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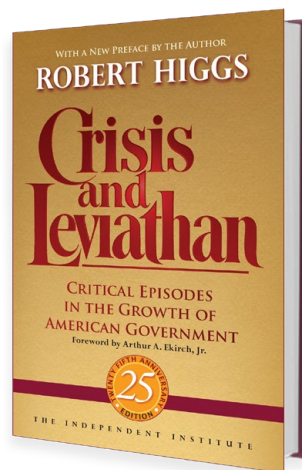
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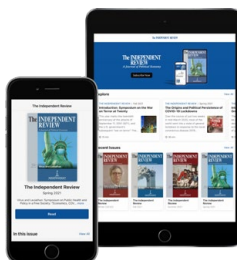
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# Polycentric Defense

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**E**conomic discussions of defense typically focus on the provision of security at the national level against external threats. Taking “the nation” as the relevant unit of analysis, economists model defense as a good that is jointly consumed, nonexcludable, and nonrival over a significant geographic space. This assumption leads to the conclusion that defense cannot be sufficiently provided privately due to free-riding issues and therefore must be supplied by a national government. What if, however, we shift our focus from “the nation” as the relevant unit of analysis of defense provision to more narrow and nuanced units? The purpose of this paper is to answer this question. The orthodox treatment of defense as a pure public good that must be provided by a centralized state suffers from three key issues.

First, it neglects the reality that many threats and therefore the defense against these threats do not affect everyone in a nation. For example, foreign invasions often target a specific area within a country. When Russia invaded and annexed the Crimean Peninsula, for instance, the Russian government was not threatening to conquer all of Ukraine. As another example, consider that terrorist acts are typically highly local in nature. If, for instance, a major city within a nation is the target of a dirty-bomb threat, it is inappropriate from the standpoint of economic analysis to treat this threat as affecting “the nation” as a whole. This is not to deny that there could be threats that affect all members of a nation. It is instead to recognize that in practice most threats have externalities that are localized relative to the nation a whole. A full appreciation of defense, therefore, requires moving beyond “the nation” as the default unit of analysis.

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Second, the orthodox treatment of defense overlooks the incompleteness of the state provision of defense, which is the result of several dynamics. One is that state efforts suffer from the well-known preference-revelation problem of determining the optimal quality and quantity of public goods. In addition, the state provision of defense suffers from a range of public-choice issues—for example, rent seeking, rent extraction, bureaucratic dysfunctions—that make the provision of security highly imperfect in practice (see Coyne and Hall 2019). Moreover, in many instances states are simply incapable of providing defense to citizens due to inadequate capacity or perverse incentives. In the face of incomplete provision of security by centralized nation-states, there is an important role for a variety of actors to play in supplying defense.

Finally, the orthodox treatment of defense assumes that the state providing defense is purely protective, meaning it does not violate the rights of its citizens. In reality, however, the state can and does use its powers to threaten the well-being of the citizens it is tasked with defending (see Coyne 2015). Under this scenario, the domestic state is an internal threat to citizens. The orthodox treatment of defense treats all threats as external and assumes away the paradox of government fundamental to constitutional political economy. As such, it has limited explanatory power in scenarios where these conditions do not hold and where people face genuine internal threats from state power.

We address these issues by moving institutional context to the foreground. Rather than assuming that defense is in all instances a public good for the nation, we argue that the specific nature of the good depends on its institutional context. Goods that are considered part of defense are often associated with diverse scales of externalities. These goods can, therefore, be produced by diverse centers of decision making that operate at multiple scales rather than simply by a monocentric nation-state. Indeed, in practice, defense-related goods have historically been provided by a polycentric archipelago of public, private, and civil society organizations.

Our analysis bridges two literatures—the orthodox economic treatment of defense and the Bloomington School research program on polycentric systems of governance and social cooperation. As noted, economists typically model defense as a pure public good that must be provided by a monocentric authority. We leverage the insights of Elinor Ostrom and Vincent Ostrom and of the Bloomington School of institutional analysis based on their research (see Aligica and Boettke 2009; Tarko 2017; Boettke 2018; Aligica, Boettke, and Tarko 2019) to challenge the general applicability of the orthodox view of defense. Scholars in the Bloomington tradition have studied polycentricity in diverse arenas, including competitive market economies (V. Ostrom 1999, 2014, 49–58), scientific inquiry, federalism (V. Ostrom 1991, 1999, 2014, 49–58), common-pool resource conservation (E. Ostrom 1990), municipal policing (Ishak 1972; E. Ostrom, Parks, and Whitaker 1973; E. Ostrom et al. 1973; E. Ostrom and Whitaker 1974; Rogers and Lipsey 1974; Parks 1979; Boettke, Palagashvili, and Lemke 2013; Boettke, Lemke, and Palagashvili 2016; Goodman 2017), education (E. Ostrom 1996), social capital networks (Craig and Goodman 2019), and responses to climate change (E. Ostrom 2009). Vincent Ostrom briefly examines international order as a

polycentric system and the implications this has for peace and defense (1991, 240–43). However, existing scholarship has largely neglected extending polycentricity to the provision of defense.<sup>1</sup>

We proceed as follows. The first section contrasts the orthodox public-goods theory of defense with the polycentric alternative. The second section illustrates the prevalence of polycentric defense with a sample of real-world examples. And the third section concludes.

## Theoretical Considerations

To understand the orthodox model of defense, one must start with Paul Samuelson (1954, 1955), who divided goods into two types: private goods and public goods. Private goods are excludable and rivalrous, whereas public goods are nonexcludable and nonrivalrous. Since Samuelson, national defense has been given as an archetypal example of a public good (see Coyne and Lucas 2016). Defense is asserted to be nonexcludable because it is very difficult to defend me from a missile strike or an invasion without defending my neighbor. Similarly, one person in a territory being protected does not tend to deplete security for other residents, and defense is therefore assumed to be nonrivalrous.

Since Samuelson wrote his seminal paper, however, various nuances have been introduced to the theory of public goods. New types of goods—for example, club goods and common-pool resources—have been introduced, and institutional context has become far more important to our understanding of the nature of goods (see, for instance, Buchanan 1965; E. Ostrom and V. Ostrom 1977; Cowen 1985; E. Ostrom 2009). These theoretical and empirical developments require rethinking national defense provision on two margins. First, defense should not always be considered a pure public good. Second, defense being a public good does not automatically imply that it requires state provision, because under certain conditions private individuals can come together to provide defense just like private individuals are able to come together to resolve the tragedy of the commons despite theoretical predictions to the contrary (see E. Ostrom 2009).

This reconsideration of defense begins with a deep appreciation of how both the institutional context within which a good is provided and the scale at which it is consumed shape the nature of the good. As Tyler Cowen points out, “Nearly every good can be classified as either public or private depending upon the institutional framework surrounding the good and the conditions of the good’s production” (1985,

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1. One notable exception is Michael Makovi (2017), who, following Coyne 2015, argues that national defense is not a public good. Makovi contends that a polycentric system would allow military providers to discover the appropriate scale of production. Our paper complements his analysis by offering detail on the benefits of polycentric defense as well as empirical examples.

53). This means that when the surrounding institutional context is varied, a good associated with defense can be more or less public in nature.

Consider the provision of missile defense (see Cowen 1985; Hummel 1990; Hummel and Lavoie 1994). The orthodox view is that missile defense is a public good. It is nonrival because defending someone from a missile attack does not make her neighbors more vulnerable to a missile attack. It is nonexcludable because defending a city from a missile attack does not permit singling out particular houses in the city limits and leaving them vulnerable. An appreciation of institutional context, however, suggests that these features of missile defense are not immutable.

If the marginal unit of national defense is the entire U.S. missile defense system, that unit may be nonexcludable and nonrival at the national level. However, a single antiballistic missile is rivalrous in that it cannot protect New York City and Los Angeles simultaneously. Once missile defense becomes rivalrous, it is no longer a public good. It is at that point either a common-pool resource or a private good, depending on the costs of exclusion, which also depend on the institutional context. For instance, a bomb shelter that is administered by a private club can exclude nonmembers. This means that the missile defense service the club provides is either a private good or a club good, depending on the number of users. The use of antiballistic missiles can also vary in excludability. The reason for this goes back in part to the marginal unit. It is relatively costly to exclude one house within a city block from protection by a missile defense system. It is far easier to exclude San Francisco from protection by a missile defense system that defends New York.

The available technology also affects a good's excludability. Consider that today acts of terrorism carried out by individuals or nonstate networks are a more salient national security threat than missile strikes by a nation-state. The technology and institutions used for counterterrorism have significantly greater excludability and rivalry than even antiballistic missile defense systems. For instance, body scanners, searches, and metal detectors are often used to prevent individuals from bringing weapons into events or buildings that terrorists might wish to target. This type of screening is excludable. Providing this security screening for one building or event does not provide it for another building or event. It is also rivalrous. A metal detector that is used in one building cannot simultaneously be used in another.

These various examples illustrate that defense's status as a public good is far less solid than economists commonly assert. However, even in contexts where defense more closely resembles a Samuelsonian public good, that does not necessarily imply that the good must be provided at a single scale. Public goods differ in the scale of the externalities involved. For instance, a municipal police force provides benefits in terms of crime prevention that have public-good characteristics within the municipality. However, once we travel beyond the jurisdiction of that municipality, these public-good characteristics quickly disappear because the city's police are not providing goods to those outside the geographic purview of their authority.

Appreciating geographic context matters because the orthodox view of defense assumes that national defense involves externalities at the scale of the entire nation-state

and therefore must be provided at the national level. However, this presumption requires homogenizing defense into a single public good with a single scale—“the nation.” In practice, however, defense is not a single good. Defending a marathon from a terrorist attack is distinct from defending a city from a missile attack. Both are distinct from defending a nation-state from a ground invasion by soldiers or from citizens defending themselves against an authoritarian despot. Each one involves different scales of externalities. Given these distinctions, the polycentric provision of defense, in which multiple independent decision-making units direct the delivery of security at various scales, requires serious consideration. Polycentric defense offers several benefits.

First, decentralized decision making allows actors to take advantage of local, context-specific information in a relatively rapid manner. A key aspect of defense is that it requires coproduction to be effectively supplied. The term *coproduction* refers to direct input and participation by consumers who are actively involved in the effective supply of the good (E. Ostrom 1996; Aligica and Tarko 2013). Many goods do not require coproduction. For example, a pencil does not require any direct input from consumers to be produced. For these goods, there is a neat separation between consumption and production. For other goods, however, coproduction is essential. Education is one example. A student will learn little from a class if that student does not put in the required work to coproduce the desired outcome.

Effective security requires active coproduction on the part of the citizenry. Citizens cannot entirely outsource security provision to specialized professionals in the military, police forces, or private security firms. They contribute to security provision in a variety of ways, such as locking their doors, deterring and reporting crimes or other security threats, reinforcing social norms that deter violence, and serving on juries (Goodman 2017). As Jane Jacobs (1961) noted many years ago, citizens walking around communities throughout their daily business often deter violence simply by serving as “eyes on the street.” Polycentric governance encourages citizen coproduction by aligning governance with community norms, incorporating local knowledge, and promoting social trust within the community.

Examples of this dynamic were evident both in the unfolding of the attacks in the United States on September 11, 2001 (9/11), and in their aftermath. As the attacks unfolded, the monocentric U.S. federal government’s national security state struggled to mobilize resources in an effective and timely manner. In contrast, the private citizens on Flight 93 were able to efficiently coordinate and mobilize to stop the terrorists from striking their intended target (see Scarry 2002). In the post-9/11 period, private citizens have successfully thwarted and resisted the Underwear Bomber in 2009 and the Shoe Bomber in 2001. In each of these cases, the proximity of private citizens to the would-be terrorists gave them local knowledge of the situation and the ability to respond quickly relative to the monocentric alternative.

Second, polycentric defense permits greater competition, experimentation, and flexibility compared to monocentric control. A polycentric environment introduces multiple margins of competition and therefore creates incentives for entrepreneurs to

serve the desires of those who consume public and collective goods. When citizens have the power to vote with their feet and to compare services offered by different providers whose jurisdictions overlap, this generates better incentives and knowledge about citizen preferences. A polycentric institutional context is therefore crucial for encouraging productive entrepreneurship in place of unproductive or destructive entrepreneurship. As Elinor Ostrom points out, the “modified form of competition—of vying for citizens to resolve problems and procure services in an urban neighbourhood—is one method for reducing opportunistic behaviour even though no institutional arrangement can totally eliminate opportunism with respect to the provision and production of collective goods” (2005, 3). Given the pervasive opportunism engendered by secrecy within a highly centralized national security state, methods for reducing opportunism are a major benefit of polycentric defense provision (Coyne, Goodman, and Hall 2019). With relatively few barriers to entry, individuals can use their unique local knowledge to provide better security in the face of a diversity of preferences held by individual citizens.

For instance, African American activists during the civil rights movement could not reliably expect monocentric, state-provided defense to protect them from racist violence. In response, public entrepreneurs within the African American community organized armed self-defense to protect activists from violent repression (Cobb 2015; Beito and Beito 2017). From these activists’ perspective, defense provided through a top-down, monocentric order was ineffective at best and a threat to security at worst. Given the context-specific challenges faced by civil rights activists, the type of security they desired was unique to their local circumstances and subjective perceptions of alternatives.

Third, polycentric defense enhances the robustness of the overall system because there is no single point of failure. A key concern regarding monocentric systems is that a substantial shock to the centralized decision-making unit can be severely destabilizing. Because polycentric systems involve numerous, overlapping decision-making units engaged in competition and experimentation, failure by any one unit does not undermine the system’s overall stability. Returning again to the citizen-based response in the United States during and after the 9/11 attacks, sole reliance on the monocentric order—that is, the U.S. national security state—would have led to more successful terrorist attacks, compared to relying on responses from dispersed citizens who were effective in stopping several attacks from occurring where the government failed to provide adequate security.

Finally, polycentric defense disperses power within a society because no single unit possesses monopoly control over decision making. A key issue with monocentric defense is that the centralized decision-making unit can use its monopoly power to harm the citizens it is supposed to protect. Under this scenario, the monocentric order tasked with providing defense becomes a threat to the security of citizens. Polycentric defense offers a means of mitigating the harm posed by this internal threat by dispersing power across multiple units of decision making.

For example, the U.S. national security state, mainly through the National Security Agency, invests significant resources in cybersecurity and cryptography. In principle, the fruits of this investment can be used to protect U.S. residents from foreign cyber invaders. At the same time, however, the U.S. government has used these advances to surveil and control domestic persons. In addition to monitoring the communications of domestic persons, the U.S. government has proposed restrictions on encryption and demanded backdoor access to encryption from private firms (Sanger and Frenkel 2018). This has prompted civil liberties groups, such as the American Civil Liberties Union, Electronic Frontier Foundation, and Human Rights Watch, to encourage internet users to engage in self-defense by adopting encryption technologies to protect their communications from state surveillance (Zetter 2014).

### **Looking out the Window: Pervasive Polycentric Defense**

The polycentric theory of defense provision can explain a far broader range of real-world defense activities than the orthodox view. This approach appreciates that defense is not a single good but rather a bundle of heterogeneous goods provided at multiple scales. These goods are provided by individuals operating within a diverse network of enterprises, including households, private firms, nonprofit organizations, civic associations, and public economies ranging from the local to the national. The wide range of defense activities falls along a spectrum from public goods to private goods. In this section, we illustrate the diversity of real-world defense provision with a sample of defense-related activities. We start with very local defense and then scale up to defense that serves far larger collective-consumption units.

At the most local level, individuals and households act to secure themselves against various forms of violence and plunder. People lock their doors to protect their property from intruders and thieves. These locks also reduce the chance that they will be subjected to violent assaults by home invaders. Many individuals invest in more advanced technologies, such as elaborate home-security systems. However, whether they protect their home with locks, alarms, or cameras, these forms of defense rely on technologies sold by private firms on the market, all to create an architecture of security that helps enforce private-property rights.

Technological advancements alter the available means that individuals have for protecting their property. For example, Lojack is a car-retrieval system that relies on a radio transmitter hidden in an automobile. This radio transmitter can be remotely activated after the car is reported stolen, allowing police to track the car. Ian Ayres and Steven Levitt (1998) argue that this technology creates positive externalities because criminals cannot easily discern whether a car has Lojack, and the technology's prevalence, therefore, deters car theft generally, protecting Lojack users and nonusers alike. However, despite the positive spillovers for drivers who do not purchase cars with Lojack, the private benefits still lead some private individuals to purchase cars that have Lojack installed.



Private gun ownership is another form of defense that occurs at the individual and household level. Individuals use their firearms to ward off criminal assailants in diverse social contexts. Gun owners are typically aware of crime attempts long before the police are and can use their local knowledge of time and place to defend themselves from assaults, home invasions, and robbery attempts. This can be particularly important for individuals who are marginalized and believe they will not be effectively protected by state-provided defense. For instance, Gabriel Arkles (2013) discusses how transgender and lesbian African Americans use guns to defend themselves from hate crimes because they know that the state's criminal justice system will not protect them owing to the prevalence of profiling in that system. In some instances, gun owners have organized to defend social movements from violent political opponents and state repression. For instance, as noted earlier, during the civil rights movement African American activists organized through groups such as the Deacons of Self-Defense in order to defend civil rights activists (Hill 2004; Umoja 2014; Cobb 2015). The same good, a gun, can therefore be used both for individual- or household-level self-defense and for the collective provision of defense.

Collective provision of defense occurs at the neighborhood level through organizations such as neighborhood watch groups. In practice, these groups can vary in scale from “just a few households . . . [to] many thousand households” (Bennett, Holloway, and Farrington 2006, 439). These groups surveil the neighborhood and call private firms or state police to report suspicious activity. Members also “create signs of occupancy . . . [by] removing newspapers and milk from outside neighbors' homes when they are away, mowing the lawn, and filling up trash cans” (Bennett, Holloway, and Farrington 2006, 438). This activity makes prospective invaders anticipate that they are more likely to be caught by residents if they break into a home. In addition, neighborhood watch groups mark property and conduct security surveys. They receive support from police departments, but members also raise money through “voluntary contributions, local businesses, and the proceeds of fêtes and raffles” (Bennett, Holloway, and Farrington 2006, 439–40). Neighborhood watch activities are a form of coproduction in which citizens help produce the security they consume, both through self-protection and through communication with private security producers and state employees.

Security threats do not arise just in physical space. Commerce, community, and civic life increasingly occur online. Invaders can cause grave harm if they acquire access to sensitive information about an individual's bank accounts, credit cards, or private communications. To respond to these concerns, individuals and firms rely on encryption to defend against attacks. There is a robust for-profit cybersecurity industry. In addition, voluntary associations collaboratively produce open-source cybersecurity software with a publicly accessible source code (see Coleman 2009). In this polycentric system, competitive markets coexist with an independent voluntary sector.

Beyond defending against attacks by private invaders or invading nation-states, citizens have throughout history defended themselves against their own governments.

Doing so effectively requires resolving collective-action problems just like the ones that plague any good with strong positive externalities. The diverse institutional responses to collective-action problems have been studied extensively in the literature on revolutions. Gordon Tullock's (1971) work on the paradox of revolution starts from a collective-action problem and renders revolutionary activity incentive compatible by examining the "selective incentives" that induce people to participate. Selective incentives are private goods awarded to people who participate in the provision of a collective good (Olson 1965). Although the overthrow of a government is a collective good, revolutionaries can seize a variety of excludable and rivalrous gains, such as private financial gain or payments in kind—for example, approbation or promotion within an organization. Mark Lichbach (1994, 1998) identifies around two dozen potential ways that rebels can resolve the collective-action problems they face. He discusses solutions associated with a range of institutional forms, including markets, community, contract, and hierarchy.

Selective incentives, for example, often arise within hierarchy. A hierarchy may also structure a revolutionary organization so that it takes on the character of a club that limits membership (Buchanan 1965). At the community level, common knowledge and shared values can reduce the costs of cooperation, align expectations for coordination, and alter individuals' payoffs to induce cooperation. In terms of contract, revolutionaries may form contractually agreed upon forms of self-government in order to achieve their goals. At the market level, technological innovations may increase dissidents' effectiveness and therefore increase the perceived benefits of participating in political action. For example, social media platforms were used extensively during the Arab Spring of 2011.

Importantly, the sources of these solutions interact and overlap. For example, market transactions rely on community to provide common values and thereby create trust in one's trading partners. Similarly, communities rely upon markets "because beneficial mutual exchange is one important basis of common values" (Lichbach 1994, 23). Collective action therefore relies on a variety of mutually reinforcing institutions. This implies that the nuances of defense cannot be understood as the result of a purely monocentric hierarchy in which one center of decision making exogenously imposes rules to induce collective action. Rather, collective action requires a polycentric system in which individuals interact through a diverse range of institutions and organizations. The very diversity of associational forms that polycentricity unlocks also enables citizens to promote collective action through mutually reinforcing means.

Citizens involved in collective defense often use nonviolent tactics rather than solely the violent means associated with armies and other state-led defense forces (Sharp 1973, 1985, 1990, 2005; Ammons and Coyne 2018). Citizens have historically employed nonviolent struggle to end foreign military occupations and to achieve regime change (Chenoweth and Stephan 2011). Expelling a foreign occupier or an unwanted nation-state or political regime is defense at the *national* level. Given the nationwide public goods involved, the orthodox view would suggest that a single,

national hierarchy that can wield coercion against free riders is needed. However, there are numerous historical cases where people-powered movements from the bottom up have successfully achieved these goals.

Erica Chenoweth and Maria Stephan examine a data set of 323 violent and nonviolent resistance campaigns that occurred between 1900 and 2006. They find that “nonviolent resistance campaigns were nearly twice as likely to achieve full or partial success as their violent counterparts” (2011, 7). They argue that nonviolent campaigns succeed more often because the cost of participation is lower, and nonviolent campaigns therefore recruit a larger base of participants. The source of these lower costs is twofold. First, the use of nonviolent tactics removes the need for physical strength associated with violence. Second, the wide range of nonviolent methods employed—for example, noncooperation, strikes, civil disobedience, boycotts, and so on—creates an opportunity for a larger number of participants than violence does. From the orthodox perspective of defense, these instances of successful large-scale civilian-based defense should not occur. The empirical record flies in the face of this theoretical prediction, however, and suggests that the orthodox view of defense is a straitjacket that has prevented economists from appreciating the diverse forms of defense that occur in practice.

## Conclusion

The implications of our analysis are as follows. First, with respect to defense, a comparative institutional analysis that includes an appreciation for the polycentric provision of defense is needed. Economists who adopt the orthodox view of defense assume that the only two relevant alternatives are either a world in which defense is grossly underprovided or a world in which the state provides defense. Reality, however, indicates that there is a diverse array of possibilities. The opportunity for scholars to examine the varying degrees of polycentricity in defense provision requires appreciating that there is a range of options beyond a monocentric national security state and Hobbesian anarchy.

The second implication concerns the paradox of government that wrestles with the challenge of whether government can be simultaneously empowered to protect individual rights and constrained so that it does not violate those rights. This question looms large in the operation of the defense sector because militarization entails building and experimenting with tremendous coercive powers. These powers can then be used to violate individual rights, including the rights of those citizens being defended. Within the United States, this problem has been observed in the form of police militarization, mass surveillance, and even torture of American citizens (see Hall and Coyne 2013; Coyne and Hall 2014, 2018; Coyne and Hall-Blanco 2016). Polycentric defense offers one underexplored response to the paradox of government: defense can be provided by organizations other than a monocentric government. This possibility provides one check on opportunism, mitigating abuses of power.

Finally, polycentric defense offers a potential means of overcoming the cronyism inherent in a monocentric protective state. Even a minimal, night watchman protective state requires significant cronyism to operate (Coyne and Hall 2019) because the state's monopoly on security requires both the extraction of resources from the private sector and significant discretion to carry out its security functions. An appreciation of polycentric defense, however, indicates that the monocentric state is only one of many means of supplying security. To the extent that polycentric defense effectively offers an alternative to the monopoly provision of defense by a centralized state, so too does it provide a means of avoiding the cronyism inherent in the monocentric arrangement. As such, polycentric defense may offer a potential means to avoid the "road to crony capitalism" (see Munger and Villarreal-Diaz 2019) by limiting the scale and scope of the activities assigned to the monocentric nation-state. Appreciating this possibility will require economists to shift their tacit presuppositions away from the orthodox monocentric view and toward the polycentric view of defense.

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