

# **The Scoring of Integrative Complexity as a Tool in Forecasting Adversary Intentions**

*Three Case Studies*

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## Abstract

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The scoring of integrative complexity (IC) from archival materials has been shown to forecast outbreaks of war vs. peacefully negotiated agreements in a number of international crises. In scoring documents and other verbal materials released by national leaders and leadership groups, maintained or increased IC prior to the outcome of the confrontation precedes a peaceful resolution; a drop in IC within approximately six months prior to resolutions precedes the outbreak of war. These findings have been replicated in historical events where wars occurred as the culmination of cycles of escalation, surprise strategic attacks, and persistent international rivalries.

The present report extends these findings into three different categories of conflict. One is an international war between two nations, one of which was until recently a subordinate part of another and is still in a situation of military and political inferiority (Georgia vs. Russia). Another is the periodic occurrence of government-sponsored violence against members of the political opposition (Zimbabwe). The third is the sporadic launching of terrorist attacks against civilian targets in a variety of countries by the same organization or its affiliates (al-Qaeda).

In all three cases, the findings have been similar to those of previous studies: i.e., drops in IC reliably occur several months prior to each episode of violence, whereas increases in IC are found during periods of reduced tension.

## Résumé

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La cotation de la complexité intégrative (CI) à partir de documents d'archives s'est avérée une façon de prédire le déclenchement d'hostilités ou la négociation pacifique d'ententes dans certaines crises internationales. En analysant des documents et des archives sonores remis par des chefs nationaux et des groupes dirigeants, on a constaté qu'avant une confrontation, le maintien ou l'accroissement du niveau de complexité intégrative annonçait un règlement pacifique de la situation, alors qu'une baisse, environ six mois avant un éventuel règlement, annonçait le déclenchement d'un conflit. Ces situations se sont répétées aux cours de l'histoire alors que des guerres ont été le résultat d'escalades, d'attaques surprises stratégiques et de rivalités persistantes entre des nations.

Les auteurs appliquent ce constat à trois types de conflit : une guerre entre deux pays, dont un des belligérants est, jusqu'au moment fatidique, opprimé par l'autre et demeure dans une situation d'infériorité sur les plans militaire et politique (la Géorgie contre la Russie), les manifestations périodiques de violence, sanctionnées par le gouvernement, contre des opposants politiques (Zimbabwe), et le lancement par une organisation ou ses filiales (al-Qaïda) d'attaques terroristes sporadiques contre des cibles civiles dans divers pays.

Dans les trois cas, les constatations ont été semblables à celles d'études antérieures : il se produit invariablement une baisse de la complexité intégrative plusieurs mois avant chaque épisode de

violence alors qu'on observe un accroissement de celle-ci dans les périodes d'apaisement de la tension.

## **Executive summary**

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### **The Scoring of Integrative Complexity as a Tool in Forecasting Adversary Intentions: Three Case Studies**

**Dr. Peter Suedfeld; DRDC Toronto CR 2010-039; Defence R&D Canada – Toronto.**

#### **Introduction:**

The systematic scoring of archival materials for psychological variables is a core methodology in political psychology, primarily because of the difficulty of obtaining direct (face-to-face interview, questionnaire, or experimental) access to high-level political leaders. Among the variables of major interest has been cognitive processing, which encompasses information search and utilization, judgment, interpretation, perspectives, and decision-making – all obviously crucial factors in leader behaviour.

The scoring of integrative complexity (IC) has been a technique used in many studies to investigate the relationship between this aspect of cognitive processing on the one hand, and decisions to resolve crises either by peaceful negotiation or by war, on the other. IC scoring is performed by trained and qualified scorers, applying a detailed manual to randomly selected extracts from documents, interviews, letters, official notes, etc. (or to the entire text of such materials) emanating from identified leaders or leadership groups such as ministerial cabinets or crisis resolution teams. IC is a measure of cognitive structure, not of content: that is, leaders may profess peaceful intentions while change in their IC forecasts that they are deciding to go to war, or vice versa.

Past research has shown consistent patterns of IC change in advance of the culmination of international confrontations. IC remains stable, or rises, preceding peaceful solutions, as in the cases of the 1911 Agadir crisis, repeated crises over Berlin during the Cold War (including the Berlin Blockade), and the Cuban Missile crisis. IC drops, usually on the part of both protagonists, within approximately six months prior to the outbreak of war in confrontations involving cycles of escalation (e.g., World War I, the Korean War) and intermittent major warfare in persistent international rivalries (the half-century of conflict between Israel and Arab nations, and between India and Pakistan); in cases of strategic surprise attack (e.g., Pearl Harbor, the German invasion of the USSR, the Soviet invasion of Hungary ending the 1956 revolution), only the eventual attacker's IC decreases in advance, while the target's IC increases in an apparent effort to maintain progress toward negotiation. Our interpretation of these data follows the cognitive manager model (Suedfeld, 1992): IC goes down when important problems seem intractable and cognitive resources are expended in unsuccessful solution attempts (disruptive stress); at that point, the decision-maker seeks solutions that simplify the situation and require no more subtle interactive solution attempts. The point of disruptive stress is a function of both internal states (fatigue, impatience, value conflict, etc.) and external conditions (risk-benefit ratios, time pressure, information overload, etc.). Thus, for example, other things being equal we would expect the downturn in IC to occur earlier in the side that has the most to lose in a confrontation.

The current project extends these findings into three contemporary cases, all of which differ from the international wars that were the foci of earlier research. One is the South Ossetia, or Russo-Georgia, War. In that case, a former part of the USSR, gaining independence after the dissolution of the superpower, challenged Russia over the extension of Georgian sovereignty in two largely Russian-populated and –oriented breakaway provinces (South Ossetia and Abkhenazia). Escalations occurred on both sides, and ended in a full-blown Russian invasion and occupation, not only of those two provinces, but of other parts of Georgia as well, along with a naval blockade, and air sorties. Georgia, which had hoped for support from international bodies and Western nations, did not receive substantive aid and had to settle for Russian control of the two provinces and continuing influence over Georgian affairs. Our scoring was of the IC of Mikheil Saakashvili and Dmitry Medvedev; respectively, the presidents of Georgia and Russia during the major part of the confrontation. The second case study was the first ever conducted in a period of sporadic domestic political violence. In Zimbabwe, the economically destructive and politically oppressive rule of Robert Mugabe and his ZANU-PF party was challenged by Morgan Tsvangirai and the MDF. In an attempt to retain power Mugabe’s followers initiated a number of physical attacks on opposition leaders and members both before and since a power-sharing agreement in 2009. Our study tracked IC in editorials written by Mugabe’s main spokesman as the rivalry between the two sides continued.

The third case is the prolonged series of terrorist attacks attributed to, and claimed by, al-Qaeda and affiliated groups. Using material produced up to one and a half years prior to the 1998 attacks on US Embassies in East Africa as a baseline, we scored the transcripts of broadcast messages purportedly originating from Osama bin Laden during the period ending in December 2009.

### **Results:**

In the case of the Russo-Georgia War, sizeable decreases in Saakashvili’s IC were found prior to each escalation of the conflict, with increases when events seemed to be turning more favourably to Georgia. The pattern for Medvedev showed that IC drops did not necessarily occur when the escalation was caused by Russian moves against Georgia. This is in accordance with the cognitive manager hypothesis: Russia, by far the stronger of the two contenders, had little to lose and both influence and prestige to gain once it became clear that the West would not intervene. In Zimbabwe, lowered IC scores of the government spokesman both accompanied increases in violent episodes and preceded them: downward changes in IC scores preceded violent upswings in the following month. bin Laden’s IC showed decreases in advance of al-Qaeda attacks; the temporal sequence showed a 4-6 month lag time, but could not be established precisely because releases of his messages were unevenly distributed in relation to the dates of terrorist acts.

### **Significance:**

These studies significantly extend the data-supported use of IC scoring in the context of violent international and sub-national events. Both the avoidance and the occurrence of international wars have been shown to have reliable IC change predictors and concomitants, the latter including IC drops among societal elites outside the political leadership. Further, the Russo-Georgia data support our hypothesized relationship between risk and IC; and the other two studies indicate that the inclusion of IC scoring can be a useful addition to the toolbox of analysts interested in forecasting levels of violence in domestic political disputes and terrorist attacks. Its

reliability and wide applicability should make it of considerable interest to security, defence, and intelligence practitioners.

**Future plans:**

In the brief time remaining for this research, we will add the archival scoring of power motivation to the scoring of IC. In studies of international war, power motivation was shown to predict outbreaks, although not as consistently as in the case of IC. We will test whether using the two together adds power to the predictive process. Last, we will complete an ongoing study of the ICs of leaders in Iran, Israel, and the United States, in an effort to track changes in the tension and forecast the short-term (6 months to a year) likelihood of a military resolution to Iran's nuclear activities.

# Sommaire

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## Cotation de la complexité intégrative comme moyen de prédire les intentions de l'adversaire : trois études de cas

Peter Suedfeld; DRDC Toronto CR 2010-039; R & D pour la défense Canada – Toronto.

**Introduction ou contexte:** En psychologie politique, la cotation systématique de paramètres psychologiques dans des documents d'archives est une méthode qu'on emploie systématiquement lorsqu'il est difficile de rencontrer en personne les hauts dirigeants politiques (entrevue, questionnaire ou laboratoire). Parmi les paramètres d'intérêt majeur, il y a le traitement cognitif, qui englobe la recherche et l'utilisation de l'information, le jugement, l'interprétation, les points de vue et la prise de décisions – tous des facteurs cruciaux manifestes du comportement des dirigeants.

La cotation de la complexité intégrative (CI) est une technique employée dans bien des études pour scruter la relation qui existe entre, d'une part, cet aspect du traitement cognitif et, d'autre part, la décision de régler les crises par des négociations pacifiques ou par un affrontement. Des spécialistes dûment formés et compétents attribuent des notes à la CI à partir d'extraits ou de versions intégrales, choisis manuellement ou au hasard, de documents, de transcriptions d'entrevues, de lettres, de notes officielles, etc., de chefs et de groupes dirigeants identifiés, comme les conseils de ministre ou des équipes de résolution de crises. La CI est une mesure de la structure cognitive, non du contenu : en effet, un dirigeant peut professer des intentions pacifiques alors que la modification de la CI qu'il manifeste indique qu'il a décidé de faire la guerre. L'inverse est aussi vrai.

Des recherches antérieures ont révélé l'existence de modèles réguliers de modification de la CI avant le déclenchement de confrontations internationales. La CI demeure stable ou s'accroît avant un dénouement pacifique comme ce fut le cas de la crise d'Agadir en 1911, des crises répétées à propos de Berlin durant la guerre froide (y compris le blocus sur la ville) et de la crise des missiles à Cuba. La CI décroît, habituellement chez les deux protagonistes, dans les six mois environ avant l'éclatement du conflit durant les confrontations marquées par des cycles d'escalade (p. ex., la Première Guerre mondiale, la guerre de Corée) et par des épisodes intermittentes d'affrontements majeurs entre deux rivaux internationaux de longue date (le demi-siècle de conflit entre Israël et les pays arabes, et entre l'Inde et le Pakistan); dans les cas d'attaques surprises stratégiques (p. ex., Pearl Harbor, l'invasion allemande de l'URSS, l'invasion soviétique de la Hongrie qui a mis fin à la révolution de 1956), on a constaté que la CI décroissait uniquement chez l'agresseur éventuel et, que chez la cible, elle s'accroissait à cause de la volonté manifeste d'arriver à un dénouement négocié. Notre interprétation de ces données suit le modèle cognitif du manager (Suedfeld, 1992) : la CI décroît lorsque les problèmes importants semblent insolubles et que les ressources cognitives sont engagées dans des tentatives de solution infructueuses (stress perturbateur); arrivé à ce point, le décideur cherche des solutions qui simplifient la situation et n'exigent aucune tentative de solution interactive subtile. Le moment d'apparition du stress perturbateur est une fonction à la fois de la condition intérieure (fatigue, impatience, conflit de valeurs, etc.) et de conditions extérieures (rapport risques-avantages, contrainte du temps, surdose d'information, etc.). Ainsi, par exemple, à choses égales, on pourrait



s'attendre que la baisse de la complexité intégrative se produise plus rapidement du côté qui dans une confrontation a le plus à perdre.

Nous avons appliqué ce constat à trois cas contemporains, tous différents des guerres internationales qui ont fait l'objet de recherches antérieures. Le premier est le conflit Géorgie-Russie en Ossétie du Sud. Dans ce cas particulier, l'ancien pays satellite de l'URSS, ayant acquis son indépendance après la dissolution de la superpuissance, a défié la Russie en étendant sa souveraineté à deux provinces séparatistes, dont la population est en majorité russe et prorusse, l'Ossétie du Sud et l'Abkhazie). L'escalade des tensions qui est survenue des deux côtés a abouti à l'invasion et à l'occupation par les Russes non seulement des deux provinces, mais aussi d'autres parties de la Géorgie, ainsi qu'à un blocus naval et des sorties aériennes. La Géorgie, qui avait espéré recevoir l'appui d'organisations internationales et de nations occidentales, n'a pas eu d'aide importante et a dû se résigner à accepter que la Russie contrôle les deux provinces et continue de s'immiscer dans ses affaires. Nous avons évalué la CI de Mikheil Saakashvili et de Dmitri Medvedev, respectivement président de la Géorgie et président de la Russie au cours de la majeure partie de la confrontation. La deuxième étude de cas a été la toute première étude effectuée durant une période de violence politique intérieure sporadique. Au Zimbabwe, le régime d'oppression politique aux effets dévastateurs sur l'économie, mis en place par Robert Mugabe et son parti ZANU-PF, a été contesté par Morgan Tsvangirai et le MDF. Voulant conserver le pouvoir, les fidèles de Mugabe ont lancé une série d'attaques physiques contre les chefs et les membres de l'opposition, et ce, avant et après la signature en 2009 d'une entente de partage du pouvoir. Nous avons évalué la CI au moyen des éditoriaux du principal porte-parole de Mugabe alors que la rivalité entre les deux factions était toujours vive.

Le troisième cas est la longue série d'attaques terroristes, attribuées à al-Qaïda et aux groupes qui lui sont affiliés, ou revendiquées par ceux-ci. En utilisant comme référence le matériel publié jusqu'à 18 mois avant les attaques de 1978 perpétrés contre des ambassades américaines dans l'est de l'Afrique, nous avons coté les transcriptions des messages attribués à Osama bin Laden lui-même durant la période prenant fin en décembre 2009.

**Résultats:** Dans le cas du conflit russo-géorgien, on a constaté une baisse assez considérable de la CI chez le président Saakashvili avant chacune des escalades du conflit, suivie par des accroissements chaque fois que les choses semblaient pencher à l'avantage de la Géorgie. La courbe de la CI chez le président Medvedev montre que les baisses ne correspondaient pas nécessairement aux escalades dans les actions des Russes contre la Géorgie. Cela est conforme au modèle cognitif du manager : La Russie, de loin le plus puissant des deux opposants, avait peu à perdre mais une influence et un prestige accrus à gagner lorsqu'elle a su que l'Occident n'interviendrait pas. Au Zimbabwe, les faibles cotes CI attribuées au porte-parole du gouvernement correspondaient aux recrudescences des périodes violentes et les précédaient : les baisses des notes CI ont précédé les sursauts de violence le mois suivant. La CI de bin Laden décroissait avant les attaques d'al-Qaïda; la séquence temporelle montre un décalage de 4 à 6 mois, mais on ne peut l'établir avec précision car la diffusion des messages ne se produisait pas au même moment par rapport aux dates des actes terroristes.

**Importance:** Les études de cas susmentionnées poussent beaucoup plus loin l'emploi des notes CI dans le contexte d'événements internationaux et infranationaux violents. On a constaté que

l'évitement et le déclenchement des guerres internationales s'accompagnaient tous les deux de paramètres de prévision et de variables concomitantes fiables du changement de la CI, les dernières incluant la baisse de la CI parmi les élites de la société hors du milieu politique. En outre, les données de l'étude sur le conflit russo-géorgien appuient le lien hypothétique entre le risque et la CI que nous avons établi. Les deux autres études, quant à elles, indiquent que l'inclusion des notes CI peut s'avérer utile pour les analystes que la prévision des degrés de violence issus des différends politiques nationaux et des attaques terroristes intéresse. Leur fiabilité et leur grande applicabilité devraient rendre ces données très intéressantes pour les praticiens de la sécurité, de la défense et du renseignement.

**Perspectives:** Dans le peu de temps qui reste pour notre recherche, nous ajouterons aux notes de la CI, la cotation, à partir de documents d'archives, de la motivation du pouvoir. On a constaté dans les études sur les guerres internationales que la motivation du pouvoir en prédisait l'éclatement mais de façon moins régulière que la CI. Nous vérifierons si l'emploi des deux paramètres permettrait d'accroître la capacité du processus prédictif. En dernier lieu, nous terminerons notre étude de la CI chez les dirigeants d'Iran, d'Israël et des États-Unis, afin de faire le suivi de la fluctuation des tensions et de prédire la probabilité à court terme (de 6 à 12 mois) d'un règlement militaire du dossier des activités nucléaires de l'Iran.

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# 1 Introduction

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As discussed in our previous DRDC Technical Report (Suedfeld, Stewart, & Cross, 2009), the psychological study of political leaders has its roots in two seminal facts. One is that such individuals play significant roles in decisions that are critical to their nations and sometimes to the entire world. To recognize this is not to deny that leaders work within a systemic framework, or rather, within a multiplicity of systemic frameworks: economic, societal, legal, political (at many levels), and so on. But although these frameworks may set more or less rigid limitations and opportunities, each leader maneuvers within them in accordance with his or her own personality characteristics, emotional reactions, cognitive predisposition, ideology, physical and psychological health and vigour, etc. The second fact is that leaders, especially at the highest levels, are rarely if ever accessible to being studied through traditional psychological techniques such as interviews, questionnaires, or experimentation.

## 1.1 Leadership Assessment at a Distance

One result of these two facts has been the growth of what has been termed “assessment at a distance.” In this endeavour, the researcher collects information about the leader, led by theoretical and methodological considerations, evaluates that information, and draws conclusions about the subject’s relevant characteristics. The databases used by these approaches range from the purely qualitative, as in psychobiography, to the predominantly quantitative, based on computerized counting of selected words and phrases.

Between the two ends of the continuum we find thematic content analysis (TCA). TCA is a method for converting qualitative materials into quantitative data. After selecting the variable of interest, researchers extract samples from the verbal (written, oral, or recorded) output of the leader and, using detailed scoring manuals, measure the presence or level of that variable. The procedure is methodologically rigorous, as identifying material is usually removed from the samples prior to scoring, scorers are qualified through a painstaking training course, interscorer reliability is tested for each study and repeatedly over time, and the data can be evaluated by normal inferential statistics. TCA is flexible as to the variables that can be measured: there are scoring systems for a wide range of personality, motivational, attitudinal, cognitive, and other dimensions (see Smith, 1992; Gottschalk, 1995). New scoring systems are being developed, usually through the adaptation of existing paper-and-pencil questionnaires.

## 1.2 Thematic Content Analysis of Integrative Complexity

One TCA system that has frequently been used in the study of leader decisions is the scoring of integrative complexity (IC). IC is the level of cognitive complexity at which the subject was (or is) functioning at the time that the verbal material was (or is being) produced, that level being determined by the recognition that more than one legitimate viewpoint and/or more than one relevant dimension exists with regard to the topic (differentiation) and the recognition that these differentiated characteristics are related to each other via interaction, trade-off, synthesis, or inclusion within an overarching cognitive schema. IC scores are based on the structure (not the content) of information search, information utilization, and decision-making; i.e., any belief, idea, or plan can be expressed at any level of IC. Unlike most other “assessment at a distance”

constructs, IC is conceived to be a state (rather than a trait) variable, which fluctuates with circumstances.

IC is scored on a 7-point scale (see Annex A), by trained scorers using an established manual (Baker-Brown et al., 1992). Previous research has established that IC scores do not vary significantly as a function of original language vs. official translation, the use of a speechwriter or other proxy producing text approved by the identified originator, or private vs. public presentation (e.g., Suedfeld, Tetlock, & Streufert, 1992).

This fluctuation occurs within limits possibly set by trait complexity (“conceptual complexity,” Schroder et al., 1967). The state level is then determined by the allocation of cognitive and perhaps material resources such as attention, concentration, the ignoring or de-emphasizing of other problems, information search and communication channels; and by personal conditions such as fatigue, the problem’s importance in the context of all other problems needing a solution at the same time, conflict among important values, ideological guidelines, time pressure, perceived reward and risk levels, and attention span. The cognitive manager model (Suedfeld, 1992) proposes that the course of IC change under stress resembles Selye’s General Adaptation Syndrome (1956): as an important problem is recognized and resources are mustered to deal with it, IC increases to an asymptote determined by external and internal factors; if the problem proves intractable, or if there is too much competition for resources among concurrent problems, IC decreases (“disruptive stress”) to the point that a simplifying solution is sought. In intergroup confrontations, that simplifying solution may be the abandonment of one’s previous positions and demands, but this is unlikely if the issue is significant. The alternative way to simplify is to resort to arms. The point of disruptive stress is influenced by both internal factors (fatigue, frustration, distraction, impatience, illness, conflict between important values, etc.) and external conditions (the dangers and potential gains posed by the situation, time pressure, information underload or overload, domestic politics, etc.).

Many studies (reviewed in Suedfeld, Leighton, & Conway, 2006) have assessed the IC of political leaders and governments in situations of international confrontation and crisis. With a high level of reliability, these studies have shown a pattern of sustained or increased IC as the confrontation moves to a negotiated solution, and of sharply decreased IC preceding the outbreak of war. The former have included the peaceful resolution of the Agadir Crisis of 1911, the series of US-Soviet face-offs over Berlin during the Cold War, and the Cuban Missile Crisis of 1962; the latter, the beginnings of World War I, the Korean War, major wars during the half-century of persisting hostility between the Arabs and Israel, and a series of strategic surprise attacks in the 20th Century (reviewed in Conway, Suedfeld, & Tetlock, 2001). In eight of the nine attacks in the last category, the IC drops were unilateral: the future attacker showed the drop several months in advance, while the future target maintained and then increased its IC until the attack actually occurred (Suedfeld & Bluck, 1988).

The existing body of literature on IC changes related to intergroup conflict deals almost exclusively with negotiations and war at the international level. The extent to which such findings are applicable to lower systems has not been established, although one study of negotiations between the Mexican government and the Chiapas Mayan rebels showed that progress in the negotiation was judged to be greater on days when the mean IC of the groups involved was higher (Liht, Suedfeld, & Krawczyk, 2005). With novel international relations following the end of the Cold War and the dissolution of the USSR, and with the growing



importance and immediacy of violence involving non-state actors, it became important to test whether the IC construct, the scoring methodology, and theoretical constructs such as the cognitive manager hypothesis and disruptive stress were applicable to such contexts. If so, the scoring of IC can become one useful tool for analysts engaged in forecasting terrorist attacks and crisis outcomes in other than major international wars.

## **2 The Current Studies**

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The three studies described in this report have the goal of initiating such an extended examination of the applicability of IC scoring to political situations of actual and potential violence. Three cases were selected on several criteria. One was that their political milieux differed both from previous research and from each other; the second, that they were open-ended at the time of the research – that is, none of them had reached closure, and the possibility of future violence was still open in all three; and last, that archived materials emanating from significant individuals involved in decisions were available for scoring.

### **2.1 The Russo-Georgia War**

#### **2.1.1 Background**

Georgia, incorporated into the USSR in 1922, became independent again in 1991. Its government has wished to join the European Union and NATO, but has not been invited to membership, largely because the members are concerned about the reaction of Russia, which is strongly opposed to such a move. On 7-8 August 2008, the Georgian government initiated a military confrontation with separatist (mostly ethnic Russian) groups in two areas, South Ossetia and Abkhazia. These provinces had been under Russian “protection” for the 15 years prior to the war, with the central government of Georgia severely limited (and frustrated) in exerting its sovereignty.

These groups were no match for the Georgian forces when the current crisis began, but the Russian army soon entered the conflict. The Georgian military was ejected from the two provinces. The brief war involved a Russian naval blockade and the aerial bombing of Georgian sites, and the eventual Russian occupation of Abkhazia and South Ossetia as well as several areas within central Georgia. A ceasefire was declared on 15-16 August 2008, and Russian forces withdrew from central Georgia by 8 October, but Russian “peacekeepers” are still stationed in the two provinces. Russia has recognized the breakaway provinces as independent states, a precedent not followed by most other nations. Georgia considers them to be occupied territories. Both the international hostility between Georgia and Russia and internal political rivalries in the former continue.

We chose the war in Georgia as one of our conflict areas for several reasons. The Russo-Georgian conflict involves sequentially increased and decreased tension, leading to war, in the post-Cold War era, in Europe; it features a major world power, a small country that seceded from it, and regions that then seceded from that country under the protection of the major power; and it is characterized by complex ethnic and cultural dynamics.

The ongoing confrontation is an example of (so far partial) re-colonization of a relatively small and militarily noncompetitive part of the former Soviet Union; the roots of the conflict can be traced to the movement of majority ethnic groups to areas formerly and/or currently independent (cf. the immigration of Han Chinese into Tibet) and it may signal some degree of renewal of the Cold War between Russia (as the successor of the USSR) and the West. The situation is also interesting because of the combination of internal political opposition and unrest in Georgia and

an ongoing confrontation with a historically oppressive, currently hostile, and much stronger bordering country.

### **2.1.2 Method**

We analyzed IC in communications by Georgian President Mikheil Saakashvili and Russian President Dmitry Medvedev from April to October 2008. Transcripts of complete speeches, interviews, and statements made by Saakashvili and Medvedev between April and October 2008, with English translations, were obtained from a variety of news sources and databases. Although Medvedev had been elected president on 2 March, he did not take office until 7 May; however, he publicly spoke on behalf of the government concerning the Georgia crisis from the time of his election.

Text material that would allow identification of the source and occasion was removed. All paragraphs in the database were combined and rearranged in random order prior to being scored by a qualified scorer. One-fifth of the paragraphs in each speech were scored independently by a second qualified scorer. The two scorers reached 85% agreement, meeting the usual criterion of interscorer reliability.

### **2.1.3 Results**

The results, with IC scores averaged at two-week intervals, showed that significant decreases in IC were correlated with increased tension and violence (see Figure 1).

There were significant drops in Saakashvili's IC from 14-27 April, associated with the Russian downing of a Georgian unmanned aerial vehicle on 20 April and the massive Russian military exercise near the border later in the summer. The significant drop in Saakashvili's IC in August is related to the escalation of armed conflict in South Ossetia between the Georgian Army and South Ossetian separatists, and the subsequent Russian invasion of the enclaves, leading to attacks on undisputed Georgian areas shortly thereafter. The timing of the drop in IC suggests that Saakashvili was surprised by the Russian invasion following the escalation of tension in South Ossetia. This result is interesting because it can be seen to support the Georgian argument that the Russians were already on their way into South Ossetia when the Georgians mobilized to respond. When tension was lower, during the lull between 20 April and 31 May, and especially at the most promising time of reduced danger when US Secretary of State Condoleezza Rice visited Georgia and a joint US-Georgian military exercise was held, equally clear increases in Saakashvili's IC are found. Between the beginning of the war and the termination of our data collection as of 5 October, internal political dissent and unrest in the form of demonstrations also increased in Georgia, explaining the dual roots of Saakashvili's heightened stress and decreasing IC.

Medvedev's IC shows a pattern that implies less disruptive stress, as befits the leader of the country that initiated most of the tension and possessed overwhelming military force that immunized it from real danger. There was an increase after the UAV incident, with a decrease prior to deployment in Abkhazia, and another increase prior to the Russian military exercise. From that point on, the IC curve moves steadily downward to a nadir when the war begins. Reflecting Russia's easy victory and the passivity of the West, the subsequent levels show a general increase in IC.

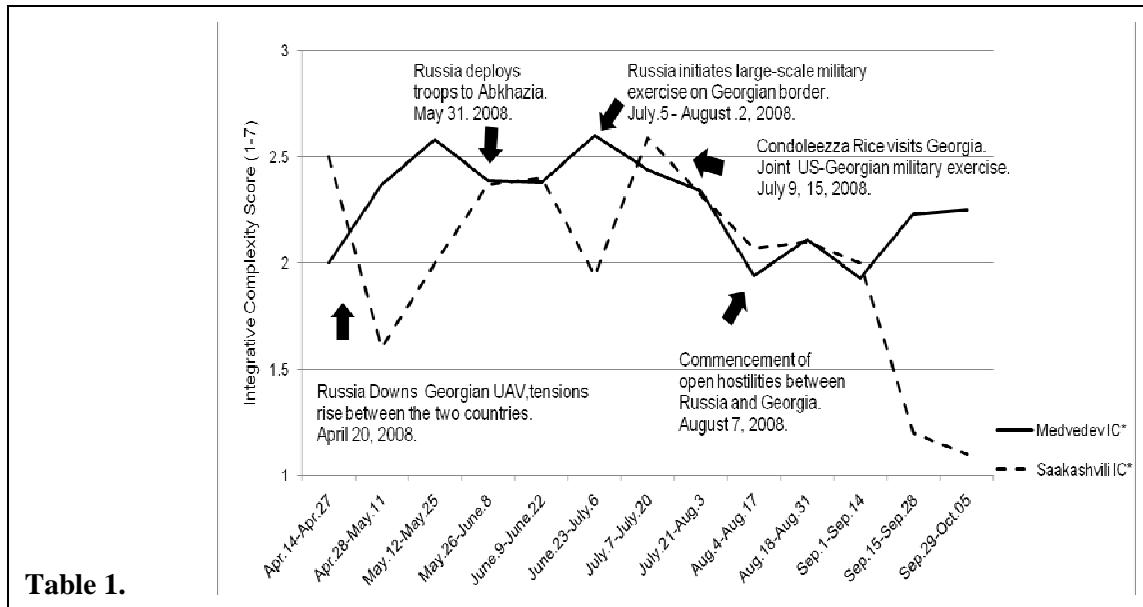


Figure 1: Medvedev versus Saakashvili Integrative Complexity: Bi-weekly Aggregate

### 2.1.4 Discussion and Significance

We can summarize the findings as generally conforming to the cognitive manager model: tension is negatively correlated with IC, the relationship modulated by (among other variables) loss-gain considerations. The pattern at the end of data collection is interesting, with Saakashvili continuing to decrease and Medvedev to increase in IC. Under most circumstances, such as confrontation between two comparable powers, this would presage a strategic surprise attack by the state whose leader shows the IC drop (Suedfeld & Bluck, 1988). In this case, however, given the disparity in forces, size, population, etc., it is unlikely that Georgia would launch such an attack against Russia; and Medvedev’s pattern indicates that no such attack by Russia was likely within the 6-12 months following the end of data collection. As we now know, of course, no such attack was in fact made.

The study was successful in extending the applicability to IC scoring to a situation notably different from any that had been examined in this way until now. The complex interplay in which ethnic as well as political boundaries were important – ethnic Russians in the two secessionist provinces, backed by Russia against the political sovereignty and majority ethnicity of Georgia itself – an international aggression occurring in NATO’s “back yard,” the declined opportunity for the West or for the UN to deter or reverse the invasion of a country that was exercising its sovereign right to bring rebellious areas under control, the disparity of forces that meant danger for only one side of the confrontation, all contributed to the idiosyncratic nature of this episode.

The findings that despite such idiosyncrasy, IC scoring meaningfully reflected the historical sequence of tension-related events, and that changes in IC reliably followed the cognitive manager model, are encouraging evidence for the general usefulness of the technique.

## 2.2 Domestic Political Violence in Zimbabwe

### 2.2.1 Background

Since gaining independence from Britain over thirty years ago, Zimbabwe has been ruled by Robert Mugabe, leader of the Zimbabwe African National Union Patriotic Front (ZANU-PF) party. Originally known as ZANU, the party merged with its former rival, ZAPU, after a bloody guerrilla war involving the murder of many ZAPU supporters. Mugabe has continued to rule by violently suppressing all opposition, through assassinations, fraud, intimidation, torture, and induced famine. He has also confiscated farms belonging to white citizens of Zimbabwe and handed them over to his supporters, with the result that the population depends on foreign aid for survival and the economy has been destroyed (inflation reached an annualized rate of 230 million per cent late in 2008). Mugabe attributed these problems to a British plot to re-colonize the country, with his political opponents as Britain's stooges. In the face of growing domestic unrest and foreign condemnation, early in 2009 a power-sharing agreement and new constitution were initiated under which Mugabe continues as President but the leader of the opposition MDF (Movement for Democratic Change), Morgan Tsvangirai, is Prime Minister. The solution is unstable, however, with Mugabe and his party striving to retain as much power as possible. Sporadic violence, mostly attributable to ZANU-PF followers, continues, and the eventual outcome—continued chaos and low-level violence, all-out civil war, stable negotiated power-sharing, or decision through an honest election—is unknown.

Previous research using IC scoring to forecast the outcomes of confrontations has demonstrated that drops in complexity consistently precede the outbreak of war, while peaceful resolutions are preceded by maintained or even increased complexity. Our Zimbabwe project is the first to conduct a predictive study of an ongoing crisis in a domestic context.

### 2.2.2 Method

Because violence has primarily been initiated and committed by ZANU-PF followers, our scoring concentrates on that group. Ideally we would score the statements of Mugabe himself; however, his public utterances have been too few for reliable scoring. For example, in one of the years of major interest, 2008, only four complete speeches by him were archived.

Fortunately, there is a reasonable proxy. George Charamba, Mugabe's chief spokesman (according to former cabinet minister Moyo, "Mugabe speaks through Charamba"), was a frequent contributor of editorials to the ZANU-PF/government newspaper, *The Herald*. Although the editorials appeared under the nom de plume "Nathaniel Manheru," it is common knowledge that (a) Manheru is really Charamba, and (b) Charamba is Mugabe's public voice. Accordingly, we scored the editorials appearing under Manheru's name in 2007 (n = 31) and 2008 (n = 28). The usual procedures for preparing the material for scoring and for establishing reliability (see 2.1) were followed.

In this case study, the clear-cut dependent variable, war, was not relevant. Instead, conflictual and cooperative actions of the Mugabe government toward members of the MDC were identified from a website of all news from Zimbabwe, [www.zimbabwesituation.com](http://www.zimbabwesituation.com), and were classified according to World Interaction Survey categories. Fifteen relevant types of action were

identified. In categorizing the actions of the government, three independent scorers reached 95% agreement on the classification of events.

### 2.2.3 Results

All correlational analyses were conducted using three different aggregations of the data – bi-weekly, tri-weekly and four-weekly periods starting at (and working back from) 1 January 2008. Methodological work by researchers such as Shellman (2004) has shown that aggregating time series data into different intervals can dramatically shape one’s interpretation of those data, so one should be careful not to make conclusions based on only one aggregation as though this applied to all aggregations. Examining the data aggregated into different time periods could therefore improve the understanding and interpretation of the data. The overall correlation between the (root-transformed) level of violence and IC was  $r = -0.39, p < .05$ . For the two-, three-, and four-week analyses, the respective results were  $r = -0.47, -0.51, \text{ and } -0.62$ , all  $p < .01$ .

A scatterplot of this relationship is shown in Figure 2. The fitted non-parametric curve shows a linear relationship with the log transformed version of violence. A simultaneous entry ordinary least squares regression model was therefore tested, with integrative complexity (at a lag of one time unit) entered as the predictor of log-transformed violence. Integrative complexity provided unique predictive utility in the model,  $\beta = -.55, t(19) = -3.74, p < 0.002$ . Thus, IC at any one time was significantly related to the level of violence during the *next* time period.

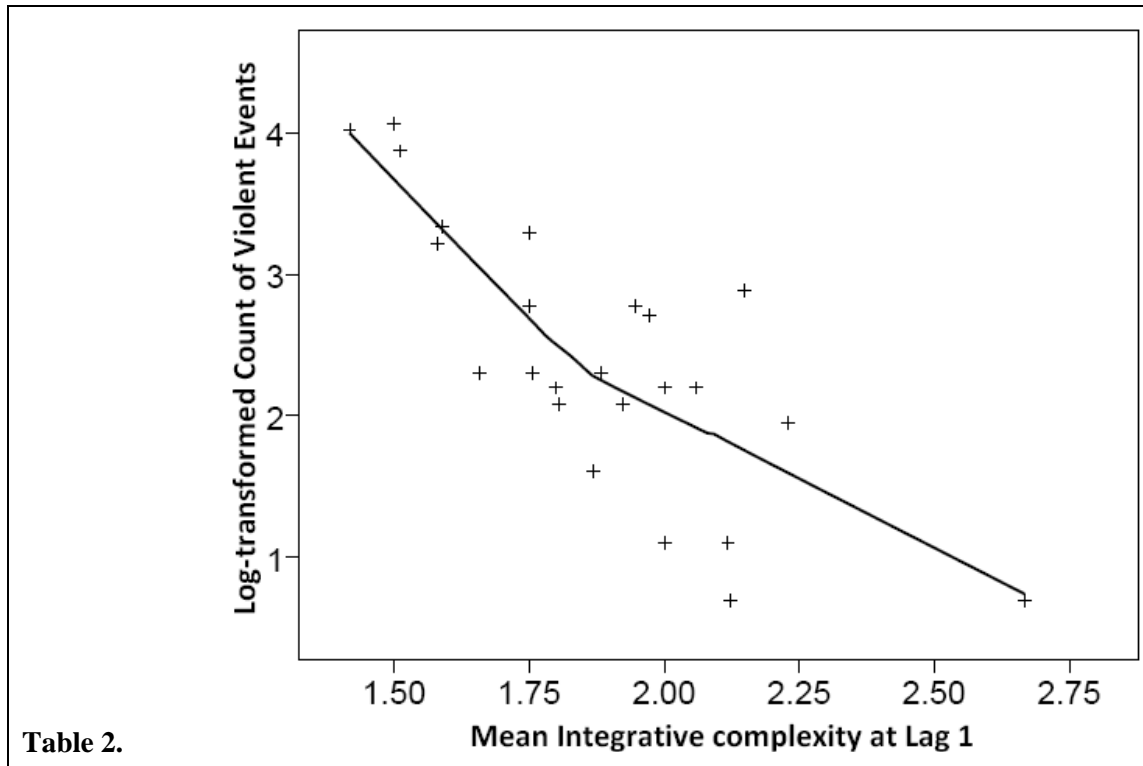


Figure 2: Integrative Complexity and Violence in Zimbabwe

## 2.2.4 Discussion and Significance

This study once again shows the reliability of IC drops both accompanying and preceding violent events, indicating the usefulness of IC scoring in forecasting. Although we could make no prediction about the eventual outcome, the lagged analysis enabled us to predict accurately whether violence would increase or decrease during the next time period. The study also adds several significant new items to the knowledge base related to IC:

1. It shows that utterances of a close companion/spokesman for the leader can be used as proxies for statements of the leader himself.
2. It shows that IC changes can predict and accompany violent events at the subnational level, in the context of domestic politics in an unstable political climate.
3. It shows that the relationship between IC and violence holds even when the violence is categorized in ways that are less absolute than violence vs. nonviolence and includes acts less severe than killing.
4. For the first time, it shows the applicability of IC scoring in a sub-Saharan African nation and culture. The great majority of previous studies had focused on events involving European

and/or North American nations, although a few had examined Middle Eastern and Asian leaders.

## **2.3 bin Laden and al-Qaeda**

### **2.3.1 Background**

The last study in this series measured the relationship between the IC of statements attributed to Osama bin Laden and terrorist attacks carried out by al-Qaeda, which is believed to be under his personal control. Because of the existence of several al-Qaeda regional and affiliated groups, bin Laden's group is sometimes referred to as al-Qaeda Central.

As is generally known, al-Qaeda is a covert group using terrorist tactics to combat what it considers the oppression of Muslims by both Western governments and non-fundamentalist Muslim governments in the Middle East. It has perpetrated major atrocities, causing thousands of civilian casualties, in many parts of the world, the most dramatic being the "9/11" destruction of the World Trade Center in New York City and the simultaneous damage caused to the Pentagon near Washington, D.C. in 2001. Following the US destruction of al-Qaeda's safe bases in Afghanistan after the 9/11 attacks on American soil, bin Laden, its leader, went into hiding. A number of videotapes were released in the period immediately following those events, showing him in conversation with allies and followers or delivering a set speech meant for broadcast. In the past few years, only audio tapes have been made public by broadcasters. Although bin Laden is still the iconic figure of al-Qaeda, the group itself has moved into a mode of dispersed cells or individuals, including such groups as al-Qaeda in the Arabian Peninsula, whose affiliation to al-Qaeda Central and whose direction by bin Laden are both questionable.

Obviously, bin Laden's public statements have been intensively studied by analysts. However, they have not been subjected to serious scrutiny using TCA. In the only published study to date, statements attributed to bin Laden shortly after 9/11 hovered between 1.0 and 1.4 on the IC scale (the lowest point being when the U.S. was creating the anti-Taliban coalition), but so few statements were available for scoring at the time that no reliability could be attributed to this finding (Suedfeld and Leighton, 2002).

The current study was designed to fill that gap. If bin Laden's statements, broadcast by the world media, transcribed, and collected in various databases, could be shown to have characteristics that could be used to forecast terrorist operations, the assessment of those characteristics would be of significant utility.

### **2.3.2 Method**

al-Qaeda attacks were identified through the Global Terrorism Database, an open-source database presenting information on terrorist events around the world between 1970 and (to date) 2007, at this point totalling over 80,000 "events." Information is included on where, when, and how each terrorist event occurred. The database is maintained by the National Consortium for the Study of Terrorism and Responses to Terrorism ("START") at the University of Maryland (START, 2010). There are some thirty-one "events" attributed to al-Qaeda in this dataset. Thirty different



sources, including books, websites, radio and television transcripts and compiled reports, were sampled for this study and a total of 176 statements, comprising 1,416 paragraphs, was collected. Because a question had arisen concerning different “official” translations, nine instances where multiple translations of the same source statement were compared. This represented some 35 statements in total. Correlations were run between the different translations. Only one statement in a single set of translations of the same source statement showed a statistically significant difference in IC, indicating that this was not a serious problem.

All available statements attributed to bin Laden and produced between 1994—the first year that confirmed statements made by bin Laden appear—through December 2009 were collected. According to our usual procedure, each statement was divided into its constituent paragraphs. Identifying information was removed as far as possible, the paragraphs were assembled in random order across the entire set, and were scored by qualified scorers who had gone through a training workshop and reached a reliability level of 85% or higher with established expert scoring. Given the nature of the text reliability analysis was conducted on the entire dataset by a second independent qualified person, reaching a reliability level of 86.8%.

### 2.3.3 Results

IC levels in bin Laden's statements were compared with each other and with baseline. The baseline was defined as the average IC of all bin Laden statements from 1994 through April 1997, the latter date being more than one year prior to al-Qaeda's coordinated attacks against the US Embassies in Kenya and Tanzania. In the figures that follow, each data point is based on at least four separate statements.

Figure 3 shows the IC of bin Laden's statements, starting a year in advance of the 1998 Embassy bombings, which occurred on August 7<sup>th</sup> 1998 (baseline). IC showed a steady decline from about 5-1/2 months to 2-1/2 months prior to the attack, an increase—which was not statistically significant—during two days at that point, followed by a significant drop to the lowest possible IC level (1.00) at the closest pre-attack data point, two months in advance of the event. The changes were statistically significant,  $F(6, 381) = 2.71, p = .014$ .

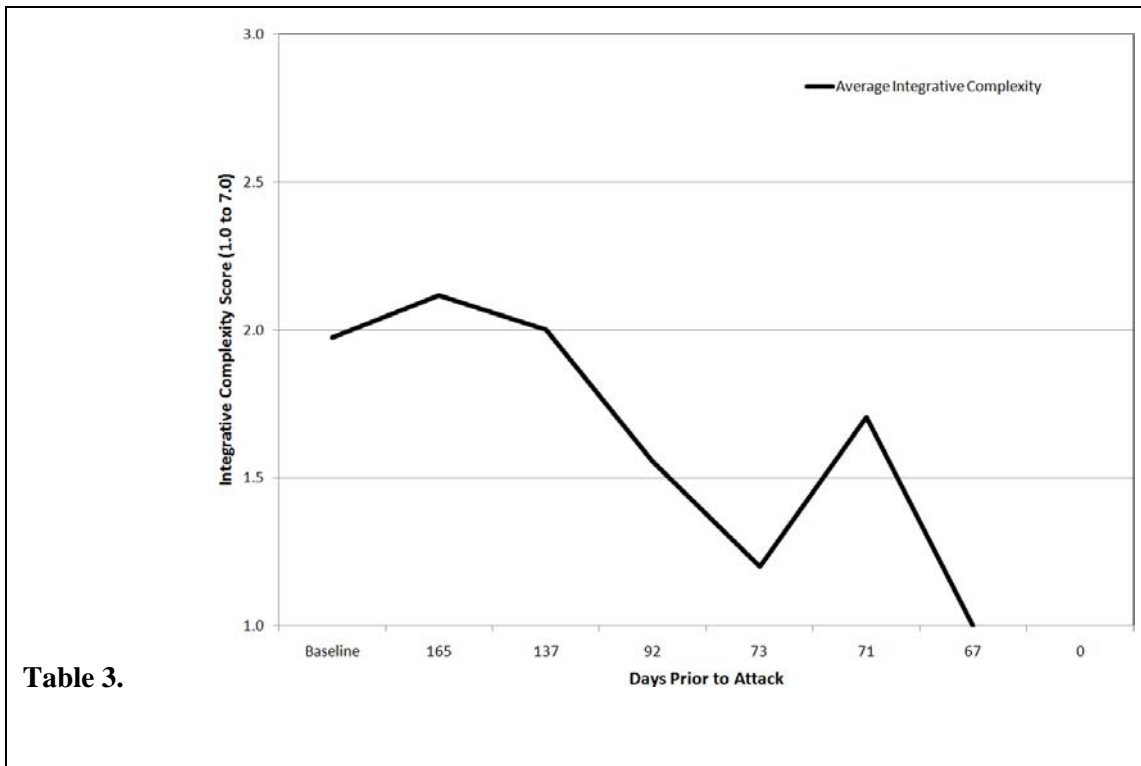


Table 3.

Figure 3: Integrative Complexity of bin Laden Prior to 1998 US Embassy Bombings

bin Laden's IC preceding the bombing of the USS *Cole*, October, 2000, in Aden, Yemen is shown in Figure 4. Again, the change in IC was highly significant  $F(2, 317) = 7.49, p = 0.001$ . IC reached its lowest point close to eight months prior to the attack. Interestingly there was no

significant change in IC between the two dates shown (279 and 112 days prior to attack); however both are significantly lower than baseline. There was a significant quadratic trend,  $F(1, 1) = 11.64, p = 0.009$ .

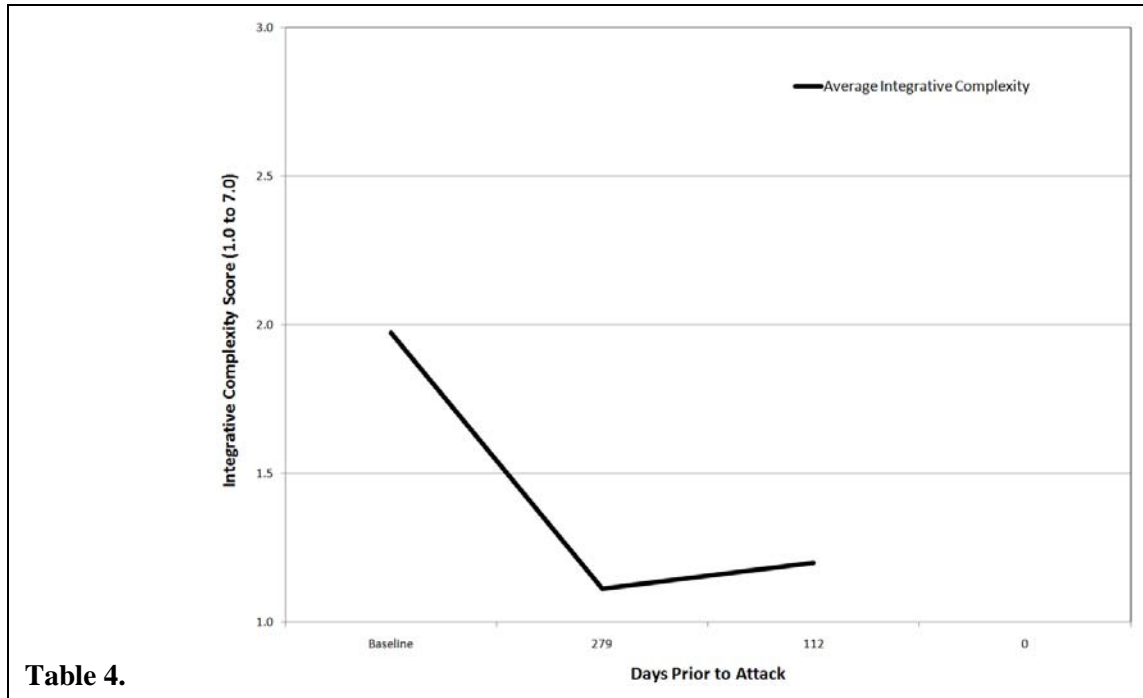


Figure 4: Integrative Complexity of bin Laden Prior to USS Cole Bombing

Figure 5 presents the mean IC of bin Laden’s statements prior to the 9/11 attacks. These data are inconclusive, as they are based on only two statements (one of which was a speech given at his son’s wedding), made only two days apart some nine months prior to the attack. Although bin Laden did make other statements in the months prior to the 9/11 attacks, the statements were far too brief for a reliable measure of IC. Nevertheless, an IC drop was found, occurring approximately eight months prior to the attack:  $F(2, 317) = 0.178$ , nonsignificant.

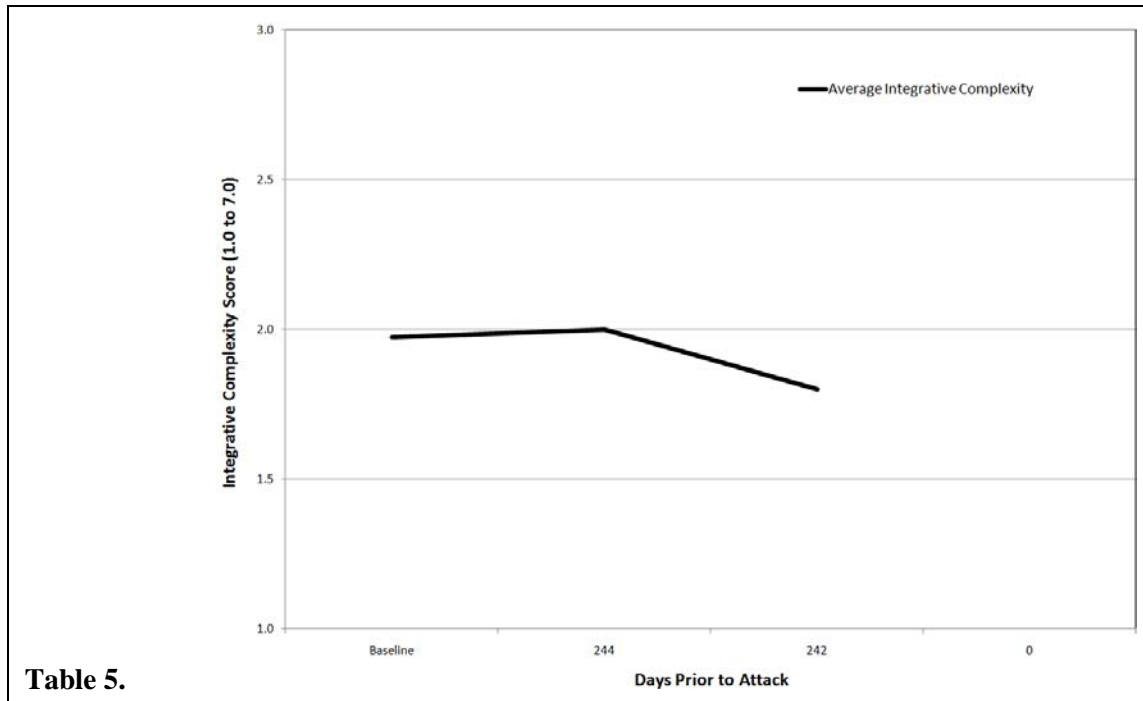


Figure 5: Integrative Complexity of bin Laden Prior to 9/11 Attacks

### 2.3.4 Discussion and Significance

This study was the first to conduct longitudinal tracking of the IC of an individual terrorist leader. In fact, it was the first to conduct longitudinal tracking of the IC of *any* leader that correlated the IC scores with the occurrence of violent events attributable to that leader’s decisions.

We are encouraged to find consistent and substantial IC decreases (from a mean of 2.0 at baseline to 1.0-1.4 prior to attacks) in bin Laden’s statements issued chronologically closest to attacks, on a time scale comparable to those usually found for the outbreak of war (two to eight months in advance). The IC decrease happened before every attack for which sufficient data were obtained and which were reliably linked to bin Laden’s al-Qaeda.

At the same time, the study shows one weakness of the archival assessment at a distance methodology, its total dependence on the issuance of materials by the subject of interest. If, for example, we are trying to use IC changes to forecast a terrorist or international attack, our ability to do so may be limited by the timing and volume of the leader’s output. In the case of bin Laden, the very small pre-9/11 database would have reduced our confidence in extrapolating from the IC change that an attack would occur within the usual 2-8 month time-frame – although, as it turned out, the IC pattern was consistent with the eventual outcome.

### 3 Discussion

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There is a substantial body of research literature in psychology supporting the arguments on which this work is based. The cognitive processes underlying information search, information processing, and decision-making are important determinants of how leaders perceive, interpret, approach, and deal with problems. As situations involve increasing difficulty and stress, the need to cope with simultaneous problems, more serious risks or more attractive possible gains, and as the individual's reserves of available energy, attention, and informational resources wane, the ability to think in complex ways -- to perceive the different strengths and weaknesses of various sides or aspects of an issue, and to perceive how these may be linked conceptually and strategically -- wane and decisions become more rigid, more absolutistic, and more detached from feedback and reality (Streufert & Streufert, 1978). Eventually, this progressive simplification of cognitive processing can lead to a decision that drastically simplifies the situation. We may thus think of the process as one where decreasing cognitive complexity leads to decreasing decisional and therefore outcome complexity. In a situation of intergroup rivalry or hostility, the ultimate simplifying decision is to resort to arms. It is important to note that the conduct of military or terrorist operations is not necessarily simple at all; what is simple is the decision to move into that mode, which allows the decision-maker to escape the difficulties and stressors of working out mutual concessions and other negotiating strategies. In many cases, it also transfers the problems of decision-making to other people -- sometimes to tacticians rather than strategists, but at any rate to the leaders of armies, militias, mobs, and terrorist cells.

As our previous papers have established, the scoring of IC is a useful tool in identifying whether such a simplifying process is occurring. Not relying on message content, and thus reducing the probability that a good impression manager or propagandist can successfully disguise his or her real intentions and decisions, the scores consistently show stable or increased levels of complexity when the source is able to devote sufficient resources to the problem to continue working out flexible, nuanced moves that are both sensitive to and responsive to the environment and the other participants. Conversely, IC scoring can identify when the decision-maker's ability to cope in such a fashion is being degraded by circumstances. Among high-level leaders, we have found that the period between drastic decreases in IC and the often dramatic decisions preceded by such decreases is usually in the range of months, most frequently between two and eight months.

Previous findings by other researchers as well as ourselves have demonstrated this pattern in a number of confrontations at the international, national, and nonstate levels, although the emphasis has been on the first of these -- in particular, on episodes some of which avoided war and some of which did not. In cycles of intensifying escalation, in sporadic outbreaks of major war against a background of lower-level small-group actions, and in surprise attacks by one nation on another, the IC scores of leaders most frequently showed the expected decrease. In a few cases, the data were collected at a time when the world did not yet know the outcome of the confrontation; these studies found that the eventual outcome was consistent with the IC patterns established in postdictive research.

IC fluctuates within trait-like limits, so that some decision-makers chronically function at high or low levels, and may also differ in their ability to resist conditions that impact negatively on complexity (cf. Suedfeld et al., 2009). These data have two useful features. One is that an

established baseline makes deviations more salient; the other, that policy-makers could use a protagonist's known level of baseline IC and known susceptibility to IC change to guide their positions and proposals in negotiation. Neither of these possibilities has been empirically tested.

The three studies described in this report were designed to both test and extend our previous knowledge of how IC is related to leader decisions in situations of potential or actual conflict. Recall that most such knowledge has come from historical events at the international level, with two countries -- usually significant powers -- in a confrontation that could be solved peacefully or by going to war. These are drastic and dramatic situations, involving the potential deaths of large numbers of human beings, the nature of governments, the location of boundaries, and the economic state of major polities. The question of whether smaller players, for smaller stakes, could follow the same patterns, and whether these patterns would be equally open to IC assessment at a distance, has been explored relatively seldom.

All of the current studies address such relatively limited events. The Russo-Georgia War was a confrontation between an ex-colonial power and one of its ex-colonies. The conflict was brief and, in global terms, not very significant. One side had much to lose, the other almost nothing. The fact that IC changes of the presidents of both countries were compatible with the cognitive manager model (Suedfeld, 1992) showed that the extension of the approach to this hitherto unexplored situation was valid.

The Zimbabwe study was even further from the usual parameters of IC research. We found that IC changes could foreshadow increasing and decreasing levels of violence in a prolonged domestic political rivalry, in a sub-Saharan country long plagued by governmental instability, economic incompetence, and stunted democracy. It also established that IC scoring is correlated with violence in a more precise and subtle way than merely dropping in advance of war or not dropping in advance of a peaceful resolution. In Zimbabwe, much of the violence was sub-lethal, and in many episodes the people carrying it out were loosely (if at all) organized mobs of civilians rather than soldiers or even paramilitaries. The extension of IC scoring to this situation was a substantial extension.

Last, the tracking of bin Laden's IC prior to major attacks by al-Qaeda brought IC scoring into a focal area of today's security and defence concerns. Never before has there been a longitudinal IC study of a leader involved in repeated terrorist atrocities, including one of the bloodiest attacks in recent terrorist history, carried out over several years in several countries. The fact that bin Laden's IC consistently showed a decrease several months prior to each attack shows the utility of the approach for possible application in security-related analyses.

There remains the issue of practicality. At this point, there is no software that allows the valid and reliable scoring of IC from running text. Accordingly, scoring must be done "by hand" -- i.e., by trained personnel following a standard guideline. Training usually consists of a workshop spanning three or four days; an on-line alternative is available. Trainees who reach agreement of 85% or higher with expert scorers on a set of test paragraphs are considered qualified, but in any study interscorer reliability is measured for that particular set of materials. The process is unquestionably more time- and labour-intensive than computerized content analysis, but it is not as daunting as it might seem: a qualified and practiced scorer can in most cases score up to three or four paragraphs per minute. The sample required to reach a stable score is a minimum of ten

paragraphs per document (although the more, the better), so a reasonable sample size can be extracted and scored fairly quickly.

Both in terms of feasibility and in terms of potential effectiveness, the scoring of leader IC at a distance appears to be worth considering among the tools of political and intelligence analysis.

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## Annex A Integrative Complexity Scoring

Integrative Complexity Score	Explanation of Score	Prototypical Example of Score
Score of 1	There is no sign of either conceptual differentiation or integration at this scoring level. The author relies, without qualification, on a simple, one-dimensional rule for interpreting events or making choices.	“Enforced retirement at 65 years is most certainly beneficial to the workings of our society. We must realize that work is the job of the young, and that the elderly should leave their work positions in order to make room for the next generation. The elderly must resign themselves to “let go” of their family domination and employment in order that the new generation may explore its ideas and promote growth. Some would argue that the elderly have much to contribute because they have lived through so much, but this is clearly wrong. With the rapid rate of technological change, the elderly are the least able to adapt to the new conditions.”
Score of 2	The critical indicator for a score of 2 is the potential or conditional acceptance of different perspectives or dimensions. The author does not explicitly develop the alternate dimension or perspective; nor is it necessary that it be explicitly stated or named. Simple qualification, without elaboration, is sufficient evidence for a score of 2.	“Enforced retirement at 65 is probably beneficial to our society. To be sure, it is difficult to force the resignation of long-time employees in order to make room for the upcoming generation. We should, however, give highest priority to creating opportunities for the new generation to explore their ideas. This need may be especially critical in view of the requirements of running a modern economy. More than ever, our country appears to require new ideas and fresh perspectives.”
Score of 3	The critical indicator for a score of 3 is the recognition of alternative perspectives or different dimensions, and the acceptance of these as being relevant, legitimate, justifiable, valid, etc.	“Enforced retirement has recently engaged the interest of the popular press. Some think that the elderly should give up their jobs in order to make room for the younger generation. Such an action would bring fresh vision to business and give our society the new ideas we clearly need. On the other hand, there are those who think that the experience of the elderly is potentially our society’s deepest resource, and that their hard-won knowledge can help business to adapt to

		these changing times. Of course, we rarely see either vision or wisdom in its pure form; each school of thought tends to ignore a bit of the other's perspective."
Score of 4	The author must indicate that multiple perspectives or dimensions exist, and also that they could interact.	"For society fully to benefit from its members' skills and to survive the "technological revolution", a new philosophy must develop which unites the youth and the elderly of the nation. The technological skills of the young are important if we are to keep pace with the other industrialized countries. However, we have important social decision-making ahead of us if we are to improve our quality of life in the long term. Our future success depends upon our ability to realize the potential of our citizens, whether they be young or old."
Score of 5	The critical indicator of a score of 5 is that alternative perspectives or dimensions are not only held in focus simultaneously but also are viewed interactively. The author is able to see that multiple alternatives are all to some degree legitimate, and combines them to produce a result that none of the alternatives could have produced alone.	"For society to benefit fully from its members' skills and to survive the "technological revolution", a new philosophy must develop which unites the youth and elderly of the nation. The technological skills of the young are important if we are to keep pace with the other industrialized countries. However, we have important social decision-making ahead of us if we are to improve our quality of life in the long term. Thus, we must be concerned equally with developing technology as with developing a plan for its use. It is in this latter area that the elderly, with first-hand knowledge of history, must be consulted. With this philosophy in mind we are faced with the economic challenge of employing both young and senior citizens."
Score of 6	For a paragraph to be given a score of 6, the author must be working across several levels of schemata and at least one of the indicators noted above must be explicitly delineated. Thus, there may be an explicitly presented global overview with only an implicit indication of the specific dynamics of the alternatives.	"Their experiences with war and depression during the thirties created in many members of our parents' generation a drive to create some form of security for the future that was not available for them to enjoy in earlier years. By continuously building upon their gradually increasing assets while still maintaining the conservative lifestyles they had been pressed to follow during hard times, they created economic stability for themselves. This economic stability, enjoyed by many approaching old age, lends

	<p>Conversely, there may be explicitly stated details about the dynamic interaction between alternatives and only an implicit communication of the global overview.</p>	<p>greater power to seniors' increasingly vocal demands for an improved quality of life for the elderly. Their offspring, not having faced the same hardships as their parents, have had opportunity and cause to be somewhat reflective about issues pertaining to the quality of life in general, including the plight of the elderly.”</p>
<p>Score of 7</p>	<p>1. An overarching viewpoint is presented, which contains an explanation of the organizing principles (e.g., temporal, causal, theoretical) of the problem or concept.</p> <p>2. There is a discussion of the ways in which levels of the problem or concept interact and thus demonstrate the validity of the overarching perspective. The description of the ways in which levels of the system interact must be both specific and dynamic, demonstrating how each level is affected by the other.</p> <p>While these indicators are distinct, they are inextricably linked. The global overview encompasses the components of a system, and in fact may have developed as a result of the author's simultaneous consideration of these levels or components.</p>	<p>“We must view this problem from the very broad perspective which involves the kind of society we see ourselves to be and the kind of society we strive to be. Do I assume correctly that we are, and that we want to be, civilized? It may be that our heavy emphasis on individualism, productivity and self-sufficiency has resulted in a view of the elderly as basically useless members of society. On a larger scale, should this opinion prevail, we could hardly have a view of ourselves as belonging to an integrated and harmonious community. At a more specific level of intergroup relations, if this attitude flourishes, the older segment of the community may feel forced to exert their increasing economic and social power to the detriment of others in society, such as younger individuals in need of their employment positions. This would only contribute to an adversarial relationship (albeit reversed), where resources are still not distributed with social and economic equity among a heterogeneous population. We must all take our fair share of responsibility for the state we live in. Our treatment of all individuals, regardless of age, depicts the state of our society; a civilized community treats all its members in a civilized manner.”</p>

These examples are drawn from Baker-Brown et al., (1992).

## List of Acronyms

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IC	Integrative Complexity
MDF	Movement for Democratic Change
TCA	Thematic Content Analysis
ZANU-PF	Zimbabwe African National Union Patriotic Front

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(U) The scoring of integrative complexity (IC) from archival materials has been shown to forecast outbreaks of war vs. peacefully negotiated agreements in a number of international crises. In scoring documents and other verbal materials released by national leaders and leadership groups, maintained or increased IC prior to the outcome of the confrontation precedes a peaceful resolution; a drop in IC within approximately six months prior to resolutions precedes the outbreak of war. These findings have been replicated in historical events where wars occurred as the culmination of cycles of escalation, surprise strategic attacks, and persistent international rivalries.

The present report extends these findings into three different categories of conflict. One is an international war between two nations, one of which was until recently a subordinate part of another and is still in a situation of military and political inferiority (Georgia vs. Russia). Another is the periodic occurrence of government-sponsored violence against members of the political opposition (Zimbabwe). The third is the sporadic launching of terrorist attacks against civilian targets in a variety of countries by the same organization or its affiliates (al-Qaeda).

In all three cases, the findings have been similar to those of previous studies: i.e., drops in IC reliably occur several months prior to each episode of violence, whereas increases in IC are found during periods of reduced tension.

(U) La cotation de la complexité intégrative (CI) à partir de documents d'archives s'est avérée une façon de prédire le déclenchement d'hostilités ou la négociation pacifique d'ententes dans certaines crises internationales. En analysant des documents et des archives sonores remis par des chefs nationaux et des groupes dirigeants, on a constaté qu'avant une confrontation, le maintien ou l'accroissement du niveau de complexité intégrative annonçait un règlement pacifique de la situation, alors qu'une baisse, environ six mois avant un éventuel règlement, annonçait le déclenchement d'un conflit. Ces situations se sont répétées aux cours de l'histoire alors que des guerres ont été le résultat d'escalades, d'attaques surprises stratégiques et de rivalités persistantes entre des nations.

Les auteurs appliquent ce constat à trois types de conflit : une guerre entre deux pays, dont un des belligérants est, jusqu'au moment fatidique, opprimé par l'autre et demeure dans une situation d'infériorité sur les plans militaire et politique (la Géorgie contre la Russie), les manifestations périodiques de violence, sanctionnées par le gouvernement, contre des opposants politiques (Zimbabwe), et le lancement par une organisation ou ses filiales (al-Qaïda) d'attaques terroristes sporadiques contre des cibles civiles dans divers pays.

Dans les trois cas, les constatations ont été semblables à celles d'études antérieures : il se produit invariablement une baisse de la complexité intégrative plusieurs mois avant chaque épisode de violence alors qu'on observe un accroissement de celle-ci dans les périodes d'apaisement de la tension.

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(U) Integrative Complexity; Prediction; Conflict; War; Russia; Georgia; Zimbabwe; al-Qaeda; Osama bin Laden; Terrorism; Adversarial Intent; Psychology