



An Adaptive Insurgency

Confronting Adversary Networks in Iraq

Jeffrey White

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Front cover: In Ramadi, Iraq, a masked gunman keeps watch while another man puts up a campaign poster for a Sunni Arab group ahead of the December 2005 parliamentary elections. Copyright AP Wide World Photos/Bilal Hussein

About the Author

Jeffrey White is the Berrie defense fellow at the Washington Institute for Near East Policy. He also serves as a defense and security affairs consultant to several government agencies and defense corporations. He retired from the Defense Intelligence Agency (DIA) in October 2002 at senior executive service grade 4. He held the following senior-level positions at DIA: chief of the Regional Military Assessments Group, chief of the Middle East/Africa Regional Military Assessments Office, and special assistant to the Joint Chiefs of Staff/J2. Mr. White holds a master's degree in international affairs from George Washington University and a bachelor's degree in foreign affairs from the University of Virginia. He has authored or coauthored numerous papers on the insurgency in Iraq and has appeared frequently in the media as an analyst on the Iraq situation.



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Executive Summary

THIS PAPER ARGUES that concepts drawn from sociobiology can be used to increase our understanding of the insurgency in Iraq. Specifically, such notions as traits, adaptation, selection pressure/environmental pressure, fitness, reproduction, competition, cooperation, and survival are useful in examining insurgent network behavior and exploring the potential effectiveness of various counter-insurgent strategies. Four broad types of insurgent or adversary networks are identified in Iraq. The insurgent networks are seen as more or less well adapted to the Iraqi environment, displaying various levels of “fitness” with respect to that environment. Strengths and weaknesses of the networks are discussed, and it is proposed that strategies that seek to change the Iraqi environment beyond the capacity of the insurgents to adapt are more likely to be successful.

Introduction: The Challenge

THE INSURGENCY IN IRAQ can be seen as a “network of networks,” consisting of multiple interconnected insurgent organizations with several origins, varied natures, and diverse goals. Countering this amorphous challenge has proven a difficult and enduring task for coalition and Iraqi forces from the beginning of the insurgency in the spring of 2003 until now. No blend of coalition counterinsurgent strategies, operations, and tactics has succeeded in substantially diminishing the insurgency. At least by some measures, it has grown and become more capable.¹ Iraqi insurgent networks (organizations) have survived and even prospered in a complex environment with some hostile features; although coalition forces have gained much experience with the insurgency and have developed more promising means for dealing with it, no certainty exists that those measures will be successful.

What makes the networks in Iraq such a difficult target? At the core of the difficulty in dealing with

the insurgency lies the fundamental nature of the insurgent networks themselves—social organizations, or organisms, more or less well adapted to the social environment, or “landscape,” of Iraq, especially Sunni Arab Iraq. The adaptive nature of these networks has made them resilient, capable of accommodating substantial military and political changes in the environment, and able to survive. This paper broadly suggests what will and will not work in combating the insurgents. It makes the argument that only by changing the environment, or “landscape,” in which the insurgents operate beyond their capability to adapt to the change, can the insurgency be controlled. This approach goes beyond “oil spot,” and “clear, hold, build,” although those strategies do aim at changing aspects of the insurgents’ operational environment. It is closer to “winning hearts and minds.” But the adaptive capacity of the insurgents may surpass the ability of even this approach.

An earlier version of this paper was presented at the Johns Hopkins University Applied Physics Lab/School of Advanced International Studies *Unrestricted Warfare Symposium*, March 14–15, 2006.

1. Michael Eisenstadt and Jeffrey White, “Assessing Iraq’s Sunni Arab Insurgency,” *Policy Focus* no. 50 (Washington Institute for Near East Policy, December 2005), p. 30. Available online (www.washingtoninstitute.org/pubPDFs/PolicyFocus50.pdf).

Sociobiology and the Insurgents

“COMBAT DARWINISM,” “adaptive insurgents,” and “learning opponents” are several terms that have surfaced in the discussion of the insurgency,¹ indicating that scholars, analysts, and military operators working on the Iraqi insurgency are using sociobiological concepts, consciously or subconsciously. Insurgent organizations are social networks and, in turn, social networks are a kind of organism. This paper argues that sociobiology can be applied at the analogical and perhaps the explanatory levels to assist in the understanding of the Iraqi insurgency and its networks.² Our understanding of insurgent networks should be enhanced by using sociobiological concepts.

Sociobiology is defined as the systematic study of the biological basis of all behavior.³ According to the founder of the field, Edward O. Wilson, “behavior and social structure, like all other biological phenomena, can be studied as ‘organs,’ extensions of the genes that exist because of their superior adaptive value.”⁴ That is, the behaviors and structures of the insurgents should represent adaptations to the environment based on the “traits” of these “organisms.” In this sense, insurgent organizations have “genetic material” that shapes their ability to adapt to changes in the environment and to survive in their environment. The combination of these traits indicates, but does not alone predict, whether an insurgent organization will survive in the Iraqi setting.

Sociobiology has been controversial since its inception as a field, but it seems well enough established now

to be used as one tool in illuminating complex problems involving human behavior, including the behavior of Iraqi insurgents.⁵ Sociobiology provides many useful analogies for the insurgency. Analogies “allow for the exploration of descriptive, dynamic, and explanatory similarities across disciplinary boundaries.”⁶ Furthermore, “the analogical approach is warranted by the argument of structural similarities between biological and sociocultural processes.”⁷

Sociobiology is a very rich field, ranging as far as the discussion of literature,⁸ but some concepts seem especially useful with regard to the insurgency:

- *Traits* are the inherited characteristics of an organism, the genetic package it has as it goes about its business.
- An *adaptation* is “any structure, physiological process or behavioral pattern that makes an organism more fit to survive and to reproduce in comparison with other members of the same species. Also the evolutionary process leading to the formation of such a trait.”⁹
- *Selection pressure/environmental pressure* is: “The set of all the environmental influences, both physical conditions . . . and the living part of the environment, including prey, predators, and competitors, which constitute the agents of natural selection and set the direction in which a species evolves.”¹⁰

1. See, for example, Rick Jervis, “Militants Sharing Bomb Expertise,” *USA Today*, October 24, 2005, and Gary Thomas, “Iraq Insurgency United by Opposition to US,” *Voice of America*, May 11, 2005.

2. Here, the author is defining the individual insurgent networks as a single organism and the level at which sociobiological concepts apply. Possibly the individual insurgent cell is a more appropriate focus, but inadequate information exists to explore this concept.

3. Edward O. Wilson, *Sociobiology: The New Synthesis*, 25th anniversary ed. (Cambridge, Mass.: Belknap Press of Harvard University Press, 2000), p. 4.

4. *Ibid.*, p. 22.

5. See, for example, John Alcock, *The Triumph of Sociobiology* (New York: Oxford University Press, 2001), chapter 10, pp. 217–223.

6. Sabine Maasen, Sandra D. Mitchell, Peter J. Richardson, and Peter Weingart, eds. *Human by Nature: Between Biology and the Social Sciences* (Mahwah, N.J.: Lawrence Erlbaum Associates, 1997), p. 298.

7. *Ibid.*

8. See, for example, Joseph Carroll, *Literary Darwinism: Evolution, Human Nature, and Literature* (New York: Routledge, 2004).

9. Wilson, p. 578.

10. Wilson, p. 32.

- *Fitness* indicates how well an organism is adapted to survive in its environment.
- *Reproduction* in this context means replacement or recruitment of individuals and cells or other groups.¹¹
- *Competition* is “the active demand by two or more organisms (or two or more species) for a common resource.”¹²

- *Cooperation* means mutually supportive behavior among individuals or groups.
- *Survival* is the continuation of the group as an active participant in the insurgency—its ability to “reproduce” itself in the face of environmental pressure.

These concepts are used to illuminate the behavior and the prospects of Iraqi insurgent networks.

11. Wilson in *Sociobiology* (p. 561) described a form of competition for members among religious sects: “Those that gain adherents survive; those that cannot, fail.”
12. Wilson, p. 581.

Iraqi Networks

ALTHOUGH “TERRORIST” networks in Iraq have captured much attention in the media, and, for some time, of U.S. officials, not all the adversary networks, or even the principal ones, in Iraq are terrorist networks. A least four sets of Iraqi networks are of significant interest as adversaries.

The first of these sets is a diverse group of Iraqi Sunni Arab-based networks. They are built on a number of social factors including kinship (tribal, clan, family); association (especially former regime/Baath party); religion (especially Salafist/Wahhabist elements); criminal enterprises; “nationalists”; local or neighborhood association; and functional requirements (bomb making, financial operations). Kinship is most likely the critical social factor underlying Iraqi insurgent networks. According to Edward O. Wilson, “Kinship systems provide at least three distinct advantages. First, they bind alliances between tribes and sub-tribal units . . . Second, they are an important part of the bartering system by which certain males achieve dominance and leadership. Finally, they serve as a homeostatic device for seeing groups through hard times.”¹ All of these elements are important to the resiliency of the insurgency.

The broad social factors on which Sunni insurgent groups are based are not exclusive, and any given Sunni Arab Iraqi insurgent network or organization can represent more than one of them. These networks comprise the bulk of the organizations that make up the “network of networks” in Iraq. Examples of these organizations include the Islamic Army in Iraq, the Army of Muhammad, the 1920 Revolution Brigades, and the Mujahidin Army. These are all Iraqi Sunni Arab organizations and, while their specific traits may differ, they have played a significant role in the insurgency.

The second set of Iraqi insurgent networks consists of terrorist and foreign fighter groups, the most promi-

nent of which are al-Qaeda in Iraq (AQI)—the organization associated with the late Abu Musab al-Zarqawi, and Ansar al-Sunna. Al-Qaeda in Iraq started as a foreign-based organization but has become much more, if not predominantly, Iraqi in terms of its recruitment. Its titular head is now reportedly an Egyptian, Abu Ayyub al-Masri.² Ansar al-Sunna is an indigenous Iraqi group with a membership consisting of Iraqi Kurds, Sunni Arabs, and foreign jihadists that has emerged as one of the deadliest and most militant of the insurgent groups.³ It operates widely across the Sunni Triangle. Other terrorist-type networks are active in Iraq, including the Victorious Army Group, which is emerging as an active terrorist element.

Although the insurgency is largely Sunni Arab in its composition, Shiite networks also operate in Iraq and are currently, or have the potential to be, adversaries of the coalition and the Iraqi government. These Shiite groups can be divided into two categories—those that operate in the open and visibly, and those that operate partially or completely underground. The first category includes the Supreme Council for Islamic Revolution in Iraq (SCIRI), *Dawa*, and the organization overseen by Muqtada al-Sadr. These organizations constitute broad political and religious networks that extend across Shiite areas of Iraq and that can be used to mobilize support.

The covert Shiite networks include the Mahdi Army associated with Muqtada al-Sadr and the Badr Brigades of SCIRI. The Mahdi Army is a readily mobilized militia that willingly responds to al-Sadr’s direction, while the Badr Brigades operate underground in response to direction from SCIRI leadership. A Shiite resistance organization, the al-‘Abbas Brigade, announced itself in July 2006, proclaiming its opposition to foreign occupation,⁴ and two additional groups

1. Edward O. Wilson, *Sociobiology: The New Synthesis*, 25th anniversary ed. (Cambridge, Mass.: Belknap Press of Harvard University Press, 2000), p. 554.
2. Nadia Abou El-Magd, “Al-Zarqawi’s Successor Gets the Credit,” Associated Press, June 20, 2006.
3. Rick Jervis, “Pressure-Triggered Bombs Worry U.S. Forces,” *USA Today*, October 24, 2005, p. 1.
4. “New Shia Group Debuts,” *The Intelligence Summit*, July 6, 2006. Available online (<http://intelligence-summit.blogspot.com/2006/07/pro-terrorist-website-claims-new.html>).

that are probably Shiite in membership, but may also contain former regime elements (FREs), have also conducted insurgent-type actions (bombings, assassinations, ambushes) in southern Iraq—the Imam al-Hussein Brigades and the Abu Hafs al-Masri Brigades.

Finally, three possible “metanetworks” have emerged in Iraq. These represent a potential emergent middle layer of command and control, or at least coordination, for like-minded insurgent organizations: the Mujahidin Shura Council, associated with AQI; the Coordination Department of the Jihad Brigades; and the Mujahidin Central Command. The Mujahidin Shura Council reportedly consists of eight organizations, including al-Qaeda in Iraq, the Victorious Army Group, the Army of al-Sunna Wal Jama’a, Ansar al-Tawhid Brigades, Islamic Jihad Brigades, Jama’a al-Murabiteen the Strangers Brigades, and the Horrors Brigades.⁵ The Mujahidin Shura Council was established in January 2006 as an umbrella organization and coordinating body for insurgent elements following the AQI path.⁶ The Coordination Department reportedly represents the Islamic Army in Iraq, the Mujahidin Army, the 1920 Revolution Brigades, and the Islamic Iraqi Resistance Front (Ja’ami).⁷ The Mujahidin Central Com-

mand appears to be associated with FREs. Temporary insurgent cooperative networks have also arisen. During the period Falluja was under insurgent control (March–November 2004), a Mujahidin Shura Council operated there, coordinating insurgent political and military activities, and reportedly a “united” resistance command was active in Mosul in December 2004.⁸

Although some evidence exists of a more structured coordination developing, as suggested by the metanetworks, informal or ad hoc coordination also occurs across groups. Insurgent groups occasionally announce that they have conducted joint operations.⁹ Furthermore, the Islamic Army in Iraq has been reported in joint actions with at least six other insurgent groups.¹⁰ The emergence of metanetworks and ad hoc joint operations embodies the concept of a “network of networks” functioning in Iraq. These developments can also be seen as adaptive measures responding to the changing military and political environment. In the face of substantial hostility from Sunnis to al-Qaeda of Iraq, especially in Anbar province, a Mujahidin Shura Council uniting first six and then eight insurgent groups was announced,¹¹ and Zarqawi reportedly “transferred” leadership to an Iraqi.¹²

5. “The Mujahideen Shura Council in Iraq Announces the Joining of Jama’a al-Murabiteen into the Council,” SITE Institute, March 23, 2006.

6. “Mujahideen Shura Council,” *MIPT Terrorism Knowledge Base*. Available online (www.tkb.org/Group.jsp?groupID=4575).

7. “The Islamic Army in Iraq, Mujahideen Army, Twentieth Revolution Brigades, and Islamic Iraqi Resistance Front (Ja’ami) Respond to Iraqi President Talabani’s Desire to Have Discussion with the Iraqi Resistance,” SITE Institute, November 21, 2005. Available online (www.siteinstitute.org/bin/articles.cgi?ID=publications121805&Category=publications&Subcategory=0).

8. “The [Iraqi] Resistance Unites in Mosul and Announces Its First Produced, ‘Al-Farouq1’ [missile],” SITE Institute, December 13, 2004. Available online (www.siteinstitute.org/bin/articles.cgi?ID=publications13104&Category=publications&Subcategory=0).

9. See, for example, “The Islamic Army in Iraq Announces a Joint Operation with the Mujahideen Shura Council and Ansar al-Sunnah in Striking Coalition and Iraqi Forces in al-Azamiya,” SITE Institute, February 7, 2006. Available online (www.siteinstitute.org/bin/articles.cgi?ID=publications145806&Category=publications&Subcategory=0).

10. Based on author’s analysis of SITE Institute reporting.

11. “A Statement Announcing the Establishment of a Mujahideen Council in Iraq,” SITE Institute, January 16, 2006 (available online at www.siteinstitute.org/bin/articles.cgi?ID=publications139206&Category=publications&Subcategory=0), and “The Mujahideen Shura Council in Iraq Announces the Joining of Jama’a al-Murabiteen into the Council,” SITE Institute, March 23, 2006 (available online at www.siteinstitute.org/bin/articles.cgi?ID=publications159406&Category=publications&Subcategory=0).

12. Liz Sly, “Council of Militant Groups Reportedly Replaces al-Zarqawi,” *Chicago Tribune*, January 24, 2006, p. 3. It is not clear that this was much more than a ploy to reduce his profile during a period of rising tensions between al-Qaeda in Iraq and the Sunni community.

Characterization (Traits) of Iraqi Networks

THE WAY IRAQI NETWORKS behave is based, at least in part, on their traits. The nature, structure, scope, membership, resources, skills, and function or purpose of each network will all define how it will behave. Different “packages” of traits should lead to different behaviors. And indeed this result can be observed. Clearly, a distinction exists between the behavior of groups like al-Qaeda in Iraq and Ansar al-Sunna—which represent the extreme violent wing of the insurgency, specialize in terrorist-type attacks on civilians, and espouse extreme Islamic views—and more centrist or nationalist insurgent elements like the 1920 Revolution Brigades and the Islamic Army in Iraq, which have more moderate religious views and focus on resistance to occupation. The differences in traits among Iraqi insurgent groups are the basis for the divide in the insurgency.

Precise characterization of insurgent networks in Iraq has proven to be a major challenge.¹ As indicated previously, Iraqi networks can be broadly classified, but determining their exact characteristics has proven elusive. Nevertheless, they have a number of identifiable characteristics or traits, and those traits can provide useful information about these organizations and their ability to operate, adapt, and survive in the Iraqi environment.

Insurgent structures and behaviors are rooted in “inherited” traits (for example, those the Zarqawi organization “inherited” from al-Qaeda, and those FRE-based insurgent groups “inherited” from the Baath Party and regime intelligence and security organizations). These traits are passed on and can be modified as the insurgent organizations reproduce and evolve.

Although insurgent networks possess many traits, among the ones important to their success are:

- *Structure*—centralized, decentralized, flat

- *Nature/identity*—kinship, ideological/religious, personal (based on an individual), party/faction, foreign/indigenous, composite (a blend of several identities)
- *Purpose/function*—operational, support, integrated
- *Scope*—narrow or broad relative to functions, geographic range, and/or goals
- *Knowledge, skills, and abilities*—held by group leaders and members
- *Membership and recruitment base*—kinship, other forms of association, local, foreign, indigenous
- *Resources*—arms, money, connectivity (to important social structures), status (within the social system)
- *Adaptability*—ability to learn, ability to change behavior based on learning, preadaptation

Of these traits, kinship and adaptability seem to be especially important in the Iraqi context.

According to Edward O. Wilson, “most kinds of social behavior, including perhaps all of the most complex forms, are based in one way or another on kinship.”² Much of life in Iraq is based on kinship systems. Therefore, that the insurgents would operate within those systems seems natural. Kinship provides important selection advantages to insurgents that can take advantage of it. In the words of John Alcock:

Selection has evidently favored people with the motivational mechanisms, emotional systems, and intellectual capacities that enable us to learn kinship categories, establish kin-based links with others, educate others about genealogical relationships, and feel a sense of solidarity and cooperativeness with

1. For an illustration of this difficulty, see Dexter Filkins, “Where the Shadows Have Shadows,” *New York Times*, February 5, 2006.

2. Edward O. Wilson, *Sociobiology: The New Synthesis*, 25th anniversary ed. (Cambridge, Mass.: Belknap Press of Harvard University Press, 2000), p.73.

those identified as relatives, especially with our close relatives.³

The ability of insurgent networks to adapt will vary, but probably all insurgent groups have some adaptive capability. Questions to consider regarding any insurgent network are: how well does the network “learn” about changes in its environment, and what is its capacity for adaptation if the environment changes? Nevertheless, although behavioral flexibility is adaptive,⁴ not every aspect of insurgent behavior is adaptive—adaptation does not and cannot explain all insurgent behavior, and some insurgent traits and behaviors can be nonadaptive.

According to John Alcock in *The Triumph of Sociobiology*, “learning abilities evolve in response to selection pressures acting on individual differences in the ability to solve real world problems.”⁵ He further states that “we will change our behavior in particular (adaptive) ways in response to specific (biologically relevant) experiences.”⁶ The acknowledgment that the insurgents are “learning opponents” is a recognition that this principle is at work. What could be a more “biologically relevant” experience than the survival pressures the insurgents face in Iraq? Reporting on insurgent responses to their environment indicates that they clearly learn from their experience and change their behavior based on new knowledge. We can probably assume that in general insurgents’ learning capacity improves, both as a whole and as individual cells. The rapidity with which insurgent “lessons learned” are distilled and disseminated indicates that evolved learning

mechanisms have developed. Imprisoned insurgents are able to pass knowledge to others while detained.⁷ The insurgents also demonstrate a certain plasticity of behavior; they can change behaviors, even at the strategic level, to adapt to changes in the Iraqi environment.

Insurgents in a sense are programmed to adapt and to try different responses to the environment. Which insurgent elements survive depends on the adaptive quality of their responses. Insurgents who learn better and change their behavior accordingly will live longer and pass on their traits. Zarqawi’s adaptations, including franchising, affiliation with other groups, and recruitment of Iraqis, provide a kind of case study of learning and adaptation in the insurgency (see box, next page). The same is true of some insurgent groups operating in the Ramadi area, which have responded to the changing political environment by distancing themselves from al-Qaeda in Iraq.⁸

Finally, with reference to adaptability, the concept of preadaptation is of interest. According to Wilson in *Sociobiology*, a preadaptation is “a previously existing structure, physiological process, or behavior pattern, which is already functional in another context and available as a stepping stone to the attainment of a new adaptation.”⁹ The existence of preadaptive structures suitable for the insurgency in Iraq is clear. These structures include the Baath Party, former regime intelligence and security services, the tribal system, religious structures, and a nascent network of foreign fighters. These structures greatly facilitated both the rise of the insurgency and its ability to adapt to changes in the environment.

3. John Alcock, *The Triumph of Sociobiology* (New York: Oxford University Press, 2001), p. 201.

4. *Ibid.*, p. 57.

5. *Ibid.*, p.163.

6. *Ibid.*, p. 167.

7. Thom Shanker, “Abu Ghraib Called Incubator for Terrorists,” *New York Times*, February 15, 2006, p.1.

8. “Six Groups Break with al-Qaeda’s al-Zarqawi,” *AKI*, January 23, 2006. Available online (www.adnki.com/index_2Level.php?cat=Security&loid=8.0.255961390&par=0).

9. Wilson, p. 34.

Case Study: Zarqawi, al-Qaeda in Iraq, and Adaptation

The path of Abu Musab al-Zarqawi and the al-Qaeda in Iraq (AQI) organization illustrates adaptation at work within one Iraqi insurgent element. Starting with some pronounced adaptive disadvantages and under the pressures of operating in Iraq, the organization and its leadership adapted in multiple ways. These adaptive measures have permitted the organization to survive and operate in a very hostile environment.

Although AQI began as an essentially foreign jihadist organization, it started cooperating early with former regime elements (FREs). Its presence in the country before the regime fell made this process easier, even though ideological differences between the two groups were, and remain, significant. Over time AQI came to cooperate with a wide range of other insurgent elements, sharing resources and participating in joint operations. Cooperation with FREs and other insurgent elements expanded the resources available to AQI, legitimized its presence, and increased its significance as an insurgent group.

AQI adopted new tactics as the insurgency progressed. From classic terrorist actions in the early stage of the insurgency, it evolved to include a wide range of operations, such as complex attacks on Iraqi security forces and the coordination of actions by multiple insurgent groups. Those changes provided the organization with operational flexibility and expanded its prominence.

In response to attrition, coalition operations to reduce the influx of foreign fighters, and the probable need to be seen as more Iraqi in composition by the Sunni Iraqis, Zarqawi's organization became more Iraqi in membership over time. This change probably helps account for AQI's ability to continue to operate within the cover of the Sunni Arab population.

Zarqawi's formation of the Mujahidin Shura Council was another adaptation to the changing

environment. Facing increased hostility from some Sunni Iraqi elements because of his tactics (especially attacks on Sunnis), Zarqawi likely created the council at least in part as a means of reducing the profile of his organization and spreading responsibility for terrorist-type actions. This move also served to more clearly embed AQI in the Iraqi insurgency.

Coalition operations ("predation") aimed at "high value individuals" in the AQI organization have constituted one of the major environmental pressures on the organization. The most dramatic of these was the killing of Zarqawi himself, but perhaps several hundred other members of the AQI cadre have been killed and captured, including some of the most senior leadership beyond Zarqawi. AQI quickly accommodated the loss of its leader and has been able to continue operations in the face of coalition actions, but this campaign appears to be slowly reducing the capabilities of the organization. The combination of continuing hostility from some elements of the Sunni population and leadership losses has perhaps made the environment hostile to a degree beyond which AQI can successfully adapt. If true, its role in the insurgency should decline over time.

Not all of AQI's actions have been adaptive to the Iraqi environment. Some, in fact, have been nonadaptive. Despite the potential benefits of moderating its ideology and shifting away from attacks on civilians, it has done neither, including after the death of Zarqawi when an opportunity existed to change operational focus.

Although the final chapter on AQI has yet to be written, its case illustrates the effect that adaptation can have on an insurgent organization. It also suggests why the struggle against the insurgents in general has been so difficult and uncertain in its outcome. The path to victory over an adaptive opponent is likely to be tortuous and strewn with emergent challenges.

The Iraqi Environment and Network Fitness

WHAT ARE THE fundamental aspects of the Iraqi environment that the insurgency must adapt to? The environment of the insurgents is in some ways like our ancestral environment.¹ Traits that were adaptive for that environment should be adaptive for the insurgent environment. This environment is highly dynamic with continual and rapid evolution in its political and military components, and slower but also continuous evolution in the economic and social areas. It is a dangerous environment for the insurgents. “Predation” in the form of coalition operations is continuous. The range and scope of coalition actions are so varied as to demand continuing response from the insurgents if they are to survive. It is a highly competitive environment. Resources, including adherents, are sought by all insurgent groups. Finally, the insurgents must cooperate to some degree to survive. Cooperation provides them a measure of relief from the environmental pressures of the situation.

Simply put, “fitness” in the Iraqi context means how well suited or adapted a given network is to sur-

vive in the Iraqi environment. Fitness depends on the previously indicated traits of the networks. Insurgent groups consciously or unconsciously operate to pass on their “genes.” Organizations with nonadaptive traits, or those which are less fit, are likely to fail if the environment changes radically enough.

In principle, one should be able to array Iraqi networks across a spectrum or landscape of fitness. Using the traits of Iraqi networks previously listed, one can build up pictures of both “more fit” and “less fit” Iraqi networks (see table, next page).

Critically, fitness is not static. Networks can rise or fall in terms of fitness, depending on changes in the environment and their ability to adapt to those changes. No network in Iraq is guaranteed of survival, although some are more likely to endure than others. Even highly fit networks could see the environment change too radically for their traits to accommodate. A network’s fitness is a function of its adaptability and the environment. Thus, even a nonadaptive network can survive in a situation of low environmental pressure.

1. “The ancestral environment, also referred to as the *environment of evolutionary adaptedness* (EEA), is the enduring social and physical conditions under which a particular adaptation arose.” *Handbook of Evolutionary Psychology: Ideas, Issues, and Applications*, eds. Charles Crawford and Dennis L. Krebs (Mahwah, N.J.: Lawrence Erlbaum Associates, 1998), p. 170. Available online (www.questia.com/PM.qst?a=o&d=26173938).

The Specific Compilation of Traits for More and Less Fit Iraqi Networks

TRAIT	MORE FIT	LESS FIT
Type	Decentralized. Elements of the network operate with broad local autonomy.	Hierarchical, command and control, and other functions are exercised from the top to the bottom, with subordinate elements having little autonomy.
Nature/ Identity	Strong kinship connection within tribal/ clan/family system, moderate religious views, moderate goals. This network exploits kinship as a buffer and as a source of resources and status. It does not antagonize its kinship group or active and passive supporters with extreme views/goals/actions.	Foreign based or of foreign origin, little connection to Iraqi kinship structures or social structures. Network exhibits extreme religious views and has messianic goals.
Membership	The network draws its members from important kinship groups in Iraq. The network is predominantly local or native to its operational area. The network is predominantly Iraqi. It is not predominantly made up of foreigners. Members enjoy other associations, such as party membership and military experience, which are reinforcing traits. The more of these associations that apply the more positive the membership trait will be for the network.	Significant numbers of foreigners; foreigners dominate leadership positions. Iraqi members are not drawn from important kinship groups or social structures in Iraq. Previous association among members is limited.
Function	The network performs integrated functions. It is not dependent on other networks for key processes. It is capable of acting on its own to a substantial degree. These traits make it less vulnerable and more adaptable.	The network performs only a single function or a few functions. It is vulnerable to changes in the environment as overspecialized.
Scope	The network carries out a range of actions allowing it to shift effort in response to changes in the environment. The network extends over a broad geographic range, giving it access to additional resources and reducing its vulnerability to local changes in the environment. The network's goals are broad enough that it can both exploit changes in the environment and avoid becoming irrelevant because of changes in the environment.	The network has only a narrow geographic range, as in a network based in a single neighborhood or locality. The network has narrow goals or objectives. It has a limited repertoire of actions it can conduct. Local or neighborhood insurgent groups such as the "Thunder" cell reportedly active in one Sunni neighborhood in Baghdad would perhaps be an example of a narrow-scope group. ¹

1. Sabrina Tavernise and Dexter Filkins, "Insurgents and Al Qaeda clash in Iraq," *International Herald Tribune*, January 12, 2006, p. 1.

The Specific Compilation of Traits for More and Less Fit Iraqi Networks (cont.)

TRAIT	MORE FIT	LESS FIT
Knowledge/ Skills/Ability	<p>The network possesses key knowledge: social, operational, and technical. It has a broad skill base. It is imbued with quality leadership. It has appropriate tactics, techniques, and procedures (TTP).</p>	<p>The network has inadequate or partial knowledge of its operating environment. It has only a few skills, and must depend on outsiders for missing skills. It has leadership deficiencies. Its TTP are inadequate or inappropriate for its environment.</p>
Resources	<p>The network has the wherewithal to act and survive in the environment. It has the right types of weapons in adequate amounts. It has enough money, or other forms of wealth, to carry out sustaining and operational functions. It is well enough connected to the social system to operate effectively within it and to benefit from it. The network is held in some regard for its operational prowess, resources, zeal, or some other factor or combination of factors.</p>	<p>The network has limited or too few resources, or is dependent on external actors for support.</p>
Adaptability	<p>The network adjusts to changes in its environment. It learns well; it sees and understands what is going on in the environment. The network demonstrates plasticity of behavior. The network benefits from structures (Baath Party organization down to neighborhood level) or behaviors (conspiratorial) that it “inherited” from structures or behaviors that existed prior to it.</p>	<p>The network does not adjust appropriately to changes in its environment. It does not learn well about changes in the environment. Network behaviors are rigid. The network is unable to take advantage of preadaptive structures and behaviors.</p>

Vulnerability of Iraqi Networks

IN IRAQ THE NETWORKS fight back. They are not just hiding to prepare for some future action. Instead, they are actively countering coalition and Iraqi government efforts; seeking strategic, operational, and tactical goals; and engaging in a wide variety of activities across a broad social and geographic space. These networks have both specific strengths and weaknesses that shape how vulnerable they are to disruption.

Strengths of the insurgent networks include inherent, or basic, and specific adaptations that have occurred over the course of the insurgency. A range of protective measures represents one of the inherent strengths. These protective measures include protective coloration, replacement, impenetrability, the capability for penetration of adversaries, and cell structures.

Protective coloration is the ability of insurgents and their networks to blend into the environment. Coalition forces have difficulty in separating the insurgents and their networks from the backdrop of activity in Iraq. The advantage of this protective camouflage is exemplified by the frequent comments of U.S. soldiers concerning how difficult they find distinguishing insurgents from noninsurgents.¹ The same applies to insurgent networks that can rely on traditional forms of economic and social activity to cover operations.

Replacement is the capacity of insurgent networks to rapidly replace individuals or functions that are eliminated or disrupted by coalition action. Insurgent cells make up losses quickly by recruiting new members, largely by means of personal relationships.² Surviving members of insurgent cells that are more damaged or disrupted can be recruited into existing cells or establish new cells. This capacity represents a form of reproduction.

The relative *impenetrability* of insurgent networks makes gaining intelligence difficult for purposes of either destroying or obtaining greater understanding of the networks. This impenetrability is based primarily on the bonds of kinship, religion, and purpose that tie members together. The coalition and Iraqi government officials have always hoped that as Iraqis became more involved in counterinsurgency operations, penetration of insurgent networks would increase. However, this does not seem to have occurred on any significant scale.

Insurgent networks have had at least some success in penetrating the Iraqi Security Forces (ISF).³ This strength provides them additional potential for protecting themselves by acquiring warning concerning upcoming ISF and coalition operations, as well as other valuable intelligence.

The use of *cells* as a basic form of organization prevents insurgent networks from being rolled up comprehensively.⁴ Cells are fairly frequently disrupted and members captured, but these actions do not lead to broad success against the overall network.⁵

A second inherent strength is the diversity of insurgent networks, making them, overall, more resistant to counterinsurgency strategies and increasing their capacity for innovation and adaptation. This diversity has been a basic feature of the insurgency from its inception.⁶ It has produced shifting coalition views of the adversary in Iraq and shifts in counterinsurgent strategy. It led to the search for “high value targets” (key individuals), the extended campaign against the Zarqawi organization, the effort to disrupt foreign jihadist activity in the upper Euphrates Valley, various “campaigns” against bomb makers and financial net-

1. See for example, Tom Lasserer, “A Battle Vital to Iraq’s Future Seems Futile,” *Philadelphia Inquirer*, February 19, 2006, p. A01.

2. See, for example, Greg Grant, “Iraqi Insurgents Find Ways to Bounce Back,” *Defense News*, February 20, 2006.

3. See, for example, “Insurgents ‘inside Iraqi police,’” *BBC News*, September 21, 2005, and “U.S. to Restrict Iraqi Police,” *Los Angeles Times*, December 30, 2005 (available online at www.latimes.com/news/nationworld/world/la-fg-iraq30dec30,1,3853118.story).

4. Greg Grant, “Insurgency Chess Match: Allies Match Wits, Tactics with Ever-Changing Enemy in Iraq,” *Defense News*, February 27, 2006.

5. Greg Grant, “U.S. Army Fights Hot Zone in Baghdad Suburb,” *Defense News*, January 9, 2006.

6. See, for example, Grant, “Iraqi Insurgents Find Ways to Bounce Back,” February 20, 2006.

works, and large-scale operations to eliminate insurgent-dominated localities like Falluja and Tal Afar. The latest effort has been the so-called “Battle for Baghdad.” These approaches have only brought partial successes. Given limited coalition resources, concentrating on one facet of the insurgency probably permits other aspects to recuperate and gain strength. Many of the coalition approaches have not taken into account the capacity of the insurgency as a whole to adapt to pressure on any one part of it. They also have often not taken into account the insurgency’s ability to rebound in the face of even fairly successful coalition or Iraqi government operations. Success is never complete—vestiges of the adversary always remain, and these vestiges generate new growth.

A third inherent strength of the insurgent networks resides in specific behaviors. Iraqi networks appear to behave cohesively, maintain connections to Sunni Arab society, and cooperate internally and externally to advance their interests. Iraqi insurgent networks do not fracture easily, even under the considerable pressure of counterinsurgency operations. The advancing political process seems to have generated more demands on the insurgency and to have created rifts between some insurgent elements, especially the terrorist elements, and some Iraqi insurgent groups and tribal Sunni populations. Apparently, however, this pressure has not caused serious divisions within specific insurgent groups. Iraqi networks are highly connected, both internally in terms of their members and to the social structure in Iraq. Individual insurgents can be connected to one another and their leaders in multiple ways, including kinship, religion, former association, and history, among other factors. This layering of affinity can create dense internally connected networks and supports their cohesiveness. Through their memberships these networks are also connected to major social

structures in Iraq—the tribal system and the Sunni religious structure—giving them opportunities to acquire both resources and support. Within groups and across groups, cooperation increases the “fitness” of the group as “it acts as a buffer to absorb stress from the environment.”⁷ Insurgent networks cooperate significantly on both the military and the political fronts, combining for joint operations and disseminating political and operational directions under joint authorship.⁸

In addition to their inherent strengths, Iraqi networks have made specific adaptations to reduce their vulnerability. How are insurgent elements able to adapt to the changing environment in Iraq? According to Edward O. Wilson: “If an environmental change renders old features of social organization inferior to new ones, the population can evolve relatively quickly to the new mode provided the appropriate [sets of traits] can be assembled from within the existing gene pool.”⁹ This ability could also be used “offensively,” in the sense that the insurgents can adapt to exploit favorable changes in the environment.

The set of traits possessed by the diverse Iraqi insurgent networks seems adequate to allow for rapid adaptation. At the strategic level, the most critical adaptation has been the development of a response to the political process. At least some insurgent elements decided to support Sunni Arab participation in this process, even to the extent of providing security for polling places during the October 2005 constitutional referendum and the December 2005 parliamentary elections. This strategic adaptation was promoted by Sunni concerns over being left out of the political process. At the operational level, Sunni insurgents have over time increased their relative level of effort against the ISF and other “collaborators” as these were recognized as becoming more of a threat.¹⁰ At the tactical level a long history exists of adapta-

7. Edward O. Wilson, *Sociobiology: The New Synthesis*, 25th anniversary ed. (Cambridge, Mass.: Belknap Press of Harvard University Press, 2000), p.59.

8. See, for example, “Islamic Army in Iraq and the Mujahideen Army Issues Combined Statement Denying Claim by Dr. Aiham Alsammarae That the Groups Are Willing to Negotiate with the American and Iraqi Governments,” SITE Institute, June 8, 2005. Available online (www.siteinstitute.org/bin/articles.cgi?ID=publications54305&Category=publications&Subcategory=0).

9. Wilson, p. 33.

10. Michael Eisenstadt and Jeffrey White, “Assessing Iraq’s Sunni Arab Insurgency,” *Policy Focus* no. 50 (Washington Institute for Near East Policy, December 2005), p. 20. Available online (www.washingtoninstitute.org/pubPDFs/PolicyFocus50.pdf).

tions, especially in the design and use of improvised explosive devices,¹¹ but also in the sense of matching tactics and weapons to appropriate targets. The insurgents learned that direct attacks on U.S. forces led to the destruction of the insurgent elements involved, whereas the same tactics were much more successful against the ISF, especially the Iraqi police.

The inherent strengths of the insurgent networks and their adaptations have made them a difficult target, but they are not invulnerable. Weaknesses of the insurgent networks include the following:

- *Competition*—for resources, including loyalty or acceptance of the population.¹²
- *Connectivity*—one person leads to another, and even with the use of cell structures, links between individuals can be built up into diagrams of insurgent networks.¹³

- *The requirement to “surface” to act*—especially for action elements, their very activity makes them potentially visible and vulnerable.
- *Inadaptability*—not all insurgent networks have the same capacity for adaptation, and those with less capacity are inherently more vulnerable.
- *Contradictions*—or serious differences between and among groups, and between insurgents and the population base.¹⁴
- *Self-interest*—insurgent groups act in their self-interest, although they are capable of “altruistic” behavior.

These vulnerabilities are potentially exploitable and account for at least some of the success coalition forces have had in countering insurgent networks in Iraq.

11. Charles J. Hanley, “U.S. Pours Money into Roadside Bomb Fight,” Associated Press, March 14, 2006.

12. In the words of Edward O. Wilson (p. 25): “[C]ompeting species tend to displace one another into portions of the habitat in which each is the best competitor; and these competitive strongholds are not necessarily the preferred portion of the niche.”

13. See, for example, the story of how Saddam was located and captured. Eric Schmitt, “How Army Sleuths Stalked the Adviser Who Led to Hussein,” *New York Times*, December 20, 2003, p. 1.

14. One example of this weakness is the contradiction that developed between Sunni tribal leaders in Ramadi and the al-Qaeda Iraq organization there. This difference led to attacks on tribal leaders and police recruits by AQI and retaliation against AQI by tribal elements. See Anthony Loyd, “Murder of Sheikh Provokes Sunnis to Turn on al-Qaeda,” *The Times* (London), February 10, 2006.

Disruption or Neutralization of Iraqi Networks

GIVEN THE CHALLENGE provided by the adversary networks in Iraq, what are reasonable goals and strategies for dealing with them? At the outset it should be recognized that complete defeat of these networks is unlikely. They are simply too well suited and adaptable for the Iraqi environment for success on this scale. Such an outcome is probably only possible in the context of a comprehensive and acceptable political outcome—one that eliminates the political and social bases of the insurgency. Even in this case some insurgent elements, particularly Iraqi terrorists and unreconstructed Baathists, are likely to remain active as violent underground elements.

A more attainable goal would be suppression of the insurgent networks to a level where the political and reconstruction processes can continue without being dominated by insurgent actions. This state more or less exists where U.S. operations are at the moment—put the insurgents on the defensive, loosen their control over Sunni localities, attack and destroy high-value insurgent leaders and networks, buy time for Iraqi forces and governance to be extended into Sunni areas and for Sunnis to commit to the political process, and allow rebuilding to occur.

Short of a kind of general suppression, the United States could aim for local or temporary suppression of selected Iraqi networks. This goal has been attempted in numerous operations virtually since the beginning of the insurgency in April 2003 in key cities, such as Samarra, and areas of concentrated insurgent activity, such as the “triangle of death” south of Baghdad, and in broad geographic areas, such as the upper Euphrates river valley in 2005. This strategy has appeared to work in situations where insurgent activity needed to be controlled for specific periods or in support of specific political or military objectives, as during the Iraqi national voting of October and December 2005, and in providing security for Shiite religious holidays.

Containment as a goal would be appropriate under some circumstances, such as a precipitate U.S. decision to withdraw or a major setback to the political process, for example. Under such circumstances the aim would be to prevent the insurgents from rapidly gaining ground by exploiting the change in the situation.

Several strategies for dealing with the insurgents in Iraq have been tried and none have been found to provide “the answer.” More experimentation is likely, with one of the latest being the effort to extend what is considered to be the successful approach of the 1st Cavalry Division in Baghdad during its first deployment to Iraq, to the Sunni Triangle itself.¹ U.S. strategies have included the following:

- *Large-scale offensive operations*—implemented in different ways at the operational and tactical levels. These operations have been used to break the insurgent hold on specific localities or regions. Examples would include operations in Falluja in November 2004, Tal Afar in September 2005, and the Marine Corps offensive in the upper Euphrates Valley in 2005.
- *Leadership attrition*—sustained efforts to eliminate by killing or capturing key leaders of the insurgency. This tactic has been used against former regime elements, particularly senior leaders of the Saddam regime, and leaders of terrorist insurgent groups, such as al-Qaeda in Iraq. It has also been referred to as the “high value target” strategy. It depends on persistence of effort in the face of the capacity of insurgent networks to replace their leadership losses.
- *Counterlogistics*—efforts to prevent resources from reaching the insurgents, including people, money, and arms. This strategy has been most prominent in attempts to seal the border with Syria, but it has

1. Jim Krane, “New U.S. Commander to Change Iraq Focus,” Associated Press, January 30, 2006.

also been attempted internally, especially to disrupt insurgent financial operations.

- *Changing the “fitness landscape”*—changing the operating environment beyond the capability of insurgent networks to adapt. This strategy is being attempted in both the Sunni Triangle and Baghdad.

Of these strategies, the last seems to be the most likely to succeed. Changing the fitness landscape entails some combination of changing the security environment, for example by increasing “predation” of insurgents; changing the insurgent operating environment by increasing operational difficulties (for example, movement restrictions, disruption of financial operations); and changing the social environment through “hearts and minds” measures. “Clear, hold, build” and “winning hearts and minds” (the turning of the population against the insurgents or at least making the population neutral or indifferent) are examples of strategies based on changing the fitness landscape. Critical to success is that the efforts be of sufficient magnitude and persistence to exceed the insurgents’ ability to adapt to them. A strategy of “recoil, redeploy, and spoil” has already been attributed to the insurgents.²

Unfortunately, any U.S. or Iraqi strategy that depends on time to be effective will run the risk that

the insurgents can adapt to it. This problem is one of several that can prevent strategies aimed at changing the fitness landscape from being successful. The history of the insurgency in Iraq is replete with failures to clear, hold, and build. The story of the city of Samarra in Salahuddin province provides one example where all attempts have failed to change the environment beyond the capacity of the insurgents to adapt to the change. Samarra remains a locus of insurgent activity and disputed territory.³ The selection of Samarra as the site for the single most destabilizing attack by insurgents, the destruction of the Askiriya Mosque on February 22, 2006, underlines the point. But in other places as well, “clear, hold, build” has not yet proven to be the solution. Ramadi has never been cleared of insurgent activity,⁴ and some insurgent presence and activity remains even in Falluja and Tal Afar. Currently, the coalition is attempting a “clear, hold, build” strategy in Baghdad itself. So far the results look mixed at best. The insurgents will likely avoid “predation” as much as possible by minimizing contact with the security forces and relying on their protective coloration. When the pressure of security operations is reduced, as it inevitably will be, the insurgents will come out from cover, unless the political and social environments have been made sufficiently hostile. The “clear” and the “hold” parts of the strategy are always problematic in Iraq.

2. “In Their Own Words: Reading the Iraqi Insurgency,” *International Crisis Group*, Middle East Report no. 50, February 15, 2006, p. 25.

3. Tom Lasseter, “A Battle Vital to Iraq’s Future Seems Futile,” February 19, 2006, *Philadelphia Inquirer*, p. A01, and Hamza Hendawi, “Simmering Samarra Belies Peaceful Past,” Associated Press, February 22, 2006.

4. See, for example, Antonio Castaneda, “Marines Defend One of Main Targets in Iraq,” Associated Press, February 19, 2006.

Conclusion

SOME IMPORTANT CONCLUSIONS can be derived from this discussion. First, Iraqi networks learn and adapt in response to changes in the environment. This phenomenon has been recognized from the birth of the insurgency, is not limited to the tactical level, and accounts for much of the U.S. difficulty in controlling the insurgency. Second, Iraqi networks are highly resilient, surviving in a dynamic and dangerous environment. Their diversity of traits, and of combinations of traits, makes them highly adaptable. Although this characteristic is not the sole explanation for the insurgents' survival, it is a primary one. Third, these networks are closely linked to the social environment of the Iraqi Sunni Arabs; they are effectively inseparable from it. They must "behave" in a way that is essentially consistent with the environment; even foreign networks operating in Iraq have to adapt to this environment for their survival. Fourth, Iraqi networks ultimately act in their own self-interest. This trait implies that their level of altruism and willingness

to help others will be limited. This factor will provide opportunities for exploitation by the coalition and the Iraqi government.

Some conclusions can also be drawn regarding how to deal with these networks. Strategies for defeating the Iraqi networks must be persistent and adaptive. Although no "silver bullet" or certain formula exists for defeating the insurgents, strategies that seek to change the environment or "landscape" are more likely to be successful. Nevertheless, no guarantees of success exist.

Finally, sociobiology appears to be an approach worth exploring in greater depth. Approaching the Iraqi insurgency from the perspective of biological processes, whether as analogy or explanation, does seem to illuminate important aspects of the insurgency. It adds to our understanding of the insurgency, not in terms of types of arms and numbers of men or their beliefs, but rather in terms of fundamental persisting processes at work to sustain the insurgency.

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