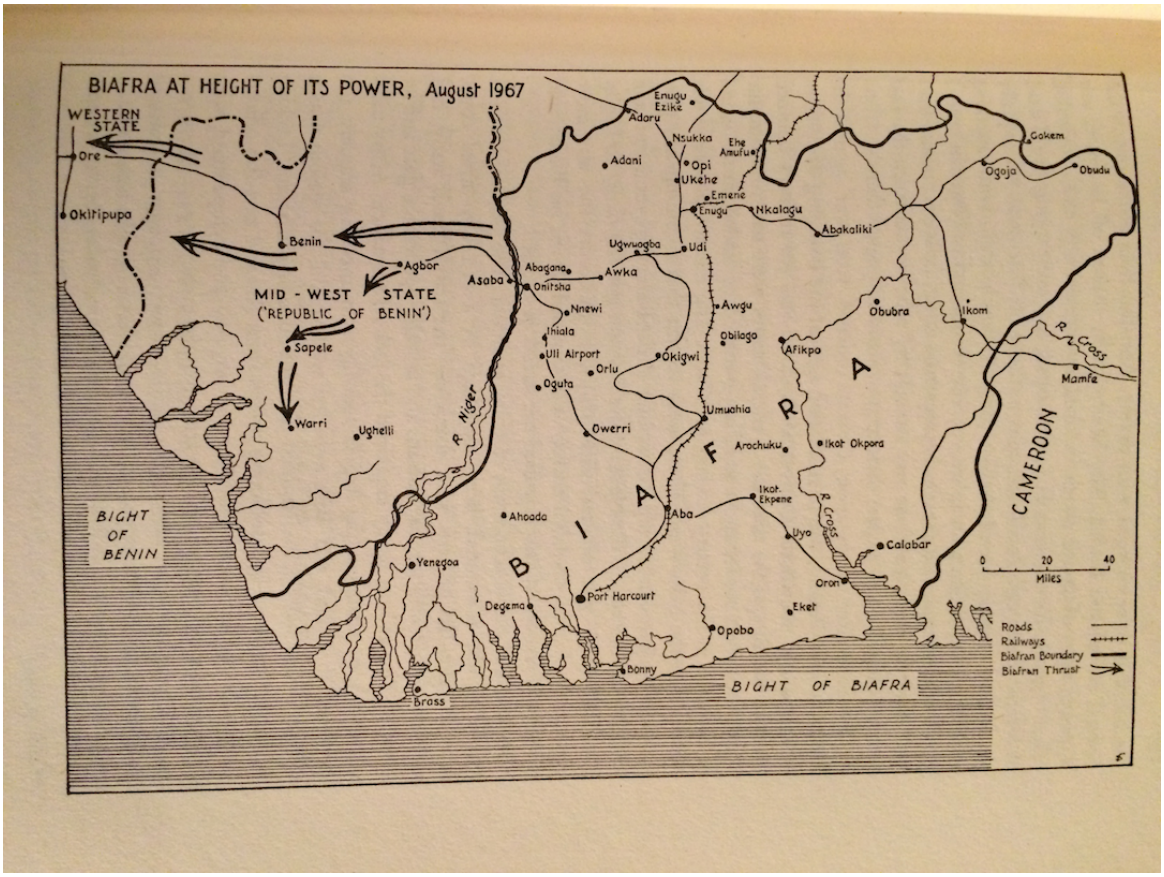


Fig. 3: Transportation Infrastructure in Southern Nigeria, from de St. Jorre (1972, 155)

to protecting a supply line and would have better odds of repelling a government attack on it.

As the Biafran forces were retreating from the West, Federal troops were advancing on the Biafran capital of Enugu from the North. The battle for the capital began on on September 12, 1967 (Obasanjo 1981, 19-21). Unable to withstand the attack by Federal troops, the Biafrans evacuated the capital and relocated to Umuahia, leaving the city to be overrun by the military (Akpan 1972, 104-106). However, the tenor of the war had changed. Between October, 1967 and September, 1968 Federal troops were able to seize considerable amounts of territory around the city of Abakaliki, denying the Biafrans access to this extensive agricultural area (Stremlau 1977, 218). This loss further stressed the already overtaxed agricultural sector in Biafra, weakening their military's ability to effectively fight the state.

After the collapse of the Mid-Western offensive, the Biafran forces had some limited success. On March 31, 1968 they ambushed a Federal army convoy in the town of Abagana on the road between Onitsha and Enugu and destroyed nearly an entire division (Ekwe-

Ekwe 1990, 84). However, these victories were outweighed by the defeats. Federal troops were able to advance north and take the city of Port Harcourt in May, 1968, cutting off shipping and the transportation of the oil elsewhere controlled by Biafra (Uche 2008, 132-133). Already greatly reduced after the early seizure of Bonny Island, Biafra's ability to export and profit from its oil was reduced to virtually nothing. Unable to pay for or actually receive many of the supplies it needed, Biafra's ability to resist was greatly reduced.

Although the insecurity around Port Harcourt meant that the Federal Government was similarly unable to profit from its oil, this situation did not last long. The government constructed a new tanker terminal off the coast of Forcados, a town firmly within Federal territory (Uche 2008, 133), and was able to begin exporting oil again in mid 1969. While Biafra controlled significant oil reserves at various points in the war, it was never able to exploit them and use the profits to purchase military equipment or necessities like food and fuel.

In September, Federal troops advanced North from Port Harcourt and captured the towns of Aba on September 4, depriving the Biafrans of a major commercial center, and Owerri on September 15 (Stremlau 1977, 215-217). However, the 'capture' of Owerri was greatly overstated and Biafran forces surrounding the town besieged Federal troops for months and finally drove them out in April, 1969 (Baxter 2015, 52-63). That same fall, Federal troops fought a pitched battle for Uli, home to the sole Biafran airstrip, but were unable to dislodge the Biafrans from the town (de St. Jorre 1972, 207). This airstrip was so vital to the Biafran war effort that Uli did not fall until the last day of the war.

By the end of 1968 the Biafrans controlled only a 5,000 square mile patch of territory. However, the small scope of this area that needed protecting, combined with a high quality asphalt road network, and the only rail line in the region as seen in Figure 3, enabled the Biafran defense to remain standing for so long against superior federal forces (Stremlau 1977, 219). Where the transportation infrastructure (or lack thereof) had made defense so difficult in the West, its density in the East helped Biafra resist a militarily much stronger opponent for so long.

Although the war was far from over by the end of 1968, it had settled into a pattern of

stalemate that would continue for the rest of the conflict. The loss of Port Harcourt not only deprived the Biafrans of easy access to cash and arms shipments, it also greatly constricted their ability to import the food needed to keep their population alive. Their territory held many more people than it could support under the best of conditions due to the influx of Igbo refugees from the North and elsewhere in the country. This overcrowding, combined with the loss of agricultural land due to territory loss and devastation by fighting, led to a serious food crisis. Private relief agencies began the Biafran Airlift in an attempt to deliver food aid to Igbo civilians in Biafra (Gourevitch 2010). The lone airfield at Uli proved indispensable to these relief efforts (Stremlau 1977, 243-246), further highlighting why they fought so hard to defend it against multiple attacks.

In mid June, 1969 General Ojukwu argued that "Oil is the mainstay of the Nigerian economy and it is from oil that they obtain all the necessary credits for the prosecution of this futile war" (Stremlau 1977, 327), and deployed his (extremely) limited air force to conduct raids on production wells and tank farms in Western State. The Western oil fields were even farther West than the Biafrans' farthest push at Ore and firmly within Federal control, and Ojukwu had no hope of capturing its oil installations from the state. Instead, he simply attempted to destroy them to deny their use to the state.

The beginning of the end for Biafra came thanks to the ever worsening humanitarian situation. By the end of 1969, disease and starvation were rampant and 8,000-10,000 people were dying daily (Ekwe-Ekwe 1990, 87). On December 22 the army launched an attack on Umuahia and by December 24 had control of the city (Obasanjo 1981, 107-108), forcing the Biafran capital to once more relocate, this time to Owerri. The next day the army took the city of Arochukwu to the east, further encircling the already surrounded Biafrans (de St. Jorre 1972, 394). Federal troops continued to push their offensive, and on January 8, 1970 they captured the town of Ulakwo, just south of Owerri, with Owerri falling the next day (Obasanjo 1981, 112). With the loss of Owerri, General Ojukwo abandoned the Biafran forces and fled by air to Abidjan, Ivory Coast (Akpan 1972, 165-175). On January 12 the army seized Uli and its airstrip from its beleaguered defenders (Obasanjo 1981, 119). That same day General Philip Effiong, Ojukwu's former second in command and acting leader of

Biafra, formally surrendered to the Federal Military Government (Ekwe-Ekwe 1990, 91). Less than three years after its declaration of independence, Biafra ceased to exist.

Theoretical Implications

Biafra's successes and failures on the ground were greatly shaped by the geographic context of where each occurred. They were forced to abandon their thrust into the West because the limited road network made protecting supply lines exceptionally difficult. They were able to hold out against numerically superior forces in the Igbo heartland for so long because of its built up transportation infrastructure. And their oil fields were useless because they quickly lost the infrastructure needed to bring it to market. These observations suggest several ways that spatial context can influence the direction a conflict takes.

Biafra made a quick advance into the West, and just as quickly abandoned its conquests because the geographic environment prevented them from mounting an effective defense. However, a strong group may not have faced this problem. This suggests that a weak group operating far from its base of support may have no intention of keeping any territory it seizes. Or it may not even try to seize territory and instead simply launch 'spoiler' attacks that damage the government's capabilities, like the RUF's destruction of the ore mines it captured. While most contemporary rebel groups do not have access to an air force, they can use terrorist tactics to strike far behind enemy lines. Accordingly, the effect of spatial context may be conditional on rebel group strength.

A group's choice of tactics is influenced by the combination of its capabilities and how far from its territory it is operating. Schutte (2015) argues that as distance increases, both states and rebels are forced to rely on lower 'quality' approaches which are less selective in the application of violence. The Biafrans' willingness to give up their gains in the West suggests that a group's *strategic* goals may also change with distance from their center. Rebels may try to capture and control a piece of valuable territory if it is near their core territory, but they may have no intention of holding onto that same piece of territory if it is located far away. The Biafrans were willing to fight so hard for each inch of ground within the Igbo homeland because the abundance of road and rail meant that it was easy to move

reinforcements to each new area that the military threatened.

Oil directly links the way the Nigerian Civil War was fought with the contours of the postwar society, indicating that spatial context may be related to conflict outcomes. Oil revenues were extensively used to fund the government's reconstruction efforts (Nafziger 1972), but this effort largely omitted the former Biafran territory in the east (Ekwe-Ekwe 1990, 115-119). However, the sources of those revenues were decidedly different than they were before the conflict. Before the war, the Eastern region was the location of almost all active oil reserves. After the conflict, the pattern than began with the construction of a new tanker terminal off the coast of Forcados during the war continued and with the development of new reserves, the West became the dominant oil producing region (Abiodun 1974). Because the war was fought in the East, the East lost out on its position as the predominant oil producing region. Regardless of the mechanism, this shift in oil activity demonstrates one way in which how, or where, a conflict was fought shaped how it ended.

The Nigerian Civil War highlights several other important dimensions of spatial context that have not been addressed by microlevel conflict research. Infrastructure played important roles in the evolution of the conflict. As the Biafrans progressively lost agricultural areas to the state, their ability to feed their people declined, eventually weakening their fighting forces. Similarly, the territory where Biafra made its last stand was relatively developed and possessed robust paved roads between the Biafran cities. In contrast, the rural area surrounding Biafra, where the army was forced to operate, did not have these amenities. This greatly complicated the process of supplying the army and may have been responsible for the long, drawn out nature of the war's stalemate period. A spatial context approach could easily incorporate factors such as agricultural or economic production as factors that influence the value of territory.

These findings suggest that connecting where a war is fought to its outcome requires careful theorizing. Beardsley, Gleditsch and Lo (2015) find that in conflicts where rebel groups have a strong base of ethnic support, the 'conflict zone,' or location of the battles that are fought, tends to move less year to year than in cases where rebels do not have an ethnic base of support. The Nigerian Civil War makes clear that we cannot blindly translate

these findings into expectations about conflict outcomes. The Biafrans had an exceptionally strong and territorially concentrated support base in the Eastern Igbo populations, and the zone of the conflict did not move significantly throughout the war. Yet they suffered a crushing military defeat. Either there is no significant relationship between the mobility of a conflict and its outcome, or this relationship is moderated by some as of yet unidentified variable.

The Nigerian Civil War provides excellent illustrations of how spatial context can shape conflict patterns and outcomes. The rebellion began in the Igbo heartland in the Southeast of the country where leaders had a large population of refugees from which to recruit fighters. This large population also enabled the Biafran forces to more easily replace lost fighters as the war shifted to a protracted defense against the Federal Military Government. While the lack of roads in the West hampered their ability to consolidate their gains, the abundance of roads in the East made defense of their territory easier. Finally, the Biafrans' experience with oil indicates that while the distribution and location of natural resources can shape conflicts, we should be mindful of how easy they are to exploit, similar to the focus on lootable resources in the existing literature.

Myanmar

A spatial context approach offers numerous improvements for our ability to study rebel groups which never manage to achieve significant success. One of the main advantages of microlevel spatial data is that they avoid many of the shortcomings and biases introduced by data limitations in conventional conflict research. The use of a battle-deaths threshold in data collections efforts, whether it is 1,000, 500, or 25, will inevitably result in us excluding some cases from our analyses. Unfortunately, this exclusion is far from random. By omitting cases below a certain threshold, we ignore a large amount of political violence that fails to evolve into full-blown civil wars. In effect, we are selecting on the dependent variable; we fail to explore the factors which can explain why some conflicts continue will

others fizzle out.[4]

Many microlevel spatial conflict datasets have no minimum inclusion criteria. For example, the UCDP Georeferenced Event Data (Sundberg and Melander 2013) includes any incidents of violence perpetrated by an "organized actor" that results in at least one fatality. While the data still suffer from missingness due to the nature of information about armed conflict, they do not intentionally exclude any observations. This should allow us to better study failed rebellions and abortive civil wars, and explore why such conflicts do not escalate into full-scale civil wars. However, collecting data on these abortive groups remains difficult due to their ephemeral nature. In contrast, a spatial context paradigm makes it easier to study these groups because it uses readily available geographic data as an explanation for group behavior. Instead of the daunting task of collecting ideological and organizational information about a failed group, we can instead employ information about where the group operated. Microlevel event data provide us with response variables in the form of where a group originates or operates, and a spatial context approach can allow us to utilize explanatory variables that operate at the same scale.

The 2010-2012 Myanmar Border Clashes are an excellent example of the kind of cases these more inclusive datasets allow us to study. Since 1948 the country has been embroiled in one of the world's longest running civil wars between the central government and the country's numerous ethnic minority groups. At various times the Bamar dominated government government has been at war with the predominately Christian Kachin, the largely Muslim Rohingya, and the primarily Buddhist Karen, Shan, and Lahu (Steinberg 2010). After the contested national election on November 7, 2010 the Democratic Karen Benevolent Army was involved in a series of clashes with the government. While these hostilities continued for almost two years, the conflict never evolved into a large-scale civil war. A close look at this period of instability can provide us with insight into how spatial context can help us better explain why some rebel groups succeed while others burn out. The locations of major battles and important areas in the conflict are presented in Figure 4.

[4] See Sambanis (2004) for an in-depth discussion of these omissions and their impacts on our conclusions.

Ahead of the 2010 national elections in Myanmar, there were serious concerns about the possibility of violence. Many worried that the first democratic election in two decades would be preceded by a government crackdown against minority groups (Sagolj 2010). In the summer before the election, there were sporadic clashes between the military and rebel groups. Both ethnic Karen and Shan rebel groups engaged in fighting with the military in the month before the election (Democratic Voice of Burma 2010). The Karen National Union, the main Karen opposition group, mobilized the elite troops within the Karen National Liberation Army (KNLA), its armed wing (Naing 2010). However, despite these preparations, it was not the mainstream KNLA that ended up fighting the government.

Fig. 4: Key Locations of DKBA Activity

Instead, the majority of the violence was perpetrated by the Democratic Karen Benevolent Army (DKBA). The DKBA is a splinter of a splinter, splitting from the Democratic Karen Buddhist Army. The Democratic Karen Buddhist Army formed in 1994 after splitting from the primarily Christian KNLA, but quickly signed a peace agreement and sided with the government against the KNLA (Human Rights Watch 2002, 132-135). Working with the government forces, the Democratic Karen Buddhist Army struck a major blow against KNLA forces (Charney 2009, 188) and carried out attacks against Karen refugee camps across the border in Thailand (Lintner 1999, 413-414). The group has since taken steps to become further integrated with the military, and reorganized as part of the Border Guard Force in August, 2009 (Moe 2009), creating units that combine former rebel fighters with military personnel and draw salaries from the government (**?**, 47). In the fall of 2010 the DKBA was formed by fighters who rejected this collaboration and broke off from the Democratic Karen Buddhist Army in the aftermath of the election (Myanmar Peace Monitor N.d.).

In the wake of the election, the DKBA launched an offensive against government forces. On November 8, they shelled the town of Myawaddy near the Thai border and approximately 300 hundred DKBA fighters engaged in a battle with the military (MacKinnon 2010). DKBA forces also clashed with the military farther South near Three Pagodas Pass (AFP 2010). Although the DKBA quickly withdrew from Myawaddy, fighting continued in the area around Three Pagodas Pass for the next several days (Mizzima News 2010*b*). On November 28, fighting broke out between the DKBA and the military in the village of Palu on the outskirts of Myawaddy (Mizzima News 2010*a*). Following these initial incidents, the conflict continued intermittently for the next several months.

In May, 2011 renewed fighting erupted in Kyain Seikgyi Township West of the initial fighting the previous year (Noreen 2011). This time, mainstream KNLA forces fought alongside the breakaway DKBA troops. By June the Kachin Independence Army (KIA), the armed wing of the main ethnic Kachin opposition group, had abandoned its 17 year ceasefire with the government and declared a new war in Kachin state to the north (**?**). Fighting continued throughout the summer, but primarily involved KIA (Kaung 2011) and

KNLA forces (Karen News 2011). By November, 2011 the political organizations affiliated with the KIA and KNLA had tentatively accepted a ceasefire with the government (Voice of America 2011). However, the DKBA rejected this conciliatory approach and continued to fight.

In September, 2014 DKBA forces clashed repeatedly with government soldiers in Kyaikmayaw Township, Mon State (Naing 2014; Weng 2014). In July, 2015 the group fought several battles with government forces over an extortion scheme along the highway linking Myanmar with neighboring Thailand (Pwint 2015; Weng 2015). In late 2015 a breakaway faction composed of former DKBA fighters, expelled by the group's leadership, fought with government forces along the road between Kawkareik and Myawaddy (**?**). While other Karen groups, and other ethnic armed groups, have begun to embrace ceasefires with the government, the DKBA has refused to do so.

Theoretical Implications

The failure of the Democratic Karen Benevolent Army to evolve into a successful rebel group illustrates the advantages of a spatial context framework for studying these failed, or continuing but unsuccessful groups. The DKBA never reaches the inclusion threshold for the UCDP ACD (Gleditsch, Wallensteen, Eriksson, Sollenberg and Strand 2002; Pettersson and Wallensteen 2015), so it never appears as an actor. Accordingly, it is difficult to impossible to study these abortive groups in a cross-national manner using traditional sources of conflict data. In contrast, the DKBA does appear as an actor involved in multiple events in the UCDP GED (Sundberg and Melander 2013), where it is referred to as the DKBA-5.[5] By using data on the few acts that such groups are responsible for, we can learn more about why they fail where others succeed. Or, if they are persistent but never cross an intensity threshold, we can ask questions about why some groups are able to persist even in the face of state repression.

These data can also offer us new insights into questions about rebel fragmentation and

[5] This is because the group originated as the 5th brigade of the Democratic Karen Buddhist Army from which it split.

rebel group emergence. Current work on rebel fragmentation has largely relied on group-level data on the number of factions within a larger movement (Cunningham, Bakke and Seymour 2012). However, spatial data can provide more accurate data for these analyses. The arrival of a splinter group from a rebel organization is often heralded by their first attack, so datasets like UCDP GED which use individual attacks as the unit of observation could enable us to create detailed chronologies of when groups split from their original movements. Spatial data can offer information at a more fine-grained temporal level than currently existing yearly data on the degree of fragmentation within rebel groups e.g. (Cunningham 2013).

While spatial data give us new ways to measure outcomes, they also improve our ability to gather information on explanatory factors. These data could be used to investigate the causes of fragmentation in new ways. Does a group split off from the main movement over ideological disagreements, or because it seeks personal riches from the spoils of war? Spatial analyses can explore the relationship between splintering and geographic resource distribution. Are groups more likely to break away if they control valuable resources and are located far from the heart of the movement? These data are easier to gather because we can draw from existing geographic datasets on factors such as natural resource locations or population density rather than having to collect new information about specific groups.

The failure of the DKBA to become a serious threat demonstrates how spatial context can constrain rebel groups. A naive analysis of the role of ethnicity in conflict would predict that the group should have been very successful. The Karen are largely excluded from power and marginalized, and the DKBA fought its battles in or near Karen territory, as seen in Figure 5. However, the group did not receive support from the Karen population for two reasons. First, it only represents Karen Buddhists, a minority of the predominantly Christian group. Secondly, as a splinter from the Democratic Karen Buddhist Army, it had a more established rival to compete with. The DKBA's challenge was not to mobilize passive civilians, but to peel supporters away from an already active group.

The identity of the DKBA helped shape its spatial constraints. As it claimed to fight for Karen Buddhists, the group needed to engage the military in Karen territory so that it

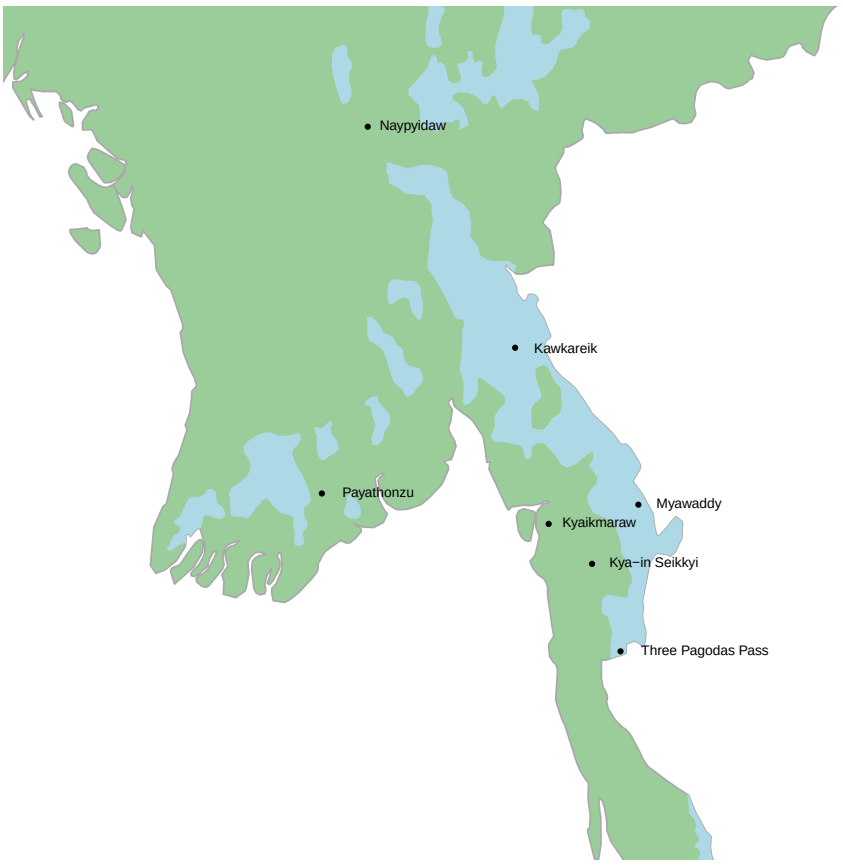


Fig. 5: DKBA Activity and Karen Settlement Patterns

could say it was supporting this goal. However, as it was a latecomer competing for scarce supporters, focusing on this small area of Myanmar meant it was never able to grow into a sizable fighting force. The Karen National Liberation Army fought many of its battles in the same areas of Myanmar, but was able to become a significant threat because it was the first Karen armed group. Understanding the spatial dimension in this case requires us to combine it with political information. A model that can explain the DKBA's failure to escape obscurity must be cognizant of the fact that while it was operating in friendly territory, it was not the only game in town. Spatial constraints are not always purely a function of spatial differences; sometimes they are modified by political factors. We should

look for ways to include spatial context information alongside more traditional political explanations due to this potential relationship.

Northern Mali

Just as spatial context allows us to explore how the strategic incentives faced by actors vary with location, it can also enable us to explore how the decisions made in a war can influence its outcome. Not every war is fought the same way. Some are low intensity insurgencies that simmer for years. Others are rapid and violent with thousands of people killed in short periods of time. Still others steadily rise in intensity until they resemble all out conventional war. Similarly, there is a diversity in outcomes ranging from negotiated settlements to military defeat or victory to a decline into irrelevance. Some of the variation in outcomes is likely explained by variation in how conflicts are fought, and failing to connect these two risks discarding valuable information.

Using spatial data, we can in effect measure how a conflict is fought. We can see if battles are fought in only a small handful of areas, or if they occur almost everywhere. Employing a spatial context approach, we can look at where battles are fought and explore how the reasons states and rebels decide to fight there can influence conflict outcomes. The Northern Mali Conflict, which began with the Tuareg Rebellion in 2012, provides an excellent example of the course of a conflict shaping its outcome.

The Tuareg are a largely nomadic pastoralist Berber people who inhabit significant areas of the Sahara Desert in Mali, Niger, Algeria, and Libya. When the former French colonies were undergoing decolonization, there was a widespread expectation that an independent Berber state would be one of the new countries to come into existence (Lecocq 2010, 27-86). However, the Tuareg ended up being divided among the nations that now exist today. The Tuaregs who found themselves in Northern Mali were subject to an intense modernization campaign that attacked their pastoral way of life as "backward" and regressive (Lecocq 2004, 89), and in 1963 responded by launching a short-lived insurrection against the central government. Although ultimately unsuccessful, Tuareg groups in Mali and Niger, where

they had been similarly marginalized, launched another uprising in 1990 that lasted until 1995 (Benjaminsen 2008). Despite occasional small-scale incidents, relations between the Tuareg and their governments were relatively peaceful after these conflicts.

Fig. 6: Key Locations in Northern Mali Conflict

This changed in early 2012. After fighting to help protect Gaddafi's regime in Libya, numerous Tuareg fighters returned to Mali in late 2011 and formed the National Movement for the Liberation of the Azawad (MNLA)[6] , composed primarily of these veteran combatants (Vogl 2012*a*). Initially, the MNLA declared itself as an inclusive separatist group that

[6] Azawad can refer to either the Tuareg territory within Northern Mali, or the greater region of Tuareg inhabitation that spans several countries in the Sahara.

fought for all residents of the North and sought to distance itself from Islamist groups like al-Qaeda in the Islamic Maghreb (IRIN 2012). The locations of important battles in the conflict are presented in Figure 6.

These returning Tuaregs brought significant heavy weapons and supplies back from Libya with them and in January, 2012 attacked several towns in Northern Mali including Niafunké, Timbuktu, Tessali, Aguelhok and Ménaka and Andéramboukane near the Niger border (Nossiter 2012*b*; Stewart 2012). They also moved on the town of Léré to the West in late January (AFP 2012*e*), where the military put up no resistance to their advance (Diallo and Diarra 2012). By February 1, 2012 the MNLA had taken the town of Ménaka as residents fled (Kambou 2012). During this time, some of the most intense fighting took place around Aguelhoc, in the far North, with the government losing dozens of soldiers (Reuters 2012*b*; de Raincourt 2012). By the end of January, the MNLA held significant areas of territory in Northern Mali.

The battle for Tessalit was not as quickly ended. On February 15, a convoy of soldiers and armored vehicles sent by the Malian army to relieve the garrison at the surrounded Amachach military base on the outskirts of Tessalit engaged MNLA fighters south of the town (Reuters 2012*a*). An offensive by the military on March 5 failed to dislodge the MNLA from the base, despite extensive air support (Reuters 2012*c*). By March 10, the military had fled in the face of a fresh MNLA onslaught, leaving the base and the town to be overrun (Vogl 2012*b*). Following this string of defeats, commonly accepted estimates listed over 1,000 government soldiers killed (Keenan 2012). MNLA forces entered the towns of Goundam and Diré unopposed in mid-March (**?**).

On March 21, 2012 a group of military officers launched a coup which deposed President Amadou Toumani Tour and formed a military junta called the National Committee for the Restoration of Democracy and State (Nossiter 2012*a*). The following day, the MNLA seized the town of Anéfis, just south of the town of Kidal, without any resistance (**?**). Just over a week later on March 30, Kidal, the capital of the Kidal region, fell to the rebels (Felix 2012*b*). However, this success was marred by a disagreement within the rebel ranks. Opposing the MNLA's more nationalist stance, Islamists who had earlier called for the im-

plementation of sharia law within capture territory (AFP 2012*b*) split off to form the Salafist group Ansar Dine (BBC 2012*a*).

Despite this setback, the MNLA experienced continued success on the battlefield and seized the towns of Ansongo and Bourem on March 30 (**?**). The following day they launched an assault on the major town of Gao (Dioura and Diarra 2012) and defeated the government troops there who left the town to the rebels (Dioura and Diallo 2012). On April 1, the rebels were able to capture Timbuktu amid heavy fighting (Vogl and Callimachi 2012). In a sign of events to come, the Islamist Ansar Dine raised their flag alongside the MNLA's in the newly captured city (Ahmed and Callimachi 2012). On April 5 the MNLA captured the town of Douentza and declared a unilateral ceasefire, saying that they had succeeded in securing the boundaries of Azawad (Al Jazeera English 2012).

Following this ceasefire the MNLA declared the independence of the state of Azawad on April 6, 2012 (Callimachi 2012). Despite their long list of grievances under Malian rule and a promise to respect the borders of neighboring states and establish a democratic government in line with the principles of the UN charter, the MNLA failed to garner a single recognition from important actors such as the United States, African Union, France, or Algeria (Felix 2012*a*). Following this declaration of independence, the MNLA and Ansar Dine ostensibly signed a treaty to govern Northern Mali jointly.

However, this cooperation was short-lived. By June, disagreement between the two groups over questions of governance had escalated to violence as fighters on both sides clashed in Kidal (**?**). Fighting between the nationalist and Islamist groups continued throughout June with battles beginning in Gao on June 26 (AFP 2012*a*) and the MNLA abandoning Timbuktu on June 27 (AFP 2012*c*). By the end of June, Ansar Dine had won control of Kidal and consolidated their power across the majority of the Northern Mali (The Telegraph 2012).

Tensions reignited in the fall. In September the town of Douentza fell to the Movement for Oneness and Jihad in West Africa (MOWJA), an Islamist group allied with Ansar Dine, after the local militia was defeated (BBC 2012*b*). The MNLA attempted to retake Gao from MOWJA on November 16, but were beaten back by fierce fighting (AFP 2012*d*). On

November 19 fighters with MOWJA and al-Qaeda in the Islamic Maghreb (AQIM) overran MNLA forces in the town of Ménaka (Daniel 2012).

Following the passage of UN Resolution 2085 authorizing an African-led International Support Mission to Mali in December, French special forces and jets arrived in the country to assist the government in the fight against the Islamists (Nossiter and Schmitt 2013). French and Malian forces concluded a week long battle for the city of Konna on January 18, 2013, fighting off an attack from AQIM troops, and also retook the city of Douentza (Harding 2013).

Faced with their inability to effectively counter the Islamists on their own, the MNLA aligned themselves with the government and French forces, and pledged to fight alongside them (Al Arabiya 2013). This new alliance quickly reversed the group's fortunes. As government forces retook Timbuktu, the MNLA was able to recapture Tessalit and Kidal from Islamist forces at the end of January (Voice of America 2013). As the war continued, the MNLA kept its promise and supported government forces as they successfully retook many of the towns held by the Islamists (Nossiter and Tinti 2013). The fight against the Islamists settled into a low-intensity guerrilla phase concentrated in the remote desert areas of the country (BBC 2013). Pleased with the ongoing cooperation, the MNLA signed a peace agreement with the government on June 18 (Fessy 2013).

The peace did not last, and the MNLA ended the ceasefire on November 29 after Malian troops fired on Tuareg protesters in Kidal (Diarra 2013). However, the MNLA did not carry out any serious attack on government forces after resuming hostilities. After limited clashes in May, 2014 the MNLA signed a new ceasefire agreement with the government (Diallo 2014). At the time, the group claimed to control Kidal and seven smaller towns in the area. Sporadic fighting once more continued until the signing of a new comprehensive peace agreement in February, 2015 (BBC 2015). On May 14 of the same year an umbrella group of Tuareg rebels, including the MNLA, signed a preliminary peace agreement with the government, despite fighting in Ménaka the previous month (Markey 2015) and the killing of at least 10 Malian soldiers near Timbuktu on May 11 (Iaccino 2015). The agreement required Tuareg groups to recognize the legitimacy of the government in Bamako and give

up complete regional autonomy, but does open the door to devolution of powers to Northern Mali (Parmentier and Sandner 2015). While decidedly not what the Tuareg initially hoped for, this outcome is also a far cry from the possible defeat they could have suffered.

Theoretical Implications

Given what we know about secessionist conflicts, it is surprising that the Malian government was so willing to accept peace deals from the MNLA, especially after the first broken ceasefire. The reputational framework of civil war resolution argues that states are unlikely to settle civil wars when doing so could embolden future challengers. This danger is particularly acute when the number of ethnic groups in a state is high, and when the land that may come under future dispute is valuable (Walter 2006). The government's willingness to negotiate and settle is particularly puzzling because Mali meets both of these criteria. A spatial context approach can help explain the government's decision to sign agreements in spite of the MNLA's continued reneging.

At first glance, the spatial context of the conflict seems to make the pattern of broken agreements even more inexplicable. While Tuaregs made up the the majority of rebels, they are far from the only ethnic group in Mali. There are 22 different politically relevant ethnic groups within Mali's borders (Wucherpfennig et al. 2011), so there is no shortage of potential challengers. And the territory likely to be under future dispute is indeed valuable. Exploratory estimates indicate that there are approximately 600 billion barrels of oil in an oil field in the Taoudeni Basin, which straddles Northern Mali and Mauritania (Brownfield, Schenk, Klett, Tennyson, Pitman, Gaswirth, Le, Leathers-Miller, Mercier, Marra and Hawkins 2016). These estimates are based on a 2006 exploratory survey (Whaley 2008), so this information would have been available to the government when they were deciding to settle with the MNLA. Considering these facts, the repeated peace agreements between the government and MNLA are incredibly puzzling.

However, spatial context can also indicate that the MNLA was not likely to pose a significant threat to the government in the future. When a state signs a peace agreement with a rebel group, they are concerned about the possibility that the group may renege on

the deal. By extension, the state is worried they may have to fight *that* specific group again. Conflicts which reignite are likely to do so in places where they previously occurred (Daly 2012). The spatial context in which a war was fought influences the state's willingness to sign a given agreement because they know that they will likely have to fight the group in the same areas if the conflict reignites.

The spatial distribution of population directly impacts a group's ability to overcome the collective action problem and recruit supporters (Lichbach 1995). More geographically clustered populations are better able to engage in violent rebellion against the government (Raleigh and Hegre 2009). This suggests that the risk a state faces in reaching a negotiated settlement with a group is partly related to the settlement patterns of its supporters. If a state is concerned about having to fight a former rebel group again, it will take into account information on where the previous conflict took place.

Given the stickiness of conflict location over time, states might prefer to sign peace agreements in civil wars where the majority battles of battles occurred in sparsely populated areas. If new conflict is likely to occur at the site of previous conflict, states might choose to sign peace agreements with groups who will face higher barriers to collective action and thus be less able to mobilize for new conflict in the future.

The Northern Mali Conflict's repeated ceasefires fit this theoretical story well. Figure 7 presents a map of the population density of Mali in persons/km^2. The majority of the country's population is concentrated in the South, where the conflict never reached. Conversely, Northern Mali, where the majority of fighting occurred and the majority of Tuaregs live, is incredibly sparsely populated. The Tuareg rebels should face very high mobilization costs as a result. Although they were able to maintain a fighting force and attack the military after each broken ceasefire, they were never able to mobilize enough fighters to reach the kinds of success they enjoyed at the beginning of the conflict.

The failure of the MNLA to recapture its previous triumphs lends support to the idea that where a conflict is fought can influence a state's willingness to entertain negotiated settlements. While factors such as rebel group strength and international pressure surely matter, they cannot capture how a conflict is fought. Location influences rebel goals in the

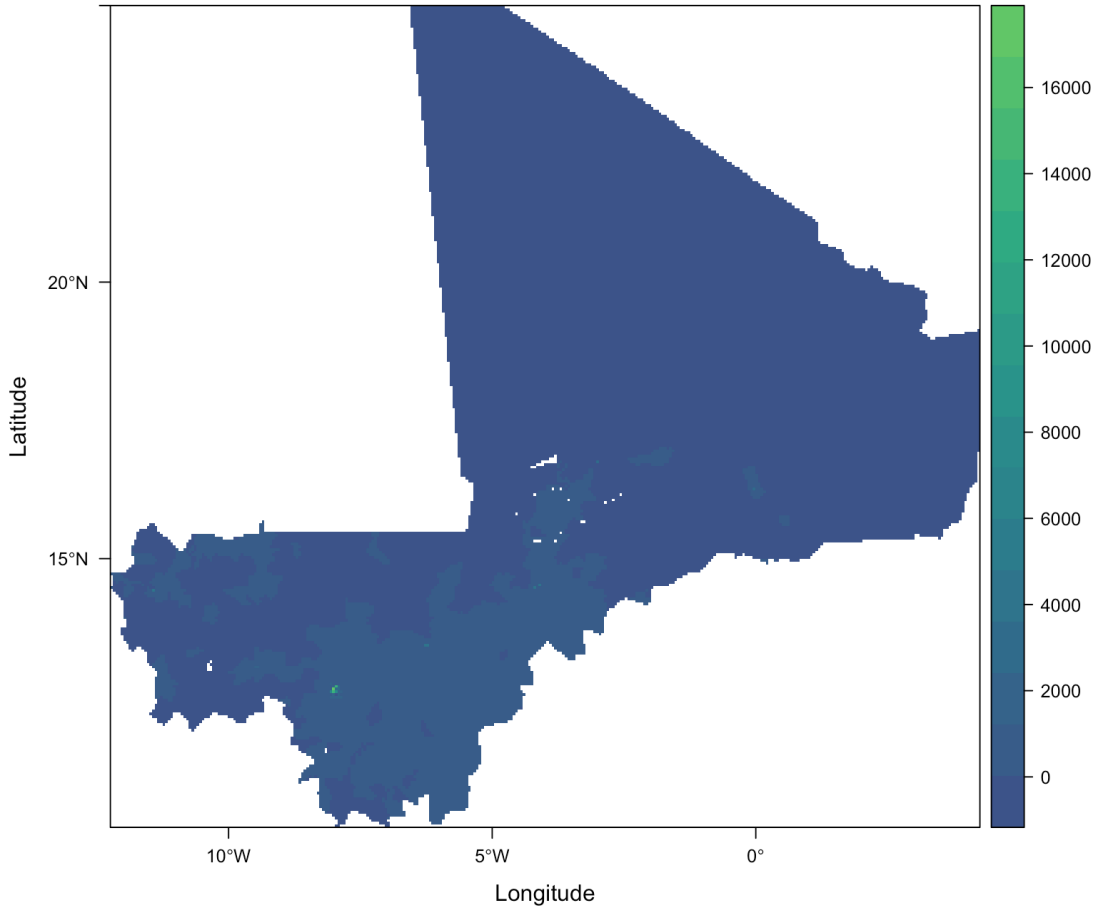


Fig. 7: Population Density of Mali, from Center for International Earth Science Information Network - CIESIN - Columbia University (2015)

moment, but it can also affect the state's long-term decision-making. The spatial context of where the conflict was fought affects how able a group will be to reignite the fighting, and in turn influences a state's decision to reach negotiated settlements.

Discussion

We know that rebel groups do not value all territories equally. The Nigerian case illustrates that rebels value territory based on both its spatial and political context. The captured cities in Western Nigeria were difficult to defend because of the single road connecting them. The rebels did not need to defend them because they were not part of the declared state of Biafra. Since they were not essential to the movement's political goals, Biafran forces gave them up with little resistance rather than expend lives and resources in a costly defense. The importance of political factors is similarly highlighted by the fact that a stronger group could have potentially overcome the territory's limitations and successfully defended it.

When new rebel groups form, they do not all emerge from the same surroundings. The Democratic Karen Benevolent Army has never been able to seriously threaten the government of Myanmar because of how the spatial context of their conflict interacts with their goals. They claim to represent Karen Buddhists, and so fight close to areas where large numbers of Karen live. However, because there is already an extant armed group filling this niche, they have been unsuccessful. Their potential base of support is already mobilized in support of another group, so they cannot find success in the areas their identity oriented goals naturally lead them to.

When states engage in civil wars, they learn about their opponents and use this information in their decisions over how to end a conflict. They hope to assess how likely a given rebel group is to uphold an agreement. Equally important is how threatening a group will be if they do not honor the deal. Mali was willing to sign multiple ceasefires and peace agreements with the Tuareg rebels because the conflict's theater suggested that the group would have a difficult time mobilizing against the state in the future. Since the conflict

happened in the country's sparsely populated North, any future rebellions would face high barriers to collective action due to the diffuse settlement pattern of the region. The spatial context of where the conflict was fought affected how the state tried to resolve it.

Each of these three cases offers insights that allow us to improve the way we think about the spatial characteristics of conflict. We need to understand how space influences rebel goals and not just how it helps or hinders their tactical capabilities.

Space influences rebel goals by constraining their available options. If rebels are not strong enough to secure and defend territory far from their base of power, they may take such territories only opportunistically. Similarly, certain types of transportation infrastructure make territory more or less easily defensible. If a city only has one road into town, then it is easy for attacking forces to cut if off and besiege the defenders. In contrast, in areas with many different roads to choose from, rebels have multiple options and can better withstand state attacks.

While current models have begun to embrace more realistic concepts of distance using road networks, they still do not actually model what a rebel group's goal is spatially. These models assume that if rebels could take any piece of territory, they would try to. Rebel groups have limited resources, and so they must make choices. The more nuanced conception of space advanced in this thesis suggests that groups may be more likely to try and take territory if it is near their already consolidated base of power, or conveys important benefits.

Space can constrain identity based groups due to the need to establish an area of control in regions where their ethnic group is predominant. We do not know if the opposite is true for ideologically motivated groups. If their motivation is not tied to an ethnic homeland, they might be able to continually move to threaten the state where it is weakest. This dichotomy might also apply to secessionist vs. center seeking groups. With an understanding of space as simply the distance between locations, we would not think about how differences in organizing principles between groups might lead them to exhibit different spatial patterns of conflict.

Similarly, a focus on distance neglects the fact that different locations have different spatial characteristics. Disparities in population density across areas can affect the ease

with which former rebel groups can re-mobilize people to once more challenge the state. We need to look at the implications of these spatial differences across space and not merely treat them as something to control for. We must also look at the differences in the value of territory.

The interaction between space and strategic decision-making in these three case studies highlight a number of new questions we can ask about the role of space in conflict. In doing so, we can overcome the idea of space as simply the distance between events. In addition to engaging with the spatial conflict literature, these inquiries also speak to numerous substantive areas within conflict research. By focusing on the connection between space and strategic rebel goals, rather than tactical choices, we can ask several new questions that would not occur to us without this improved understanding of space.

Does the location of where a group first fights the state influence its chances of growing into a serious threat to the state? Does this initial context shape the group's eventual political goal? If spatial context can constrain what groups can achieve, could groups limit their goals to what they might realistically accomplish? This process might determine whether a group seeks to secede or merely win more autonomy from the central government.

Does the distance from a group's base of power to a resource influence whether the group will attempt to capture and exploit that resource, or merely deny it to its opponents? Groups have the choice of trying to exploit and monetize resources, or they can simply occupy them to prevent the state from reaping their rewards. The farther from a group's territory a resource is, the more difficult it is to reinforce defenders and transport the resource back to friendly territory. By integrating this spatial dimension, we may better explain which choice groups make than models that focus on group level attributes.

Similarly, does the distance from a group's base of power to a piece of captured territory affect the group's willingness to cede it back to the state? If states know that rebels in far flung territories can be dislodged without much of a fight, then they may focus on defeating the rebels closer to their base of power. We may be better able to explain state responses to rebel attacks if we can estimate which gains are strategic and which are tactical. In other words, if we can tell when rebels intend to keep territory or are willing to retreat when

threatened we may be better able to understand other decisions they make.

Is state willingness to reach negotiated settlements affected by the remobilization costs faced by armed groups in the event that they renege? Does the difficulty of monitoring and enforcing a peace agreement increase as groups grow more remote? The Northern Mali case suggests that states may be willing to reach negotiated settlements if conflicts are fought in area of low population concentration where rebels will face high collective action costs. This could explain puzzling cases where states reach settlements even if the likelihood of agreement failure is high. By explicitly incorporating information about the characteristics of where conflicts happen, we can move beyond simply measuring how far from the capital a conflict occurs.

Each of these research questions attempts to move past our current understanding of space as the distance between events. In doing so, they contribute to the construction of a new conception of the role of space in conflict. This new approach requires that we stop thinking about space as a variable, and begin thinking about the spatial distribution of variables.[7] To ask how space influences political phenomena, we need to look at the geographic distribution of politically relevant variables. To demonstrate how we can approach this task, I use the following section to sketch out a theory of the relationship between initial spatial conditions and rebel group success. Each of the other research questions presented above can similarly be the source of a new theory that relates spatial context to strategic decision-making and conflict progression.

Initial Spatial Conditions and Rebel Group Success

Merely being able to ask questions is not of significant value to us as scientists if we cannot feasibly answer them as well. To that end, I lay out a research agenda which emerges from one of the broad questions presented earlier. Does the location of where a group first fights the state influence its chances of growing into a serious threat to the state? Drawing on existing work in political science, I generate a preliminary theory of the relationship

[7] I thank Tim McKeown for this succinct summation of my goal in this project.

between initial spatial conditions and group success. From this theory, I develop focused research questions and discuss specific strategies for answering them using existing data sources.

Although exploring the effect of initial conditions at the micro level on violent armed group success is a new project, other studies have addressed similar issues. The lasting impact of state formation can have considerable long-term consequences for states' eventual effectiveness and performance. States with more 'legitimate' births such as violent secession are likely to be more capable than those with less legitimate births such as externally decided partition (Lemke and Carter 2016). State formation events centuries ago can still have an impact on state success today, demonstrating the outsize effect initial conditions can have on overall trajectory.

While this section is primarily concerned with addressing the relationship between initial conditions and rebel success, there may also be a similar relationship between initial spatial conditions and rebel goals. At the more macro level, rebel goals can be explained by state capacity, with stronger states facing secessionist movements and weaker ones confronting center-seeking opposition (Buhaug 2006). Initial spatial conditions in the location where a group emerges can affect their strength relative to the state. If this mechanism might affect a group's chances of progressing into a serious threat to the state, it could also potentially influence a group's choice of goal.

I discuss three initial spatial conditions that can influence a group's trajectory as an armed opposition movement, but it's highly possible that other factors may play a similar role as well. The first, population density, affects how easily groups can mobilize fighters and supporters from the surrounding pool of available population. The second, resource distribution, affects how able groups are to secure the capital necessary to finance heavy military equipment needed to challenge the state. The third, transportation infrastructure, affects how easy terrain is to attack or defend which can influence whether a group can withstand the state's counterattack. To develop my arguments about these relationships I draw on findings from the conflict literature as well as insights from the case studies discussed earlier.

The geographic distribution of population directly affects how able armed groups are to mobilize supporters. More concentrated ethnic groups are, *ceteris parabus*, more likely to form opposition movements and violently challenge the state (Weidmann 2009). As populations grow more dispersed, coordination costs increase and the barriers to collective action become higher (Lichbach 1995). This relationship persists beyond the initial hurdles that plague group formation. Within ongoing conflicts, there is an extremely strong relationship between the population at a location and the probability that this location experiences an event of armed conflict (Raleigh and Hegre 2009; Zhukov 2012; Braithwaite and Johnson 2015), indicating that similar mechanisms can affect the ability of group's to organize and carry out attacks in specific areas.

The Biafrans were able to mount a serious challenge to the state because their home territory was densely populated, allowing for the easier recruitment of fighters. Although much weaker than the state, they were able to drag the conflict out for a long time because their dense population made it easier for the group to find new fighters to reinforce battlefield losses. Conversely, the Tuaregs have been unable to credibly threaten the state after any of their broken peace agreements because they operate in territory with incredibly dispersed population, hindering their ability to mobilize fighters for each fresh offensive.

These findings indicate two ways in which initial spatial conditions can affect long-term groups success or failure. If a movement begins in a densely populated area, its initial fighting force will likely be larger due to lower recruitment costs. As the conflict continues, it should be able to more easily draw reinforcements for lost fighters from the same population due to the lower barriers to individual level mobilization. Similarly, if population distribution affects how able groups are to plan and execute military operations, these actions should be easier to accomplish in more densely populated areas, allowing groups to better defend against the state's attacks.

The location and distribution of resources is hugely important to the ability of rebel groups to thrive or their failure to do so. At the conflict level, the location of resources has a significant impact on conflict behavior. The presence of natural resources can double the length of a conflict by raising the stakes and providing more financial resources to

rebel movements. Crucially, this increased conflict time only occurs when the resources are located in the area of a country actually under contestation (Lujala 2010), suggesting that resources influence conflict trajectory by providing operational funding today and not through the promise of increased wealth tomorrow. Although the Biafrans were unable to exploit their oil holdings due to the capture of the coastal terminal facilities, they initially planned to use the revenues to support their war effort. The Tuareg rebels were unable to utilize any of the oil in Northern Mali because the reserves were not active and producing.

Other studies demonstrate that we need to move beyond thinking about the spatial distribution of specific resources and to think about the distribution of wealth or economic activity more broadly. Kuhn and Weidmann (2015) demonstrate that as within group inequality increases, it becomes easier for rebel movements to mobilize fighters due to their lowered opportunity costs. However, this does not address the role of absolute within group wealth. How does the amount of economic activity in an area that rebels can extract rents from influence their ability to equip their fighters?

These factors could shape the eventual trajectory of a group. If an opposition movement emerges in a relatively wealthy territory, then it will have more economic resources to draw on. Conversely, a group that emerges in a poor area will not have as much capital to use on necessary expenditures such as arms, fuel, food, or medical supplies. Groups which can draw on extensive resources should be able to better resist state attacks because they should possess more well equipped fighting forces. Similarly, if a group's home territory contains extensive natural resource wealth, then it can continue to use these revenues to fund its campaign against the state. Accordingly, any single defeat on the battlefield should be less damaging than to less well endowed groups which cannot as easily replace losses. Rebels can only exploit resources if they control them and can exclude the state, and this is most easily accomplished in the group's initial stronghold. Consequently, groups which begin with significant resource endowments, whether they are extractive natural resources or a developed tax base, should be more robust to shocks provided by individual incidents of state response.

The transportation infrastructure in an area directly affects how easy it is for armed

groups to operate. Military historians have written extensively about the importance of transportation in determining success or defeat on the battlefield for conventional armies (Turner 1953; Sinclair 1992; Jones 1996; Van Creveld 2004). These authors discuss the role of transportation infrastructure both at the level of individual engagements and entire conflicts. Good transportation is essential to victory because it allows armies to move fighters and equipment with great ease, enabling them to launch offensives at the opportune moments and quickly react to defend against enemy attacks. Present day military planners continue to emphasize the importance of transportation networks in shaping the chances of combat success (McEvoy 2014). In contrast to early conventional wisdom, recent work has shown that insurgents do not 'live off the land' and move freely throughout the territory of a conflict. Instead, they are constrained by the existing transportation network and utilize established roads to move fighters and transport supplies (Zhukov 2012). As such, rebel groups are largely subject to the same transportation limitations as formal armies.

The Biafrans were able to defend their territory for so long against a superior state force because it possessed an excellent transportation network including a rail line, Conversely, the DKBA and Tuareg rebels operated in their respective countrysides which featured comparatively less well developed transportation systems. They could not as easily defend their territory against state responses.

Given the significant impact of roads on rebel combat effectiveness, the nature of the transportation infrastructure where a group emerges should have a lasting impact on the group's fortunes. Groups with well connected and maintained road systems should be able to more quickly prepare and equip fighting forces for attacks against the state. Similarly, they should be able to better defend themselves against state attacks due to the ease of moving forces within their territory. In contrast, groups in poorly connected areas will be more vulnerable to state reprisals because they will be less able to mobilize their forces and move them where they are needed most.

Other factors beyond just anthropogenic transportation networks can effect how easy it is for rebel fighters to move. Rough terrain such as steep hills, deep canyons, or fast flowing rivers can influence how long movement from one location to another takes. These other

factors need to be taken into account as well. All of these elements combine to influence how quickly rebel groups and state militaries can move between areas, which determines how ease of movement affects chances of success or failure. By examining the role that movement plays in the initial stages of a conflict, we may finally be able to find systematic evidence of the role that rough terrain plays in civil war dynamics (Buhaug, Gates and Lujala 2009, 563).

The experience of the Biafrans also suggests that we need to look at not only the immediate transportation infrastructure but also the surrounding infrastructure and the difference between the two. They were able to withstand the Nigerian military's superior forces because Biafra possessed excellent roads which allowed their fighters to easily move to counter the latest attack. Conversely, the surrounding territory suffered from especially poor roads, making the movement and supply of troops exceedingly difficult for the military. Similarly, the Malian military had difficulty dislodging MNLA fighters from several towns due to the relatively few roads connecting them, making their troops movements easy targets for rebel attack. A complete theory of spatial context will need to address the effect of differences in spatial context between rebel location and their surroundings.

These brief theories of initial spatial conditions and long-term rebel group success can be focused into three research questions:

1. Does the distribution of population in the area where an armed group emerges affect its ability to form an effective opposition movement?

2. Do the type and amount of resources in the area where an armed group emerges affect its ability to form an effective opposition movement?

3. Do differences in transportation infrastructure and ease of movement in the area where an armed group emerges affect its ability to form an effective opposition movement?

Preliminary Research Design

All three of these questions can be tested using existing data and methods available to scholars of conflict. We know that conflicts which begin farther from the state tend to last longer (Buhaug, Gates and Lujala 2009), but by investigating the role of spatial conditions in the immediate area where a conflict begins, we can vastly expand our knowledge of the role that space plays in conflict. For each question, we need some measure of the relevant explanatory variable in the area where a group initially begins its campaign of violence against the state, and a measure of how dangerous the group eventually becomes. The first requires us to identify where a group begins and the latter requires some way to capture how successful a group ultimately is.

Determining where a rebel group begins its conflict against the state can be accomplished by using a conflict event dataset and simply recording the location of the first several events in a conflict. Whether we operationalize this by choosing the first x events or some percentage of total events, the end result is that we can identify the area encompassed by these initial battles. Using a dataset such as the UCDP GED (Sundberg and Melander 2013) has particular advantages when it comes to measuring the response variable. The GED uses the same group identifiers as the UCDP ACD (Gleditsch et al. 2002), which means that the Non-State Actor (NSA) data (Cunningham, Gleditsch and Salehyan 2009) can also be easily included. These latter two data sources allow us to operationalize success by measuring either conflict duration or outcome and group fighting strength. Since the data are time invariant, they typically record information on groups at their peak, making this a useful data source for measuring how dangerous a group eventually becomes.

Once the starting area of a group is determined, we can easily measure the relevant explanatory variables for each of the research questions. Population density information can be obtained from global population datasets derived from the aggregation and integration of various subnational censuses such as the Gridded Population of the World (GPW) project (Center for International Earth Science Information Network - CIESIN - Columbia University 2015). Resources and economic activity can be measured using datasets on the location of specific resources such as diamonds (Gilmore, Gleditsch, Lujala and Rod

2005) and oil (Lujala, Rod and Thieme 2007). Transportation infrastructure can be measured using datasets that combine national road network information into a global dataset (Center for International Earth Science Information Network - CIESIN - Columbia University; Information Technology Outreach Services - ITOS - University of Georgia 2013). The spatial starting characteristics of each group can then be included in analyses of their ultimate success, measured as either the conflict's duration or categorical information on group characteristics.

While the need for additional controls will certainly arise when fully developing this research design, some initial ones are easy to identify. The location of natural resources may be strongly correlated with general economic activity and development. These resources frequently require specific infrastructures to be exploited, so the local economy may benefit from these efforts. If we do not control for overall levels of economic activity in a rebel group's starting area, we may simply capture the effect of economics and not resources. Initial efforts are underway to use satellite imagery of night time light emissions as a rough measure of economic activity on a global scale (Kuhn and Weidmann 2015; National Geophysical Data Center 2014). While a coarse measure, these nightlights data appear to be accurate enough to judge levels of economic activity cross-nationally (Weidmann and Schutte 2016). Using these data, we can control for levels of economic activity in a rebel group's starting region and separate out the effect of natural resources. Similarly, we should control for distance from a location to the capital as states are more able to fight rebel groups when they are located near sources of state power (Buhaug, Gates and Lujala 2009).

Beyond the standard need to control for confounding factors, there is one larger threat to inference that must be addressed. If each of these three factors affects how easy it is for a group to become successful and challenge the state, then there will likely be a selection effect of where rebel groups emerge. If densely populated areas lower the collective action barrier to recruiting new fighters, then potential groups may never be able to pass this threshold in extremely sparsely populated areas. Similarly, in areas with no resource wealth to speak of, the leaders of an incipient rebellion may not be able to acquire the necessary

weapons or attract supporters.

There may be a dearth of rebel groups that emerge in unsuitable areas, making any statistical results subject to small sample bias. Even in cases where groups *do* manage to mobilize in suboptimal locations, their actions may be misclassified as terrorism as low intensity or abortive rebellions often are (Sambanis 2004). The failure to correctly identify these incidents means that they will be excluded from datasets of civil war violence, even those that do not use a battle-deaths threshold, potentially biasing our findings. Accordingly, attempts to answer these research questions should avoid making any conclusions about cases – real or theoretical – at the extreme lower bound of these factors.

While this likely selection effect poses a challenge to our efforts, it also offers opportunities to improve our understanding of space and conflict. Rebel groups are most likely to emerge in geographically remote areas far removed from the sources of state power (Buhaug 2010). We observe this phenomenon because potential rebels are aware that state power declines with distance, and so they choose not to form organized opposition movements in areas where the state can easily crush their nascent movement. A similar effect is probably at work with differences in local spatial context. A first cut at this relationship can test how well the factors identified above – population density, access to resources, and ease of movement – predict rebel group emergence. If locations which contain favorable spatial conditions for rebel groups experience more rebel group emergence, this would support the theory and could provide insight for variables to include in a potential selection model.

If spatial factors affect where groups are likely to emerge, this suggests the potential for strategic interaction. If a state knows of the existence of a dissatisfied group in an area particularly conducive to fighting a civil war, then the state may be willing to grant concessions to the group to avoid conflict. Conversely, an aggrieved group in an area especially ill-suited to fighting a civil war may decide not to take the path of armed resistance because of its expected failure. Conflict may thus counterintuitively be most likely in locations that are only moderately suited to fighting. Game theoretic modeling is particularly suited to exploring this potentially nonlinear relationship, and future work should formalize this interaction.

In addition to advancing the spatial conflict research agenda, these research questions

also speak to multiple other substantive areas of conflict research. They can help add to the literature on rebel group formation and organizational structure (Weinstein 2005; **?**) by allowing us to ask how spatial context can affect group formation. Additionally, operationalizing a group's beginning based on its first attacks allows us to include non-ethnic groups in studies of conflict onset. While it is still difficult to track these groups before the decision to turn to violence, these approaches could allow us to better understand the forces at play in the immediate aftermath of that decision.

These research questions also engage with the natural resources literature in conflict studies. This work has tended to be at the national or provincial level (Staniland 2012; Rustad and Binningsbø 2012; Koubi, Spilker, Böhmelt and Bernauer 2014), and so these questions allow us to address this topic at an even smaller level. The location of resources *vis à vis* the starting position of rebel groups could provide a mechanism that moderates the relationship between natural resources and conflict duration, giving us a more nuanced explanation than we currently possess.

Finally, these questions also contribute to the emerging spatial conflict outcome research agenda. Thus far, this work has tended to use measures of distance between the centers of state power and a conflict to explain outcomes (Buhaug, Gates and Lujala 2009; Schutte 2015; Minhas and Radford 2016). Relative strength in state rebel dyads is a strong predictor of conflict outcome (Cunningham, Gleditsch and Salehyan 2009), and if the spatial environment that a group emerges into has an effect on its chances of evolving into a capable movement, then it may also influence its chances of emerging victorious. Studying the spatial context of a rebel group's initial location offers a new way to conceptualize the relationship between space and conflict outcomes.

In effect, each of these three questions is one aspect of assessing the 'quality' of a group's starting location, and how this quality plays into the group's eventual trajectory of success or failure. If these initial factors do indeed play a serious role in a group's chances, then our current failure to include them in analyses of duration and outcome represents a serious omission. However, if this theory of geographic quality is accurate, then this introduces a complication into our analysis. The maximum strength that a rebel group can

achieve is partly the result of strategic interaction. Rebels often require the neglect of the state to grow their movements; if the state wanted to, it is often easily able to crush any rebellion in its early stages. Thus, if the quality of space does affect how effective rebels can become, then states will be cognizant of this and may move faster and more decisively against groups which emerge in favorable locations.

If the quality of the location where a group begins influences its ability to challenge the state and sustain a violent campaign for extended periods of time, then this also suggests that initial spatial conditions may present commitment problems for rebel groups. If rebels enjoy an initial location conducive to mobilizing fighters and rebelling state advances, then they can reasonably expect to continue growing in power over time due to the security of their home territory. Similarly, if the group can extract significant economic rents from its core territory it will likely only grow more powerful with time. In such a situation, states will be less willing to sign peace agreements because the group may continue growing in power and seek to renegotiate the deal further down the road. Others have begun to advance the idea of such a spatially based commitment problem in the interstate rivalry context (Rider and Owsiak 2015), but there has been comparatively little attention to the intrastate situation.

Both of these issues are driven by concerns over future shifts in power between the state and newly minted rebel groups. In the former, states potentially react differently to otherwise similar groups in different locations because of concerns that they will become too powerful to defeat in the future. In the latter, states may be differently willing to sign peace agreements with otherwise similar groups in different locations based on concerns that rebels will renege on the deal in the future. These dynamics suggest that beyond this initial empirical approach, future work should employ formal modeling to better understand how the implications of the nature of space fit into the strategic interaction between governments and rebels.

While there are issues that must be addressed in the course answering these questions, they are not insurmountable. In doing so, we will gain a powerful new source of explanation for why some rebel groups manage to become significant movements that can actually

threaten states while others languish in obscurity and never pose a serious challenge.

Conclusion

Traditional country-year studies leave countless 'on the ground' phenomena out of their analysis. Conversely, the emerging spatial conflict literature has largely overshot the target. By excluding any larger scale information from their investigation, this work is forced to make many naive assumptions. Models which include both levels of analysis can help us make more realistic and theory driven assumptions.

Case studies demonstrate how spatial factors at multiple levels of analysis can combine to shape the direction and outcomes of conflicts. They show the importance of including both micro and macro level forces and developing theory that bridges this gap. A better understanding of the role of spatial context must draw on both factors.

This review of existing work and exploration of specific case studies demonstrates that notions of space can contribute much more to our understanding of conflict than they currently do. By moving beyond a limited conception of space as merely the distance between locations, we can begin to investigate a whole new avenue of potential explanations for rebel group decision-making.

This new understanding of space leads to several novel questions about the role of space in conflict. These lines of inquiry connect the strategic decision-making of rebel movements with the spatial contexts that they inhabit. The preliminary research design in the preceding section demonstrates how differences in spatial environments can constrain or bolster the organizational and fighting capabilities of rebel movements. In doing so, this research engages with the existing rebel group formation and organizational dynamics literature. It also offers the possibility of new approaches to empirically testing implications of bargaining theory. If differences in space can lead to shifts in power over time, we should be able to observe these shifts affecting the decisions of states.

This preliminary theory also has many potential broader implications for our understanding of conflict. If the spatial context of a locale does influence chances of rebel group

success or failure, then studies which utilize solely group level explanations or the interaction between group and state level factors are missing part of the puzzle. By including a measure of the 'quality' of space where a group emerges, we can reduce omitted variable bias in studies of rebel group formation and evolution.

Similarly, a spatial context approach to rebel group emergence can build upon current research to offer substantial improvements in our understanding of rebel group formation. Many studies argue that the character of rebel groups can be partially explained by the form of their organization *before* the turn to violence (Bakke, Cunningham and Seymour 2012; Staniland 2012). However, the difficulty in identifying groups which are potential rebels that never make the decision to use violence has led many studies to use the pre-violence attributes of violent groups to explain their turn to violence. This risks selecting on the dependent variable because it does not take into account the organizational attributes of groups which do not turn violent or those that embrace violence but fail to achieve any success. Other studies of onset rely on ethnic groups because they are 'pre-made' organizations which offer a universe of potential groups (Cederman, Buhaug and Rød 2009; Weidmann 2009; Kuhn and Weidmann 2015). Unfortunately, this approach omits all non-ethnic sources of potential rebel groups, potentially biasing our results or leading us to generalize from conclusions which are only applicable to ethnic rebel groups. The reliance on ethnicity in studies of rebel group emergence may reflect the difficulty in measuring group level attributes, as even the most comprehensive collection of group level data to date (Cunningham, Gleditsch and Salehyan 2009) is time-invariant.

A spatial context study of rebel emergence can overcome these barriers by shifting the unit of analysis from the group to the territory. Instead of trying to identify all organized groups of people in a state, we can measure the quality of all areas within the state using spatial factors such as population density or resource availability. While this strategy makes the inclusion of group level factors more difficult, it offsets this shortcoming by offering us a complete universe of cases. Additionally, it answers the call by Daly (2012) to collect "geographically disaggregated data . . . on both the incidence of insurgency and the factors predicted to cause it," allowing us to use local data to explain local conflict onset. Finally,

geographic factors are considerably more 'sticky' in time, so even if our measurements of them are not time-variant, they will more closely reflect their 'true' values than group level data.

We can explore the relationship between location quality and emergence by asking how these measures of quality at a location are associated with the probability that a new rebel group fights its first battles in that location. In doing so, we will reach more robust conclusions about the factors that shape rebel group formation because this approach does not limit itself to a specific type of rebel movement. Once we understand these effects, we can control for them and better understand how the quality of a rebel group's starting location affects its chances of becoming a successful organization. After initially focusing on the spatial aspect, we can then reintroduce more conventional political explanations into models of group formation and progression that account for both political and spatial factors. None of these improvements would be possible under the current conception of space as simply the distance between events. The strategic implications that drive this research agenda arise from a spatial context framework's conception of the role of space in conflict.

By developing a more accurate understanding of the connection between space and rebel capability, we can specify more complete models when investigating other phenomena. Fostering a more complete understanding of rebel emergence will allow us to strengthen our theories of rebel group evolution. Similarly, we can now ask new questions about how space shapes the progression and outcome of conflict, not just their beginnings. Additionally, spatial measures of location quality can potentially offer us new ways to test theories of commitment problems which are often difficult to empirically evaluate. This approach enables us to explore rebel group emergence using a more complete universe of potential cases than current research does. By tackling these projects, we will discover numerous other ways that space can shape the strategic choices and actions of conflict actors. Space is not just a nuisance that moderates exogenous political factors, it directly influences those same factors and can alter how they develop and interact.

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