U.S. Army National Ground Intelligence Center

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(U) Complex Environments - An Alternative Approach to the Assessment of Insurgencies and their Social Terrain, Part 1: Identifying Decisive Factors

(U) Purpose

(U) This assessment is the first in a two-part series that outlines additional principles for intelligence preparation of the operational environment (IPOE), information operations (IO), and strategic intelligence assessment. *This assessment represents an alternative to many current approaches to behavioral and motivational assessment.* The approach uses widely replicated findings from psychology and neuroscience research to explain and assess the likelihood and impact of large-scale and/or significant changes in the behavior of large populations. This assessment outlines why many current approaches to analyzing the likelihood and impact of popular movements, while often useful, lead to problems in both analysis and implementation. It also defines a viable alternative for explaining, forecasting, and making decisions about populations. The second assessment in the series will lay out specific, practical guidelines for implementing the approach described in this assessment.

(U) This assessment addresses various National Intelligence Priority Framework (NIPF) topics and CENTCOM Priority Intelligence Requirements. Details about these topics and requirements have been removed from this document in order to facilitate dissemination. For information about which topics and requirements this assessment addresses, please contact the author.

(U) Key Points

- (U) Insurgencies as well as populations in general exhibit spontaneous changes in activity as a side effect of the individual changes in member behavior. (Moderate Confidence)[a]
- (U) Explanations of behavior based on nothing more than culture, group affiliation, identity, motives, personality, attitudes, values, or ideology rely on circular argumentation, provide no decision advantage to commanders and policymakers, and often lack the support of empirical evidence. (High Confidence)
- (U) An individual person's motivation changes too frequently and in response to too many different factors for it to be definable or predictable. It is simply impossible to identify motivation in a way that is both useful and accurate. (High Confidence)
- (U) Consistent exposure to two types of constraints make behavior explainable and predictable without the need to identify motivation because all people react psychologically to these two constraints in the same way. (High Confidence)
    - (U) *Intent constraints* are close social relationships that limit the total range of possible intents a person can have. (High Confidence)
    - (U) *Capability constraints* are immediate physical and informational limitations on the total range of capabilities a person can have. (High Confidence)
- (U) Most population-based security and stability threats arise from constraints that emerge spontaneously from informal networks of people. (Moderate Confidence)
- (U) It is more appropriate to target constraints rather than individuals or groups within a population

because constraints are a more decisive factor in determining the shape and scope of a population's behavior. (Moderate Confidence)

(U) Source Summary Statement

(U) This assessment is based entirely on unclassified information to facilitate dissemination. Information about cognition and motivation is derived from experimental research findings published by mainstream academic professional organizations. Information about extremist behavior is derived from a variety of books and academic studies based on systematic comparison of numerous cases or on indepth analysis of individual cases. Some extremism information is derived from media and nongovernmental organization reports, but use of those sources has been limited because of the inability to confirm their reporting.

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(U) IPOE, IO, and Strategic Intelligence

(U) This assessment lays out a new approach to assessing situations where the motivation and behavior of local populations decisively influences mission success. These factors are most visibly an issue in counterinsurgencies and population engagements but can play a role in a wide range of missions. This assessment explains how popular movements can happen spontaneously as a side effect of individual behavior, without specific population members intentionally planning or coordinating the movements. Popular movements have historically been unpredictably variable and difficult to characterize or influence. The approach introduced in this assessment can be used to identify the causes of popular movements, to make decisions about how to mitigate or modify population behavior, and to reduce uncertainty about the consequences of population engagements. This approach is relevant to IPOE, IO, and strategic intelligence assessments.

- (U) IPOE is a set of procedures for estimating ways that features of an operational environment might contribute to an operation's success or failure.[1] IPOE allows a commander to identify and make decisions about relevant features and reduces uncertainty about the consequences of those decisions. Local populations have long been included in IPOE, but the procedures for identifying and analyzing popular influences are currently far less developed than the procedures for analyzing physical influences such as terrain and weather.
- (U) IO, among other things, entails actions taken to influence the decisions and decisionmaking processes of adversaries and other relevant populations.[2] This is done by influencing the information environment: the individuals, organizations, and systems that collect, process, disseminate, or act on information. One of the primary dimensions of the information environment is cognitive, in that the perceptions of military forces and other relevant populations affect the way those populations are affected by IO. Therefore, factors that more efficiently influence those perceptions contribute to the success of IO.
- (U) Strategic intelligence refers to information about an environment that makes commanders and policymakers better able to mobilize economic, diplomatic, informational, and military resources to achieve theater, national, or multinational objectives.[3] While IPOE helps answer questions about how an operation should be carried out, strategic intelligence helps answer questions about which operations should be planned and carried out in the first place.

(U) In this assessment, *behavior* refers to individual-level activity, while *movement* refers to population-level activity. Behavior is often inherently unpredictable and unexplainable for reasons outlined below. Movements are both predictable and explainable if the analysis is approached in the right way.

(U) Current Approaches and Their Problems

(U) Explanations as to why people or populations tend to engage in specific activities typically reference two types of causes:

- (U) Individual causes, such as motives, attitudes, personality, or values.
- (U) Social causes, such as culture, tribe, society, religion, or region.

(U) Both approaches fail to identify actual causes of behavior or to suggest viable reactions to behavior (see tone box below for alternative uses for some of these approaches). This section explains why both types of causes are not actually causes. The discussion here represents an alternative to the ways these topics are typically treated in IC assessments. The appendix presents evidence showing how these faulty explanations lead to faulty analyses.

(U) Behavior Analysis

(U) References to an individual cause (for example, a "profit motive," an "authoritarian personality," or "collectivist values") rely on circular reasoning. The only way to identify the cause is to identify its supposed behavioral outcome: for example, we know the person wants to get rich (has a profit motive) because he is seen trying to get rich, so saying that he tries to get rich because he wants to get rich has no analytic value. Using the individual cause to explain the behavior only restates what is already known.

(U) References to social causes also rely on circular reasoning. The only way to identify the social cause is to recognize its supposed behavioral outcome: for example, *culture* is usually defined to mean the customs, habits, traditions, and other normal practices within a society. We know that a person belongs to a certain culture because he tends to obey the norms of that group; therefore, saying that he obeys the norms of that group because of his culture has no analytic value. Using the social cause to explain the behavior only restates what is already known.

(U) Analyses employing other social categories such as ethnicity, religion, tribe, nation, class, and region similarly explain behavior by referring to a general description of the behavior itself. Analysts sometimes try to avoid circular reasoning by arguing that people's identification with these groups, rather than group membership itself, actually causes behavior. This approach fails as well—it trades the social cause of group membership for the individual cause of group identification. Both employ circular reasoning, so neither identifies actual causes of behavior.

(U) Movement Analysis

(U) In analyses of popular movements, individual causes are usually transformed into references to key leaders: the leaders want a population to behave in certain ways, so it does. Social causes usually take the form of group generalizations: the population is mostly made up of certain social groups that tend to behave a certain way, so the population also tends to behave that way. These approaches produce analyses that are only sometimes accurate and never actionable.

(U) Leadership statements are a poor tool for predicting or explaining popular movements. There is no reason to assume that a movement will always or even usually conform to the statements of its leadership, as population members may disregard, modify, poorly implement, or even be generally ignorant of leader commands. An analytic approach that relies on leadership statements also fails to explain those situations in which the movement *does* conform to leaders' instructions—it does not explain *why* the movement conforms—so an analysis of key leaders provides no information about what needs to change in order for the movement to change.

(U) Likewise, group generalizations are only sometimes accurate and rarely actionable. People talk about groups as if they were all separate and distinct entities, but members of different groups often think and act in ways indistinguishable from the thoughts and actions of members of other groups. There is no reason to assume at the outset that a movement will always, or even usually, mirror the group whose members make up most of the membership; making this assumption attributes behavior

to people who do not display it and fails to attribute behavior to people who actually do display it. This approach also fails to explain why a majority group tends to act the way it does, so a social-group analysis provides no information about what needs to change in order for the movement to change.

(U) The approaches noted above describe general behavioral tendencies without ever accurately identifying causes. Their use is unjustifiable in the explanation and prediction of individual behavior and ill-advised in the explanation and prediction of popular movements. The main problem with these approaches is that they provide no decision advantage.[b] *Decision advantage* is the possession of information or analysis that enables a more appropriate decision than would otherwise be possible. To provide decision advantage, information or analysis must convey the range of choices, the range and likelihood of choice outcomes, or both. Information improves knowledge. Analysis improves insight. Decision advantage improves action. While current approaches can sometimes predict popular movements, they never explain movements in a way that identifies appropriate targets or viable courses of action.

(U) When Is Social and Cultural Information Important?

(U) Social affiliations such as tribe and ethnicity, and cultural knowledge such as ideology and custom, cannot and should not be used in explanations of behavior. Such distinctions are like the colors and designs printed on the individual pieces of a jigsaw puzzle. At first, it may seem reasonable to explain why a particular puzzle fits together by referring to the picture that the assembled pieces display. In this explanation, the puzzle fits together the way it does because that is the only way the picture makes sense. In reality, the picture has nothing to do with how the puzzle fits together. The puzzle can only be assembled if the appropriately-shaped pieces are fit to one another, and virtually limitless combinations of colors and designs can be printed on sets of identical pieces to create puzzles that look different without actually differing in the shapes of the pieces or the manner in which they fit together. Often, like the color and design patterns on a puzzle, social and cultural distinctions are arbitrary: they commonly represent the results of historical and situational chance more than they represent the underlying factors that actually cause behaviors of interest. Those distinctions have little analytic value in that they rarely describe, explain, or predict behavior with any reasonable accuracy.

(U) However, different information is important under different circumstances. The markings on a puzzle, for example, may help a puzzle builder find pieces that are more likely to eventually fit together, and those markings may be invaluable when there is a need to talk about the puzzle with people who may not have the ability or inclination to discuss the individual pieces. Likewise, social and cultural distinctions may help people identify certain factors that actually make specific behaviors more likely, and those distinctions are invaluable in venues where precise information about causation is less important than the facilitation of communication and the establishment of common ground. Social affiliations and cultural knowledge are extremely important in intelligence collection, operational planning, and any other activity that requires interaction with local populations, as knowing the social and cultural distinctions that are important to those populations makes those interactions easier.

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(U) Processes and Constraints

(U) Intelligence production requires the identification of targets for collection and analysis. Motivation cannot be identified the same way many other intelligence targets are identified, because it is part of a random process.[c] More information about a random process does not yield a decision advantage,

whereas more information about an orderly (nonrandom) process does. Motivation cannot be understood without first understanding the difference between these two processes.

- (U) An orderly process is influenced by causes that are few enough in number and constant enough in nature to make it possible to precisely define which differences in the causes correspond to differences in the outcomes. The ability to observe consistent correspondence between cause and effect makes information about past instances of such processes helpful in predicting process outcomes.
- (U) A random process is influenced by causes that are *great* enough in number and *changeable* enough in nature to make it *impossible* to precisely define which differences in the causes correspond to differences in the outcomes. The inability to observe consistent correspondence between cause and effect makes information about past instances of such processes useless in predicting process outcomes.

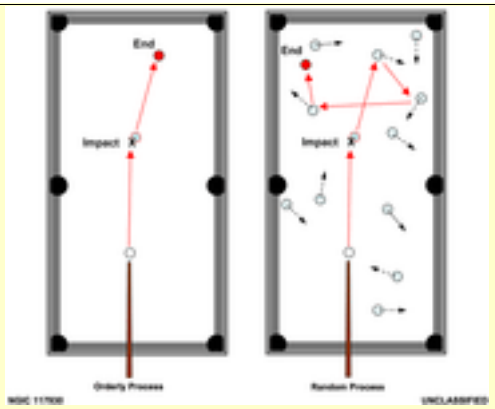
(U) Treating motivation as a random process is a stark departure from the way motivation is typically understood and assessed. While no amount of information about a random process itself can predict its outcomes, information about factors that consistently constrain the range of possible process outcomes *can* allow for some limited prediction (see tone box below). Constraints are factors that make certain outcomes more likely than others. Sufficiently restrictive constraints can limit even a random process's outcomes to only a few possibilities.

(U) Why Does the Type of Process Matter?

(U) As an analogy, an orderly process looks something like a shot in a game of pool. Determining where a single ball on a flat and otherwise empty surface will come to rest requires information about the ball's initial location, the direction and amount of force initially exerted upon the ball, and the amount of friction exerted upon the ball by the table surface. Recording this information each time a shot is made and recording the corresponding end position of the ball would allow for the identification of correspondence between certain initial conditions and certain end positions. Given this information, the end position of a ball in any particular shot would be predictable.

(U) In contrast, a random process would look something like hitting a cue ball onto a pool table on which many other balls—all in randomly determined positions—were already moving in varying directions and at varying speeds. As those balls bounced around the table, many of them would randomly and repeatedly impact the cue ball and one another, sending all the balls in new directions. The forces that determine the movement of all of the balls would be the same as in the orderly process analogy; however, the number and changeable nature of the additional balls would make the process random, which would make the final result of the shot uncertain.

(U) In the random process example, information about past shots would not predict future end positions. Making a shot and then observing a ball bounce off other balls before coming to rest at a particular point on a pool table would explain how that one ball came to that one position for that one time only. Other shots could just as easily hit different moving balls at different points, resulting in a different end position. A ball's end position at any point in the future would be unpredictable, even given identical starting positions. The only way to make a prediction based on past observations would be to unrealistically assume that all of the randomly inserted moving balls would impact and re-impact one another at the same time and in exactly the same way each time the cue ball was struck.



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(U) Pool-Table Analogy of Orderly and Random Processes (click to enlarge)

(U) The cushions and pockets on a pool table do help to constrain even a random process: no matter where they move or how many times they impact one another, all of the balls must remain within the boundaries set by the cushions, and a ball that falls into a pocket will remain there, no matter what happens to the rest of the balls afterward. Knowing where these constraints are and how they limit a ball's movement reduces uncertainty about the range of possible end positions and therefore allows for limited prediction.

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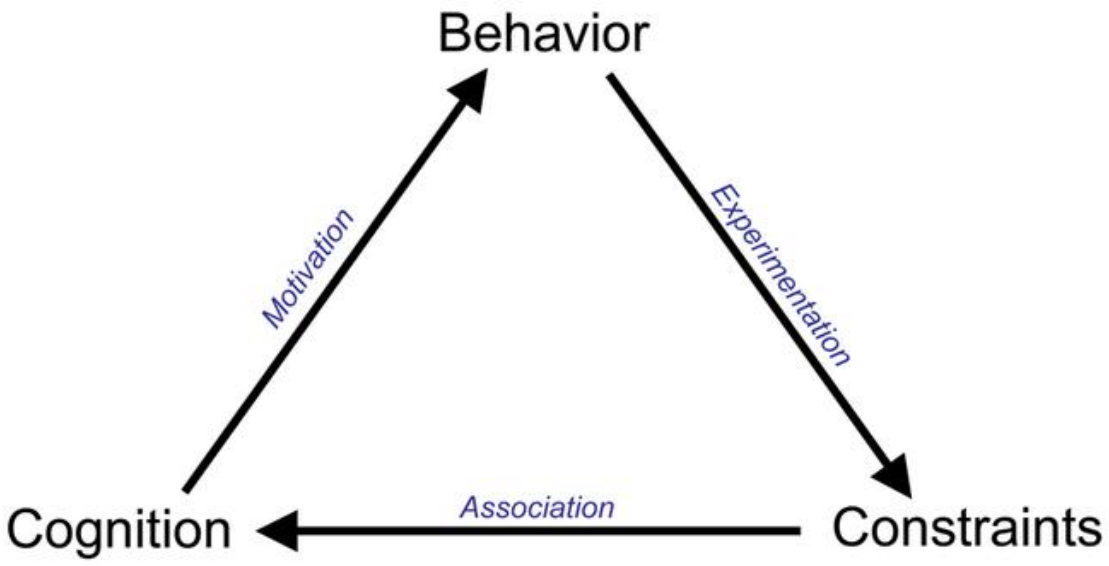
(U) Motivation

(U) *Motivation*[d] is neurological activity that associates a person's experiences with innate drives. Human innate drives are relatively simple and few: except in cases of mental illness or disability, they are basically the same for all people everywhere. People experience feelings of satisfaction when they fulfill their drives and experience feelings of frustration when they fail to fulfill them.

(U) People engage with their physical and social surroundings in attempts to promote satisfaction and avoid frustration. When people can repeatedly associate certain aspects of these surroundings with satisfaction or frustration, their brains develop dedicated neural pathways that elicit behavior each time they are exposed to similar surroundings. This generally allows people to learn to behave appropriately in surroundings in which they commonly find themselves.

(U) For the purposes of this assessment, it is accurate enough to refer to a person's surroundings as constraints and to refer to a person's motivational neural patterns as cognition (see image below).



(U) Diagram of Basic Motivation Process (click to enlarge)

(U) Motivation is a simple but random process. People interact with dozens of different and sometimes changing constraints every day, so cognition changes constantly as well. Because motivation changes constantly, it is extremely unlikely that any single, one-time set of events will consistently motivate a person for any extended period of time. Because the human brain is designed to remember the end result of those changes rather than the entire process, people are rarely well informed about those things that actually cause their behavior, and personal explanations of their own behavior can rarely be trusted.

(U) This view of motivation runs counter to the way the topic is normally approached inintelligence assessments, and claiming that motivation is a random process may seem to undermine the possibility of actually assessing motivational influences on behavior. However, random processes do not necessarily have entirely random outcomes. The most reliable method for forecasting the outcome of a random process is to analyze that process's constraints. Therefore, the most promising method for forecasting behavior is to identify factors that limit the range of behaviors possible within a given setting. As it is easy to falsely attribute causation to some aspect of a person's surroundings, uncertainty about constraints can only be reduced through rigorous testing. A rigorous test entails not only finding reason to believe that a particular constraint actually limits the range of possible behaviors, but also finding reason to believe that other, equally-plausible constraints are not the actual causal factors instead. To use the pool-table analogy, evidence derived from weak testing does not differentiate between a certain end position that is the product of the bumpers and pockets being arranged in a way that made that position more likely and an identical end position that, instead, was simply the one-time product of a set of random collisions, regardless of the constraints' arrangement. Rigorous testing allow for the plausible explanation of behavior. Weak testing does not. A more complete discussion of the differences between weak and rigorous testing can be found in the appendix.

(U) Individual Behavior

(U) This section uses the issue of violent extremism to illustrate how constraints affect individual behavior. The concepts and principles can be employed to explain all behavior; extremism is only used here because it was a convenient illustration for which good, systematic data could easily be found. This section gives only a general overview of the main constraints on behavior. The

information in this section is addressed in much more detail in the next assessment.

(U) Of the 315 suicide attacks that took place between 1980 and the end of 2005, 301 were associated with strategic campaigns designed to further the objectives of specific movements.[4] However, not all of these attacks were planned, implemented, or even ordered by the movements' professed leaders. The constraints that made people's behavior contribute to the goals of the extremist movement explain what made those people likely to engage in extremist behavior. A full discussion of the constraints that make this contribution likely must cover everything from a person's first contact with a movement to his or her actual engagement in the related behavior. Two general constraints account for this full path (see tone box below for summary).

(U) Constraint 1: Limitations on Intent

(U) For people to engage consistently in any behavior, they must have the intent to engage in it. Intent constraints limit the range of things that people can desire, making certain intents more likely in the process. These constraints are partially a matter of analyzing the costs and benefits of an action. These costs and benefits are usually basic—food, shelter, reproduction, safety, friendship, and other factors that influence a person's physical well-being.

(U) In addition to costs and benefits, intent constraints are imposed through information from other people. Close social relationships in which people learn how they should or should not behave cause certain behaviors to become more likely. For example, in one systematic study of nearly 500 Islamic militants,[5] 70% were introduced to their respective movements through preexisting friendships like childhood friends, roommates, and classmates. Another 20% were introduced to the movements by their parents, brothers, first cousins, and in-laws. The last 10% came from radical Islamist schools, mostly in Indonesia, but those extremists amounted at most to about 10% of the total student body, eliminating school affiliation as the decisive factor in their radicalization. Moreover, most recruits from these schools were also connected to their recruiters through friendship and kinship. In cases where prospective extremists did not already have a longstanding relationship with their recruiters, those relationships were founded as a result of simple cost-benefit analysis. For example, over 80% of the extremists in one sample joined their respective movements while living outside their home country, usually as a result of frequenting the same Western European restaurants or mosques as their recruiters.[6] [7] Most decided to frequent these places because they were looking for cheap *halal* food or because they were homesick and wanted friends, not because of political or even religious convictions.

(U) Once formed, these intimate groups impose intent constraints. People modify their cognition to conform to information obtained from other people, as long as that information is accompanied by emotional signaling and immediate feedback. *Emotional signaling* refers to the majority of natural human communication that involves body language and vocal inflections to convey what the communicator feels about the information being communicated.[e] *Immediate feedback* refers to public reactions to people's responses to information obtained from other people. One person communicates an emotional signal, sees the other people's response signals, then responds with another emotional signal, observes the next response, and so on. Repeated studies have show that these kinds of intent constraints happen in groups ranging in size from 4 to 12 people, with an average of 8 people.[8] [9]

(U) Constraint 2: Limitations on Capability

(U) Intent constraints, by limiting the range of things that people desire, make the intent to engage in certain behaviors more likely, but people must acquire the means to engage in a behavior before they will actually do it. Capability constraints limit the range of things that it is possible for a person to do, making certain forms of behavior more likely in the process. Many modern movements focus on capability rather than intent. For example, a large number of people who want to engage in an extremist act lack the practical knowledge needed to carry out an actual attack. The core members of many modern extremist movements devote most of their time and effort to providing operatives with the kind of practical information that allows people to act on their desires. The authors of extremist manuals from around the world tend to devote most of their attention to subjects like weapons making, tactics, first aid, and intelligence. When possible, they also provide hands-on training in

these same subject areas.[10] In addition to training, even zealous extremists need money, weapons, and targets before they can actually act on their intentions.[11] Besides running training camps, this was al-Qaida's main function before post-9/11 operations dispersed its key members. In most cases, attacks conducted in the name of al-Qaida were carried out by operatives who approached movement members about procuring materiel support for proposed attacks.

(U) What Are Intent and Capability Constraints?

(U) Intent constraints are based on simple cost-benefit analysis and on close social relationships in which people learn how they should or should not behave. Costs and benefits have the strongest effect when they relate to basic physical needs. Close social relationships have the strongest effect when people can see unambiguous and homogenous emotional signals and when they are required to publicly respond to those signals.

(U) Capability constraints are based on the physical and informational resources needed to engage in a behavior. Capability constraints are strongest when they allow only a small range of behaviors and when they allow a person to clearly see the connection between a behavior and its intended outcome.

(U) Constraints do not directly cause behavior in the same way that pulling a trigger causes a gun to fire. Constraints limit the total range of possible intents and capabilities. They make certain behaviors more likely by eliminating alternatives.

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(U) Both intent and capability constraints are necessary for a behavior to become likely; to some extent, they reinforce one another. Intent constraints make people more likely to want to behave in ways that corresponding capability constraints make possible, and making use of the opportunities provided by capability constraints makes it easier for people to want to engage in corresponding intent constraints (see tone box below for fuller discussion).

(U) Effective extremist movements take advantage of this reinforcement. For example, some of the movements most effective at maintaining member participation drastically limit member contact with outsiders,[12] and challenging and dangerous training exercises often strengthen intent constraints by putting members in situations where they must rely on and communicate with one another.[13] Most extremists, regardless of when they join, do not actively support a movement until after they have been exposed to both kinds of constraints.[14] [15]

(U) This is not to say that people who engage in a behavior all feel the same way about it. Syrian operatives in Lebanon were sometimes told they were driving a car full of supplies, when in fact the car was loaded with explosives that were detonated remotely.[16] Leaders of the Workers Party of Kurdistan were known to select several people to carry out suicide attacks, regardless of those individuals' wishes; those who refused the offer were executed in front of the others, who were then invited to accept.[17] However, in both coerced and voluntary incidents of extremism, people had been exposed to both intent and capability constraints before the behaviors were able to take place. The constraints were more decisive in determining whether a person would engage in an attack than were any ideas the attacker may have had about his or her activity.

(U) Are Constraints Just Another Word for Culture?

(U) It may seem that because intent and capability constraints are parts of a person's culture, there is essentially no difference between saying that intent and capability constraints constrain behavior and saying that culture constrains behavior. In a sense, this is true: constraints involve consistent engagement in certain behaviors, which is one definition of culture.[f] The differences in the approaches lie in their precision and in the degree to which they improve decision advantage.

(U) For example, say that members of a society tend to espouse a cultural code of conduct, such as an honor code. To say only that this honor code constrains behavior may be true, but it is definitely useless. How and in which situations does it constrain behavior? For the honor code to be analytically useful, the analyst would need to define what factors make it possible and desirable to behave in a way that the code dictates. If the analyst were able to identify these factors, the honor code could be said to constrain behavior, but at that point the code itself would be irrelevant to the analysis: once the intent and capability constraints that make the honor code effective have been identified, the constraints can explain the behavior without any reference to the code at all. The same is true of ethnicity, religious affiliation, class, tribe, and all other social groupings: they are only important when constraints make them important, and constraints can be important without them. Therefore, culture and other social groupings are not necessary to explain or predict behavior.

(U) Additionally, understanding the honor code would not improve decision advantage. The fact that nearly all members of a population know and adhere to a cultural honor code may in some cases serve as a reliable predictor of behavior, but that fact does not provide options for changing the behavior or for appropriately reacting to a popular movement.

(U) While the approach advocated in this assessment is an alternative to dominant focus within the IC on "culture" and "social factors," it should be made absolutely clear that this assessment does not argue that culture is irrelevant. It only argues that most cultural things constantly change in their effects on behavior, and that nothing that variable should be used as the basis for analysis. Sometimes, certain cultural things are consistent enough in limiting the range of what people can do or want that there is good reason to identify and analyze them. It is those things—and only those things—that comprise constraints. Constraints are those things, cultural or otherwise, that have the potential to be consistently both relevant to and useful for the analysis of behavior.

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(U) Differences in behavior are not caused by differences in the ways individual people think. All people, setting aside the impaired and mentally ill, think essentially the same way. They have to, for they all have roughly the same kind of brain with which to do their thinking. Differences in behavior are caused by differences in constraints.[g] Intent constraints are necessary for people to want to engage in a behavior, while capability constraints are necessary for people to be able to engage in the behavior. Analyzing behavior in terms of these constraints is accurate and automatically increases decision advantage by identifying targetable influences.

(U) Popular Movements

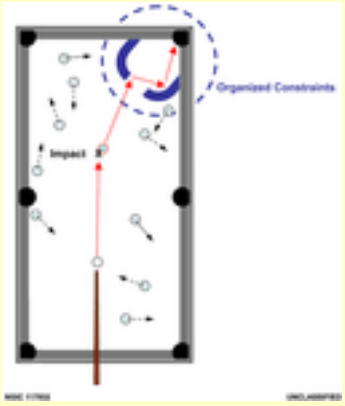
(U) Strong constraints play a more decisive role in producing a popular movement than do any individual people who participate in that movement, including those people whose participation is highly visible. Intent and capability constraints are more important than details of leadership and ideology: effective tactics, techniques, and procedures (TTP) can be implemented even in the absence of key leaders or ideological common ground so long as strong intent and capability constraints are in place.[18] [19] A person's membership in a movement does not mean he or she acts with the intention of furthering the movement's goals. That is what makes popular movements difficult to analyze: members' behaviors further the movement goals as a side effect. Movements that house effective constraints tend to have members who more consistently engage in behaviors that further the movement's goals.

(U) The strength and arrangement of intent and capability constraints determines the extent to which a popular movement can be understood, predicted, and modified through intervention. The fewer

potential behavioral outcomes a constraint allows, the stronger it is. The strongest possible constraint would allow movement members to engage in one and only one behavior once exposed to the constraints. Strong constraints reduce uncertainty about the number of potential behaviors in which movement members can engage (see tone box below).

(U) Why Does the Arrangement of Constraints Matter?

(U) To again use the pool-table analogy, the arrangement of constraints is like using cushions to partition off a section of the table near a specific pocket. Although the balls on the table bounce off each other randomly, just as they did before the partition was erected, once a ball happens to enter the partitioned area, the likelihood of it randomly falling into the pocket dramatically increases.



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(U) Pool-Table Analogy of Random Process Constraints (click to enlarge)

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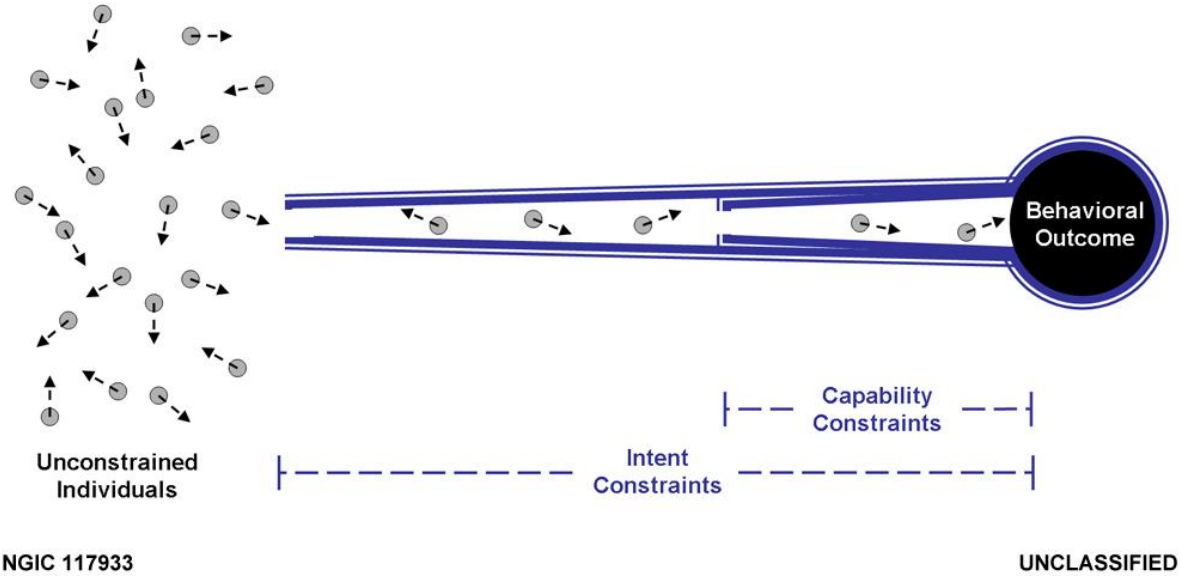
(U) Centralized Arrangement of Constraints

(U) Authorities in institutionalized movements like militaries and governments intentionally arrange strong constraints in ways that make the movements' members likely to behave in ways that conform to the movements' goals. *Centralized arrangement of constraints* can be very effective: authorities use their positions of relative power to remove or sanction people who refuse to operate within the constraints and to promote or reward those who conform. Maintenance of a centralized arrangement of constraints facilitates a command and control structure: superiors give orders to subordinates who then obey in order to gain reward or avoid punishment.

(U) Once people enter a highly centralized arrangement of constraints, their behavior becomes predictable based on the orders of their superiors and the resources of the movement. A graphic representation is shown below. Centralized arrangement of constraints allows for few behavioral outcomes apart from those desired by the arranging authorities. However, this efficiency comes at a price: centralized arrangement of constraints requires constant upkeep and supervision in order to ensure that all constraints remain in their intended arrangement.



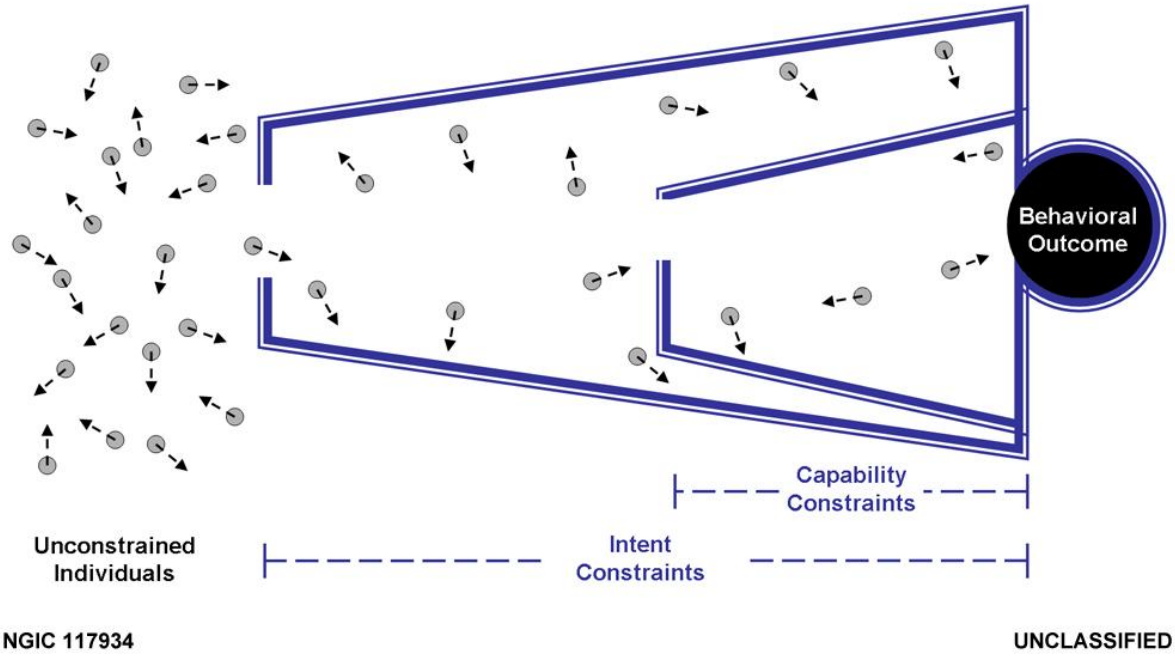
(U) Centralized Arrangement of Constraints (click to enlarge)

(U) The activities of movements that exhibit a centralized arrangement of constraints can, to some extent, be predicted based on the actions of those movements' leaders. However, it is a mistake to assume that an insurgency and other popular movements have a centralized arrangement of constraints simply because they have people who can be identified as leaders. A person's claim to leadership is not proof of centralized arrangement of constraints. Centralized arrangement needs to be established by evidence, not assumption.

(U) Distributed Arrangement of Constraints

(U) A distributed arrangement of constraints makes specific behaviors more likely without the need for a centralized arranging authority or command and control structure. Distributed arrangement emerges naturally when people become networked through interactions with one another. These networks require no leaders, as every member of the network is a decisionmaker with the ability to either allow or deny the actions of other members. Distributed arrangement of constraints makes popular movements more likely without requiring any intentional direction or control. Instead of empowering superiors to dictate the behavior of subordinates, distributed arrangement regulates and facilitates certain behavioral outcomes as a side effect. The activities and resources of all of the network members make certain behaviors more likely without those activities and resources ever being deliberately mobilized for the movement's express purpose. These behaviors aggregate into popular movements without the need for much coordination.

(U) Once people enter a distributed arrangement of constraints, their behavior becomes more predictable based on the constraints themselves. Distributed arrangement of constraints allows for many behavioral outcomes apart from those relevant to the movement. Distributed arrangement is less efficient than centralized arrangement in terms of producing large-scale action, but distributed arrangement requires little to no upkeep: the arrangement arises from those activities in which network members participate as part of their everyday lives.



(U) Distributed Arrangement of Constraints (click to enlarge)

(U) Most popular movements result from distributed arrangement of constraints. Al-Qaida's recruitment activities illustrate one aspect of distributed arrangement: prospective members usually seek out the movement themselves, and less than 20% of those are eventually admitted, with very little attention paid to actual recruitment and retention activities.[20] The fact that al-Qaida does not need to actively convince people to participate suggests that the constraints that make such participation likely are present in the everyday lives of those prospective members. The arrangement of those constraints emerges from those people's daily activities independent of any strategic doctrine, policy, or command and control structure.

(U) There are extremely few examples of naturally occurring popular movements that approximate the degree of centralized arrangement that characterizes highly institutionalized movements like those found in conventional warfare. Movements can result from both distributed and centralized constraints, but changing those patterns by focusing on the intentions and interests of key individuals is only possible in the case of centralized arrangements. In all other cases, the movement emerges spontaneously. Influencing or removing the individuals and groups involved has little lasting effect on the movement, because those individuals and groups are not the decisive factor. The constraints cause the movement. Because of this, identifying constraints contributes directly to decision advantage. Knowing what constraints make a movement more likely automatically identifies potential targets for engagement.

(U) Operational Implications

(U) Achieving popular support may be an inappropriate objective in counterinsurgency and population engagement. Insurgents do not need a majority of popular support to carry out their activities. They only need enough appropriately placed individuals to make use of constraints that allow them to advance their strategic objectives. The same is true of counterinsurgency operations. Of course, it would be nice if the majority of the population openly denounced insurgents and their goals, but in many cases that is a highly unrealistic expectation.

(U) A RAND corporation study that examined 648 extremist movements that operated between 1968 and 2006 found that all of the movements that had ceased operations did so for one of four reasons:[21]

- (U) 43% became participants in the mainstream political process.
- (U) 40% were broken up by police efforts.
- (U) 10% accomplished their goals.
- (U) 7% ended through military intervention.

(U) Assuming that a successful insurgency is an unacceptable outcome, there remain three options for successful counterinsurgency operations. Of those three options, two entail the targeting and manipulation of constraints. The first—integrating extremists into a mainstream political process—involves the provision of intent and capability constraints that make it easier for people to engage in that mainstream movement than it is to engage in the disruptive movement. The second—breaking up a popular movement through police efforts—involves simply disrupting the constraints that make it easy for people to engage in behavior that supports the movement. The third option is to neutralize the majority of movement members through military intervention, which, historically, has been a very difficult outcome to achieve (see tone box below).[22]

(U) Individual actors are appropriate targets only when the neutralization of the actors will neutralize the constraints. For example, because a centralized arrangement of constraints allows prominent members of a movement to direct the behavior of other members, eliminating those prominent members will sometimes disrupt the other members' behavior. On the other hand, eliminating prominent members of a movement that employs a distributed arrangement of constraints only aggravates remaining members who otherwise may have previously lacked the intent constraints necessary to carry out actual behavior.

(U) For example, an analysis of 3 years of suicide bombings in Israel revealed that Israeli operations that killed prominent members of extremist movements precipitated an increase in extremist attacks, while operations that resulted in the deaths of solely Palestinian civilians did not.[h] The authors of the assessment concluded that removal of high-profile members of the movement strengthened pressure on other members to carry out extremist operations. Lower-profile preventative arrests were more effective in the long run.[23] The conclusions of the study suggest that the only time a person should be considered a target is in the context of a "ticking bomb" scenario: when the person, if not neutralized in the very near future, will in some way directly contribute to an operational defeat. In such cases, the imminent threat posed by the person warrants the targeting. In all other cases, this study in particular—and the logic behind the principle of constraints in general—suggests that it makes more sense to target the constraints.

(U) Why Not Target Individuals?

(U) For a unit to use a terrain feature such as a hill to gain a tactical advantage over the enemy, it does not have to convince the hill that it should help. The unit can simply recognize that gaining control of the terrain feature offers an advantage to it and denies that advantage to the enemy. Successful insurgencies recognize and take advantage of constraint terrain as well as physical terrain.

(U) People behave the way that they do only because they are responding to constraints. Neutralizing individuals—civilians or enemy combatants, through kinetic or nonkinetic means—has little effect on insurgent or population behavior because it fails to affect the distributed arrangements of constraints that make up the key terrain. As long as insurgencies have control of key constraint terrain, they have an advantage. As long as that terrain goes unsecured or unmodified by the insurgency or the counterinsurgency, there can be no lasting influence upon a population.

(U) As an analogy, consider a conventional combat example in which the enemy occupies a hill that imparts a definite strategic, as well as tactical, advantage and from which the enemy force maintains a route that allows for fresh supplies, reinforcements, and everything else it needs to continue its occupation of the hill.

Consider an engagement that resulted in the neutralization of certain key enemy personnel, but which never even had the potential to dislodge the enemy from its position or to cut off its continued reinforcements. Such an engagement would produce a tactical victory, but a meaningless one. Neutralizing individual insurgents or engaging with individual members of a population while failing to modify constraints is like neutralizing individual enemy combatants without ever securing the key terrain that makes the combatants a problem in the first place.

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(U) Insufficiently precise alteration of constraints can carry unintended consequences significantly worse than the consequences of taking no action at all. Not every opportunity to disrupt a radical relationship, impede training, or stop a transfer of resources should be exploited. Poorly targeted operations, such as operations that use group identity labels to identify targets, run the risk of never targeting many of the members of a problematic movement, as well as the risk of inadvertently targeting many people who do not belong to, or may even oppose, the problematic movement. Some examples follow:

- (U) Disrupting the activities of a radical mosque or school that has connections to extremist movements fails to disrupt constraints in a way that deters extremism, because the members of the mosque or school who are the real extremists tend to radicalize in smaller-group settings. Denying access to the physical structure and resources of a school, imposing secular reforms, or otherwise intervening in the schools would force the students into the types of small-group settings that make stronger intent constraints possible.
- (U) Targeting the membership or activities of a distributed network because of its connections to extremists fails to disrupt constraints in a way that deters the problematic behavior, because doing so would target too many of the wrong people. Most members of such networks are not extremists. Disrupting the activities of the network would provide both extremist and nonextremist members with shared experiences, whereas previously they only had their network affiliation in common. This could serve as a basis for developing intent constraints necessary to radicalize the nonextremists.
- (U) Targeting a specific ethnic, religious, or geographic population in which a problematic behavior is common fails to guarantee disruption of constraints in a way that deters the behavior. Any campaign that attempts to reduce extremism by targeting that population would fail to target extremists who were not part of the population and would make it clear to the nonextremist portion of the population that they were thought to be extremists, when they in fact were not. The targeting itself could create common ground between nonextremists and extremists where they may have had no previous basis upon which to interact regularly.

(U) Targeting constraints holds the most potential to reduce behavior that supports problematic movements when those constraints are accurately targeted. The key is to modify constraints in a way that people who would use them to regulate and facilitate problematic movements cannot do so with as much ease, without unnecessarily disrupting the people and environments that are associated with those constraints.

(U) Conclusions

(U) Approaches to IPOE, IO, and strategic intelligence that attempt to take population influence into account have traditionally focused on factors that fail to impart a decision advantage. This assessment offers the basis for an alternative approach to such efforts. This new approach focuses on the factors that actually cause behavior and make popular movements more likely to occur. This approach is a useful departure from current, more problematic, approaches, in that it offers to provide both accuracy and decision advantage. However, it requires more specific definition before it can be

directly implemented in intelligence or field operations. Those specifics will be provided in the subsequent assessment.

(U) Motivation cannot be targeted. Attitudes, opinions, emotions, and beliefs change too quickly and in response to too many different factors for a "hearts and minds" operation to be lastingly successful. Constraints, on the other hand, can be targeted. Modifying intent and capability constraints should modify individual behavior and popular movements more effectively than neutralizing specific actors. The main quality recommending the development and implementation of this approach is that it proposes realignment of the focus of IPOE, IO, and strategic intelligence in counterinsurgency and population engagement operations to conform to a more accurate view of how individual behaviors and popular movements are actually produced. Addressing these issues with more justified assumptions increases the chances of achieving decision advantage. Eliminating the problematic approaches eliminates an unnecessary obstacle to waging a successful campaign.

(U) Consideration of Alternative Analyses and Contrary Evidence

(U) Alternatives to the proposed approach are addressed within the body and appendices of the assessment itself.

(U) Intelligence Gaps

(U) Intelligence gaps related to this approach will be fully discussed in the next assessment, which focuses on metrics and analytic techniques.

(U) Appendix: Weak and Rigorous Testing of Constraints

(U) A rigorous test examines information that gives reason to believe that a particular constraint actually limits the range of possible behaviors, as well as information that gives reason to believe that alternative constraints are not the actual causal factors. Evidence of reliable constraints depends upon both the presence of strengthening information and the absence of weakening information. In order to state with confidence that a particular constraint makes a particular behavior more likely, it must be shown that most people exposed to a constraint engage in the behavior and that most people *not* exposed to that constraint do *not* engage in the behavior. It must also be shown that few people exposed to the constraint fail to engage in the behavior and that few people *not* exposed to the constraint *do* engage in the behavior.

(U) Evidence derived from tests that do not satisfy all four of these criteria could just as easily characterize random outcomes resulting from a random process, as opposed to predictable outcomes resulting from reliable constraints. (To use the pool-table analogy, evidence needs to show that a ball's end position resulted from the bumpers and pockets being arranged in a way that made that position more likely. Otherwise, it should be assumed that any particular outcome is simply the product of random collisions.) The purpose of rigorous testing is to reduce enough of the uncertainty surrounding random-process constraints to be able to make accurate and reliable predictions regarding process outcomes.

(U) As an illustration, most extremism research that focuses on reasons why extremists engage in extremist behavior relies on weak testing. Unsupported assertions about the causes of extremist behavior regularly appear in media, academic, and government assessments, including Intelligence Community assessments. The following are some of the most common problematic assertions regarding extremist behavior:

- (U) People turn to extremism because of poverty, relative resource deprivation, or government irresponsiveness.
- (U) People are recruited to extremism when they are young, naïve, and vulnerable.

- (U) Extremists are pathologically angry, depressed, aggressive, or in some other way damaged by emotional or personality flaws.
- (U) Extremists do what they do because they espouse an ideology that dictates that they should.
- (U) Extremists do what they do because of their identity.

(U) None of these explanations of extremist behavior stands up to rigorous testing. While it is true that some extremists are poor, were raised in a radical religious environment, are mentally unstable, hold strong ideological convictions, or belong to specific cultures or identity groups, available systematic findings fail to support the proposition that any of these factors consistently constrain cognition, and none of these factors reliably predict extremist behavior.[24] None of these explanations reliably distinguish extremists from nonextremists.[25]

(U) The following subsections address several weakly tested assertions in light of evidence primarily derived from Marc Sageman's study of 500 extremists from Islamist movements[26] and Robert Pape's Chicago Project, which studied all 462 operatives who carried out all of the 315 successful suicide attacks that took place between 1980 and the end of 2005.[27] These are the most systematic studies of extremist behavior currently available and offer a well-bounded problem set for discussing the issue of behavior as a whole.

(U) Economic and Social Frustration

(U) Lack of resources and the lack of opportunity to gain resources have both been advanced as causes of extremism, but the connection between poverty and extremism fails to stand up to rigorous testing:

- (U) 66% of the extremists in Sageman's sample came from upper- or middle-class households.
- (U) The same percentage held careers in professional or semiprofessional fields.
- (U) Only 17% of the suicide attackers in Pape's sample were poor or unemployed.
- (U) The rest were actively employed, many of them quitting their jobs only a few days before they carried out their attacks.

(U) One specific version of the economic frustration assumption posits that young men in population-heavy areas like those in certain portions of the Middle East join extremist groups out of frustration at not being able to find a wife or start a family. This assertion lacks evidence. In Sageman's sample, 75% of the extremists were married. Most of those had children. Government irresponsiveness lacks support as a causal explanation as well. Most extremists in Sageman's sample grew up and lived in countries or areas where they had regular access to social services and the rule of law.

(U) Radical Education of Vulnerable Targets

(U) Another problematic assumption commonly employed is that extremists are recruited when they are young and inexperienced, making them more susceptible to propaganda and other "brainwashing" tactics. This assumption holds that people become extremists because they are indoctrinated into such support from a very young age, often by "preachers of hate" who operate radical religious schools. While such schools certainly exist, the brainwashing argument fails to stand up to rigorous testing, as Sageman's study shows:

- (U) The average age at which an extremist joined the movement was 26 years, well beyond the vulnerability of school age.
- (U) 87% of the specifically Islamist extremists received a secular education.
- (U) 10% grew up Christian.

- (U) 62% had at least a college education.

(U) If anything, most of the extremists were *under*exposed to Islamic education. Most of their degrees were in technical fields. They had had relatively little educational exposure to Islamic doctrines.

(U) Mental/Emotional Problems

(U) Until recently, most of the scholarly work on the psychology of extremism assumed that extremists possessed deep personality flaws. The prevailing explanation of suicide extremism, for example, was that suicide extremists were like any other suicide: the extremist found his life unbearable to a point that he wanted to end it, and the extremist act was just a more visible and meaningful way of doing what he wanted to do anyway. Virtually no information based on rigorous testing supports this view.

(U) Extremists do not exhibit qualities that strongly correspond to any accepted psychiatric measures of mental illness or personality disorder.[28] [29] In fact, there is some indication that those few extremists who slightly exhibit such qualities are dissuaded and sometimes actively shunned from the movements they seek to join.[30] Extremists do not hate democracy, liberty, or freedom. Survey data reliably show that most Muslims who support suicide terrorism and trust Usama bin Laden also favor elected government, personal liberty, educational opportunity, and economic choice.[31] By all indications, extremists tend to be sane, calm, and in many cases even pleasant. In the vast majority of cases in both Sageman's and Pape's samples, extremists did not even have a criminal background. Extremists do not exhibit any common set of psychological characteristics or fit into any particular set of personality profiles.[32]

(U) Ideological Dictates

(U) Extremists' explanations of their actions, including invocation of doctrine, grievances, or other rationales, are a poor basis for explaining or predicting extremist behavior. While many extremist groups in the world use some form of religion to justify their actions, the extremists themselves do not seem to be motivated by ideology. Of all suicide attackers in Pape's sample, less than half were associated with Islamic fundamentalism. When the extremists themselves explain their actions in court testimony, interviews, letters, and videos, doctrinal justifications and promises of heavenly rewards receive only passing mention, if any at all.

(U) One of the most telling illustrations of this point comes from Hizballah, with its explicitly Islamist message, and seems to indicate some form of ideological motivation among its members. Pape identified the ideological affiliation of 38 of Hizballah's 41 suicide attackers. Only eight were Islamic. Three were Christian. The majority—27 attackers—were secular, mostly communists or socialists. The Islamist movement facilitated these people's actions, but the motivation to undertake those actions in the first place probably did not come from the movement's professed ideology.

(U) Extremists commonly cite what they see as unjust meddling in their societies and violence committed against populations with whom they identify as justification of their actions. However, these grievances fail as a causal explanation because such an explanation does not stand up to rigorous testing: many people with those same grievances do not engage in extremist behavior, and many people who do not have these grievances do engage in extremist behavior.

(U) Identity

(U) Researchers and commentators sometimes point to high incidences of extremism among certain ethnicities, nationalities, or other social groups as evidence of a causal link between group identity and extremist motivation. This argument uses identity as a placeholder for a variety of constraints and assumes that people with a shared identity also have comparable exposure to the constraints that make extremism likely.

(U) There are two reasons to doubt the identity argument: first, identity labels are more convenient than they are accurate. People use group distinctions to make sense of their personal experiences. Those experiences rarely apply uniformly to a large number of people, so identity distinctions are usually too poorly defined to yield any reliable predictions of individual behavior.[33] [34] [35] Second,

explanations that invoke identity are usually one of the other four problematic explanations in disguise. Members of a group may, for example, tend to live in poverty or adhere to a particular ideology, so they are assumed to be motivated to engage in extremist acts. This assertion lacks evidence because it depends upon other arguments that also lack evidence.

Footnotes

a. (U) Confidence in Assessments. Our assessments and estimates are supported by information that varies in scope, quality, and sourcing. Consequently, we ascribe high, moderate, or low levels of confidence to our assessments as follows: *High confidence* generally indicates that our judgments are based on high-quality information, and/or that the nature of the issue makes it possible to render a solid judgment. A "high confidence" judgment is not a fact or a certainty, however, and such judgments still risk being inaccurate. *Moderate confidence* generally indicates that our judgments are based on information that is credibly sourced and plausible but not of sufficient quality or corroborated sufficiently to warrant a higher level of confidence. *Low confidence* generally indicates that our judgments are based on information that is of questionable credibility and/or plausibility, that may be too fragmented or poorly corroborated to support solid analytic inferences, or that relies on sources that present significant concerns or problems.

b. (U) *Decision advantage* is the term used by the Office of the Director of National Intelligence, first employed in the Director of National Intelligence's Vision 2015. The U.S. military's Joint Vision 2020 uses the synonymous term *decision superiority*.

c. (U) Scientists, statisticians, and philosophers often refer to random processes as "chaotic processes."

d. (U) The discussion of cognition, learning, and motivation in this assessment is based on the last 20 years of research in developmental psychology and cognitive neuroscience. Findings were used if they came from research that collected and analyzed data systematically, addressed alternative hypotheses, and demonstrated that the findings could be replicated in a variety of settings. These findings were gleaned mostly from peer-reviewed, discipline-specific scholarly journals such as *Journal of Neuroscience*, *Behavioral and Cognitive Neuroscience Reviews*, *Psychophysiology*, *Social Cognitive and Affective Neuroscience*, *Journal of Experimental Psychology*, *Psychological Review*, and *American Psychologist*, as well as publications in more general purpose journals such as *Science* and *Nature*. These findings are not cited in this assessment because they are too numerous and sometimes of a technical nature. Sources are available from the author upon request. A good, nontechnical overview of the cognition and neuroscience principles addressed in this assessment can be found in the book *How the Mind Works* by Steven Pinker.

e. (U) This communication does not necessarily have to take the form of a concrete sign, such as a hand wave or a kick under the table. Signaling refers to any communication of emotion.

f. (U) Part of the problem with using the concept of culture at all is that it is too imprecisely defined to be analytically useful. This imprecision is partially due to the ambiguity of individual definitions of culture and partially due to a lack of consensus within the social sciences regarding any definition at all.

g. (U) Constraints are not causes in the sense that a discreet impetus like a goal or belief can be said to be a cause. A goal is a cause in the same sense that a cue stick is a partial cause of where the cue ball ends up on a pool table. A constraint is a cause in the same sense that a table pocket is a partial cause of where the cue ball ends up. As far as behavior goes, cue-stick causes are very rare and rarely lasting. Table-pocket causes are much more common, but require some changes in how behavior is analyzed.

h. (U) If the attacks had simply triggered some kind of desire for revenge, or touched on some local tradition that demanded retaliation in order to save face, then it would be expected than any deaths—high-profile or civilian—would increase the number of response attacks. The fact that only the high-profile deaths resulted in response attacks suggests that the movements' constraints were the decisive factor.

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