2003

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Suedfeld, Peter, Karen Guttieri, and Philip E. Tetlock. "Assessing integrative complexity at a distance: Archival analyses of thinking and decision making." The psychological assessment of political leaders: With profiles of Saddam Hussein and Bill Clinton (2003): 246-270.

http://hdl.handle.net/10945/62376

10. Assessing Integrative Complexity at a Distance: Archival Analyses of Thinking and Decision Making

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Some psychologists hold the view that cognitive functioning cannot be rigorously studied because it is internal and therefore not amenable to direct observation (see Dominowski and Bourne 1994). Nonetheless, research has established the value of indirect measures through both experimental and observational (including archival) techniques. It is obvious that thought processes underlie spoken or written communication; we can perhaps see this most clearly when people engage in problem solving, decision making, information dissemination, or persuasion. We may reasonably infer, as in the case of motives and other intrapsychic processes, that the process and the product are related and that the product reflects some important aspects of the process. This is the inference on which most research on integrative complexity is based, and a large number and wide variety of research projects have supported its validity.

Integrative complexity is one of a number of "cognitive style" variables—including authoritarianism, dogmatism, field independence, personal constructs, explanatory style, and many others (see, e.g., Goldstein and Blackman 1978; Mancuso 1970; Schroder and Suedfeld 1971)—to have been used in the study of information processing. It differs from the others in two major ways. Unlike related theories that emphasize stable individual differences in cognitive processes, integrative complexity theory and research are primarily

focused on the internal and external factors that govern the level of complexity at which a person is functioning at a specific time and in a specific situation. Although, as is explained in more detail later, it is recognized that the level of complexity has both trait ("conceptual complexity") and state ("integrative complexity") characteristics, the research emphasis is on the latter—partly to counterbalance the more common orientation toward the former.

Scores on integrative or conceptual complexity assess the differentiation and integration of information processing (Schroder, Driver, and Streufert 1967; Suedfeld, Tetlock, and Streufert 1992). Unlike most approaches in this area, the procedure for scoring these two components has been adapted for use with almost any connected verbal material, such as speeches and interviews. This is what makes the system applicable to "measuring personality at a distance." Differentiation refers to an individual's or group's recognition of different perspectives, characteristics, or dimensions of stimuli (which may be people, events, theories, policies, etc.); integration is the perception of connections among those differentiated perspectives, characteristics, or dimensions. Differentiation is indicated when a passage makes references to alternative characteristics or viewpoints, at least two of which are viewed as legitimate. Integration is indicated when the passage makes references to trade-offs between alternatives, constructs a synthesis that combines them, or situates them in an overarching contextual structure. Both of these variables can be assessed from most kinds of connected verbal material.

History and Status of the Construct

The idea of conceptual complexity as a stable personality variable (Schroder, Driver, and Streufert 1967) grew out of personal construct theory (Kelly 1955) and conceptual systems theory (Harvey, Hunt, and Schroder 1961). Subsequent variants have included cognitive complexity (Goldstein and Blackman 1978; Schroder and Suedfeld 1971; Scott, Osgood, and Peterson 1979), interactive complexity (Streufert and Streufert 1978; Streufert and Swezey 1986), and integrative complexity (e.g., Suedfeld and Tetlock 1991). All of these are explicitly structure oriented, and the more recent versions have emphasized either situation- and context-related changes in complexity or the interplay between such influences.

Structure versus Content

One basic difference between cognitive style variables and many personality variables with cognitive aspects is the emphasis of most of the former group on structure rather than content: *how* a person thinks as opposed to *what* a person thinks (Schroder, Driver, and Streufert 1967, 5, emphasis added). Several (although not all) cognitive style theories emphasize structure, looking at such factors as the rigidity with which plans are pursued (regardless of what those plans are) and openness to new information (regardless of what the information is). A key feature of the conceptual/integrative complexity construct is its concern with structure as opposed to content, structure referring to the conceptual rules (i.e., differentiation and integration) utilized in thinking, deciding, and interrelating. By contrast, personality constructs that incorporate ideas about information processing tend to emphasize content variables, such as the focus of authoritarianism theory on moralistic punitiveness and hostility toward minority groups.

Because it is not based on content analysis, integrative complexity scoring cannot depend upon the appearance or frequency of specific words or phrases. However, at least at lower complexity levels, such appearances can be used as signals to alert the scorer to possible structural characteristics. For example, the scoring manual (Baker-Brown et al. 1992) indicates that such words and phrases as *absolutely* and *everyone agrees* are "content flags" that indicate the possibility of an undifferentiated (and therefore, by definition, unintegrated) thought structure, which would call for a score of i for the passage; such phrases or words as *on the other hand* and *nevertheless* may be content flags for a differentiation score (3). However, the manual also emphasizes that such flags are neither necessary nor sufficient justification for assigning a particular score, and they may appear in passages that are actually higher or lower than the flag would imply.

Trait versus State Characteristics

Current complexity theories (reviewed in Suedfeld, Tetlock, and Streufert 1992) recognize that the variable has both a trait component, the chronic or customary level at which the person operates (now usually referred to as conceptual complexity), and a state component specific to a given situation (integrative complexity). Whereas

conceptual complexity theory traces consistent levels of complexity that characterize a given individual's functioning, integrative complexity theory emphasizes that differentiation and integration vary from situation to situation for each individual. For example, Saddam Hussein's complexity increased and decreased as his invasion of Kuwait first succeeded, then was threatened by Desert Shield, and was eventually reversed by Desert Storm (Suedfeld, Wallace, and Thachuk 1993). The degree to which a personality predisposition is determinative and what role situational factors play are the fundamental questions in the state-trait debate.

Trait Complexity

A longitudinal examination of Robert E. Lee's integrative complexity (Suedfeld, Corteen, and McCormick 1986) effectively confirms the dual trait and state nature of information processing complexity. Lee's complexity was generally high throughout most of his adult life but declined as the adversities of prolonged war against an enemy of superior strength became more and more severe. With the end of the Civil War, it recovered its previous high level.

Suedfeld suggests that the trait component of complexity predisposes people to react to environmental factors with different levels of state complexity. The subsequent level of state complexity is jointly determined by trait complexity and the characteristics of the problem situation. This, the *cognitive manager* model (Suedfeld 1992a), argues that complexity is adjusted on the basis of the importance and urgency of the problem, other problems having to be solved in the same time frame, the individual's intellectual and other relevant resources, and the environmental and social factors discussed later in this chapter.

An alternative explanation is that state complexity affects the relationship between trait complexity and behavior—that is, as a moderator variable (Tellegen, Kamp, and Watson 1982). Clearly, research on how these components interact in a variety of contexts, both replicating and expanding the findings concerning General Lee's pattern, would be desirable.

In formulations of conceptual complexity, differentiation and integration are stable personality traits of information processing style that vary among individuals (Harvey, Hunt, and Schroder

1961; Schroder, Driver, and Streufert 1967). Measurement relies upon responses to general questions within fundamental contexts such as relationship with authority and reactions to uncertainty, and these predetermined questions are administered in a classroom or laboratory setting devoid of emotional significance or conflict (Schroder, Driver, and Streufert 1967). Early attempts to find associations between trait complexity and other personality variables have found modest relationships with content-laden cognitive styles such as authoritarianism (Adorno et al. 1950), dogmatism (Rokeach 1960), and field independence (Witkin et al. 1962). Intelligence and complexity are correlated at a moderate level, which varies with the sample and the IQ test used (Schroder, Driver, and Streufert: 1967). Conceptual complexity has been found to have only a modest correlation with mental abilities, including verbal ability, crystallized intelligence, fluid intelligence, and divergent thinking, at least in restricted-range university student populations (Schroder, Driver, and Streufert 1967; Suedfeld and Coren 1992).

Moderate correlations have also been found between trait (conceptual) complexity and a long list of general personality characteristics: openness and creativity, low social compliance and conscientiousness, narcissism and antagonism, high initiative, power motivation and self-objectivity (Schroder, Driver, and Streufert 1967; Tetlock, Peterson, and Berry 1993; Tetlock, Skitka, and Boettger 1989), social adeptness, gregariousness, extroversion, warmth and nurturance, and nonconformity (Coren and Suedfeld 1995). Conceptual complexity may in fact be associated with some unattractive personality traits, which lead others to perceive one as being easily bored, self-centered, and narcissistic (Tetlock, Peterson, and Berry 1993); but those judgments may have reflected the reactance of more complex participants against the grueling weekend of intense assessment during which the measures were taken.

Trait complexity may be a factor in leadership success. For example, leaders notable for their length of tenure in high office (such as Andrei A. Gromyko in the twentieth century and the Duke of Wellington in the nineteenth century) maintained relatively high levels of complexity even during crises where their colleagues and counterparts showed disruptive stress leading to reduced complexity (Wallace and Suedfeld 1988). General Lee consistently functioned at

highly complex levels during his military career. When drastically less complex Union commanders faced Lee (McClellan, Burnside, and Hooker at Antietam, Fredericksburg, and Chancellorsville, respectively), they were unable to gain decisive victory against him, despite superior numbers of Union troops. Lee's complexity level decreased as the Confederacy weakened and his troops shrank in numbers, energy, and supplies (from 4.60 at the first battle studied, Antietam, to 1.50 at Spotsylvania). He eventually encountered opponents who were functioning at complexity levels almost as high as his (Meade at Gettysburg) or higher (Grant in the Wilderness and at Spotsylvania), against whom he was not nearly as successful (Suedfeld, Corteen, and McCormick 1986). One interesting point is that after Lee decided to surrender at Appomattox his complexity level immediately reached new heights and remained there during the rest of his life.

Although these data may reflect the existence of a stable level of complexity whose expression may be modified under some circumstances, there is another possibility. Conceptual complexity may be an interaction trait rather than a main effect trait. The most important stable factor here may be the ability to recognize and adapt to environments that demand different levels of complexity (Suedfeld 1992a). This hypothesis has not yet been tested on archival materials, although it has been supported by the results of an extensive series of simulation studies of decision making among business executives (Streufert and Swezey 1986).

State Complexity

Researchers have explored a range of possible influences on the level of complexity exhibited in any specific situation. These include intrapsychic factors as well as several categories of situational factors: the environment, social or political considerations, and the nature of the task.

Intrapsychic Factors

A number of intrapsychic factors can be viewed as intervening between stable and pervasive trait complexity and the more dynamic and responsive dimension of state complexity. Although content and structure are generally independent, such internal characteristics may also act to increase the correlation between them.

Most of the research on intrapsychic factors has focused on the need to resolve a conflict or contradiction among goals, beliefs, or values. For example, Tetlock and his colleagues have found that political liberals (i.e., those moderately left of center) tend to produce policy statements that are higher in complexity than more extreme adherents of either the left or the right wing. Tetlock (1981a, 1984) has reported consistent data from both American and British politicians showing the same pattern, which was replicated in a sample of Canadian members of Parliament (MPs) (Suedfeld et al. 1990). Although a number of alternative explanations have been proposed, Tetlock argues that liberalism or liberals are not somehow intrinsically complex. Rather, it is at this portion of the left-right political spectrum that *value conflict* or *value pluralism* reaches its highest level (Tetlock 198la, 1983a, 1984). Value conflict occurs when two important values cannot both be maximized; in politics, it is experienced by liberals as the urge to foster both equality and individual freedom. When the two conflict, as they often do when policy strategies are being chosen in Western democratic states, conservatives tend to find freedom more important, whereas socialists opt for equality. Both of these groups therefore experience less conflict, and have less need for highly complex solutions, than do liberals (although tactics to resolve value conflict without increasing differentiation and integration have been identified, e.g., Bar-Siman-Tov 1995; Tetlock 1998; Tetlock and Boettger 1994; Tetlock, Peterson, and Lerner 1996). The curvilinear relationship between complexity and ideological position on the left-right dimension has been supported by experimental studies as well (Suedfeld and Epstein 1973; Suedfeld et al. 1994; Tetlock 1986).

Research has also explored the power of value conflict to motivate integrative complexity at different points of the ideological spectrum. For instance, in a laboratory study, Tetlock (1986) found that moderate liberals, who ranked both equality and their own economic prosperity highly on the Rokeach Value Survey, reached their maximal complexity in response to the question of whether they were willing to pay higher taxes to help the poor. By contrast, moderate conservatives, who ranked both national defense and their own prosperity highly, reached their highest complexity level when responding to the question of whether they were willing to pay higher taxes

for the purpose of enhancing national defense. One key lesson of the value pluralism model is, therefore, not to expect reliable main effects of ideology. Rather, the model predicts ideology by issue interactions in which the point of maximal complexity of reasoning shifts as a function of both the value priorities of the respondents and the perceived relevance of "issue framing" to highly ranked values.

The left-right spectrum is not the only foundation for differential value conflict. For example, pre—Civil War moderates who were opposed to slavery but also wanted to preserve the Union were obviously in more conflict and, as predicted, showed higher integrative complexity than either radical abolitionists or supporters of slavery (Tetlock, Armor, and Peterson 1994). In another archival study, the provincial government of British Columbia and a panel of scientists that it had appointed to develop forest management policy in a sensitive old-growth area were caught in the midst of a controversy between groups wanting to maintain the economic benefits of logging and those wanting to ensure the protection of forested wilderness (Lavallee and Suedfeld 1997). As Tetlock's model predicted, the government and its scientists showed higher complexity than did environmental activists and representatives of timber companies. In an experimental setting, students also write significantly more complex essays discussing the relation between two values that they rated as highly conflicting (e.g., preserving the environment vs. a growing economy) than in discussing two not very conflicting values (e.g., a growing economy and the preservation of human life) (Suedfeld and Wallbaum 1992).

Value pluralism, then, will lead to higher levels of complexity when there are two or more values that are fairly well balanced in importance, so that any resolution must accept the legitimacy of both. The situation must be such that maximization of either would lead to infringement of the other; the only way out is to try to see how they can be related and what kind of trade-off or compromise could obtain at least some reasonably satisfactory level of both. This is, of course, the very definition of a complex solution to a problem. By contrast, those who must advance only one important value do not need to develop such compromise positions.

Lavallee and Suedfeld (1997) have suggested that a similar mechanism affects complexity levels in situations that evoke *motive plural-*

ism. This occurs when individuals or organizations may simultaneously experience at least somewhat incompatible motives, such as the desire to exert power over another person or group (need for power) and at the same time be liked by the target of the influence attempt (need for affiliation).

Situational Characteristics

Situational characteristics whose impact on complexity has been investigated include the severity of environmental stressors, social factors, and the nature of the task. The measure of integrative complexity captures environmental influences such as domain and task complexity. Building on this research, cognitive management and metacomplexity theorists need further to examine the ways in which individuals are able (or choose) to bring psychological propensities such as compartmentalization and attribution to bear on particular problem situations.

The Task Environment

The theory of integrative complexity calls for the study of how environmental factors influence the level of complexity at which an individual processes information and behavioral consequences as the individual's complexity level in turn affects the response to particular environmental conditions. Information load (Schroder, Driver, and Streufert 1967), time pressure, perception of threat, perception of high consequences, fatigue, uncertainty, in-group conflict, and challenge to or loss of control are examples of environmental factors that affect integrative complexity (Streufert and Swezey 1986).

When time is limited, information load is nonoptimal, and/or outcomes are negative, planning and decision making in simulation experiments become less integrated (Schroder, Driver, and Streufert 1967). Participants writing a paragraph based upon a set theme achieve lower complexity scores, omitting qualifications and consideration of alternatives in preference for responses that are dominant in the respondent's hierarchy (Suedfeld and Coren 1990).

Severe and prolonged ("disruptive") stress is hypothesized to account for an inverse correlation between the onset of violent conflict and the level of complexity, as in studies of executive deci-

sion makers in foreign policy crises (e.g., Suedfeld and Tetlock 1977). In crisis situations, especially those in which violent conflict is a probable outcome, outside observers typically judge that the situation calls for high complexity among national decision makers. Decision makers confront threats to vital national interest, characterized by a risk of war (possibly nuclear war); uncertainty about the intentions of adversaries, allies, and neutrals; a stream of possibly confusing intelligence data; and the need to maintain effective control over one's own bureaucratic and military machinery and political base and to engage in lengthy and fatiguing deliberations (Bracken 1983; George 1980; Gottfried and Blair 1988; Wallace 1991).

The impact of environmental factors on complexity has been a subject of repeated scrutiny in relation to leadership decision making during international crises. International crises are stressful almost by definition, and many researchers have looked at the relationship between crisis outcome and complexity. A case study of Neville Chamberlain during the sequence of events comprising the Anglo-German crises of 1938-39 (Walker and Watson 1994) shows fluctuations in complexity as the leader shifted between cooperative and competitive strategies. In crises that lead to war, the complexity levels of leaders show reliable reductions prior to the breakdown of diplomatic efforts. Suedfeld and Tetlock (1977) found that leader complexity dropped between the preliminary and climax phases in two crises culminating in war (World War I, Korean War) and that Israeli and Arab speeches in the UN General Assembly showed marked drops within the few months prior to the outbreak of major Middle East wars (Suedfeld, Tetlock, and Ramirez 1977).

On the other hand, continuing high complexity is often associated with negotiated, nonviolent resolutions. In the Suedfeld and Tetlock study (1977), complexity remained stable or rose across the two phases in other crises that involved the same nations and some of the same leaders but were resolved without war (the Agadir Incident of 1911, the Berlin Blockade of 1948, and the Cuban Missile Crisis). It is especially noteworthy that, while conflict spirals (as the outbreak of World War I, for example, is frequently described) induce lowered complexity among the leaders of all nations involved, surprise

strategic attacks are consistently presaged by a drop in the complexity of the eventual attacker but not in the complexity of the victim (Suedfeld and Bluck 1988).

War is not the only crisis event relevant to complexity. A decrease in complexity may indicate the onset of a confrontation, which may be terminated peacefully when complexity is regained: the complexity of American and Soviet leaders dropped in the months immediately preceding the onset of the two major Berlin crises but rose over the course of the crises (Raphael 1982). Nor is disruptive stress necessarily associated with armed conflict, but sometimes only with the abandonment of a balanced, compromise- or consensus-oriented policy. A study of Canadian prime ministers has shown that decisive, unidimensional solutions to critical domestic political controversies are also accompanied by a decrease in complexity (Ballard 1983). Such findings point to one potential application of the integrative complexity approach: real-time monitoring of the complexity of utterances may warn observers of imminent changes in the strategy of a protagonist.

Another perspective on the relationship between crises and decision-maker complexity has been provided by Satterfield (1997), who analyzed verbal materials produced by Churchill, Hitler, Stalin, and Roosevelt before and after personal and political crises. Assessing the individual's psychological functioning (resilience) using change scores on the Global Assessment of Functioning Scale (APA 1994), Satterfield found that leaders who exhibited higher integrative complexity prior to a crisis showed higher resilience—that is, fewer negative effects of stress—afterward. In another recent study, Kowert (1996) found that U.S. presidents who were rated as "open" (i.e., who consulted more advisers, considered more options, etc.) showed less decrease in integrative complexity during crises.

This may be a good place to emphasize that complexity, as a structural variable, is normatively neutral. It is unrelated either to morality or to the appropriateness or correctness of the final behavior (Suedfeld and Tetlock 1991). Not only is there no theoretical or historical reason to equate complex decisions with good decisions, even a recently developed computer-based decision support system failed to find such a relationship (Wilkenfeld et al. 1996). Because complex strategies cost more in time, effort, and resources for handling other

problems (Suedfeld 1992a), and may divert attention from crucial to trivial information (Tetlock and Boettger 1989, 1994), optimal decision making may involve managing available resources according to a (possibly implicit) cost-benefit analysis (Suedfeld 1992a). Both theory and data indicate that a stubborn, hostile, or simple-minded adversary may be best met with an unequivocal response that would be delayed, obscured, or diluted by complex information processing (Suedfeld 1992a; Suedfeld and Tetlock 1991; Tetlock and Tyler 1996). Thus—although the ability to maintain complexity in the face of crisis may be correlated with personal career success among statesmen (Wallace and Suedfeld 1988)—either low or high levels; of complexity may lead to successful resolution of problems or conflicts, depending on the situation and the opponent. The verdict of history is that Chamberlain, comparatively complex during the Munich Conference, was outmaneuvered by Hitler in spite of the latter's low level of complexity. We would also reject the conclusion of many colleagues that a declaration of war ipso facto denotes a failure of decision making: under certain circumstances, abandoning negotiations and embarking upon armed conflict may be the morally superior, or pragmatically successful, move—or both moral *and* successful.

The moral irrelevance of complexity has often been ignored by scholars who firmly believe that complex (negotiated, compromise) outcomes occupy the high ground (see Suedfeld 1992a; Suedfeld and Tetlock 1991). But, as so often happens, the abstract value breaks down when we look at specifics. Three historical examples illustrate the complex relationship among complexity, morality, and success.

1. Many academic and media commentators disapprove of Ronald Reagan's integratively simple characterization of the Soviet Union as an evil empire. Nevertheless, President Reagan's description had both moral and pragmatic justification, given the history of Soviet oppression and the chronological—and arguably causal—association between American strategies based on Reagan's viewpoint and the demise of Communist hegemony in Eastern Europe.
2. On the other hand, most observers today applaud the integratively simple abolitionists of the 18505, who

demanded the end of slavery even if the cost would be the massive bloodletting of a civil war and/or the dissolution of the Union—as integratively complex moderates in both the Democratic and Republican parties accurately predicted at the time.

3. Most (although not all) present-day experts also extol the integratively simple approach of Winston Churchill, who in the 19305 denounced Nazi Germany as a gangster state that understood only the language of force and deterrence. Churchill accordingly demanded an end to Chamberlain's integratively complex policy, which had been predicated on balancing deterrence with reassurances that the British understood legitimate German security concerns.

Social Factors

A variety of social factors are relevant to complexity, including the desire to project a certain image, the nature and perceived opinions of the audience in a persuasion situation, the source's position, which also determines accountability, and intragroup cohesiveness and diversity.

Impression Management

Most of the integrative complexity research reviewed in this chapter assumes that complexity reveals *intrapsychic* processes: that people who speak or write in integratively simple or complex ways are thinking about the issue in roughly equivalent simple or complex ways. By contrast, an *impression management* explanation asserts that the way people speak and write is a function of the political goals they have in the interpersonal or institutional world they inhabit. In this view, an issue may be discussed not at the level of complexity at which the source actually thinks about it but rather at the level that the source believes will create the desired impression on the target audience. For example, Tetlock *(19853.,* 1985^ has argued that deliberate simplification of statements can be used to signal firmness to an opponent, while more complex formulations could be used to project a misleading image of reasonableness and willingness to listen to the other side. One may also want to allay or avoid criticism

by appearing to have considered all points of view before choosing a policy and to be aware of the shortcomings of that policy even though one has chosen it (Tetlock, Skitka, and Boettger 1989).

For certain purposes, the distinction between these interpretations may be irrelevant (Tetlock and Manstead 1985). Decreasing complexity in international crises may signal the imminence of war, regardless of whether simplification reveals changes in underlying thought or influence strategies that have been more or less deliberately selected; increases may predict eventual compromise, again regardless of the "true nature" of the construct that determines the complexity of the text. But for other purposes, the distinction may be highly consequential. It does make a difference, both psychologically and politically, whether leaders truly do not recognize legitimate alternative perspectives on a problem or whether they are strategically feigning nonrecognition (or, in the opposite direction, merely pretending to recognize the legitimacy of the adversary's view without any real intention to accommodate it).

In one sense, the impression management hypothesis is untestable because it is impossible to ascertain what impression the source of a message wishes to establish. Both high and low complexity can be evaluated positively or negatively by observers (Tetlock, Peterson, and Lerner 1996; Tetlock 1998; Tetlock, Peterson, and Berry 1993), so that there is no across-the-board advantage to either image. In specific cases, leaders often do not communicate at the level that would seem optimal for impression management. For instance, a show of complexity would seem to have been a good strategy for national leaders planning a strategic surprise attack, for Saddam Hussein as the UN Security Council's deadline for imposing sanctions approached, and for Mikhail Gorbachev as his economic and political problems at home grew steadily more threatening; but, in fact, all of these leaders showed lower complexity (Suedfeld and Bluck 1988; Suedfeld, Wallace, and Thachuk 1993; Wallace, Suedfeld, and Thachuk 1996). To rescue the impression management hypothesis, it could be argued that in desperate circumstances leaders might have expected that the projection of a determined "I shall not be moved" stance would discourage opponents or lead them to make more concessions. Without seeing into the mind of the leader, this is an unanswerable question.

Two research procedures that might disentangle intrapsychic from impression management explanations are reviewed by Tetlock and Manstead (1985). One is to compare private and public documentation: the disruptive stress hypothesis would predict simplification in both, the impression management only in the second, preceding war or other uncompromising conflict. The public-private difference predicted by impression management was found in two studies (Levi and Tetlock 1980; Guttieri, Suedfeld, and Wallace 1995), but not in three others (Suedfeld and Rank 1976; Tetlock and Tyler 1996; Wallace, Suedfeld, and Thachuk 1996).

Another approach is to study circumstances where impression management is unlikely to be relevant. Significant stress-related drops in complexity have been found in an experiment using a noise stressor with university students (Loewen and Suedfeld 1992) and in a field study of students as they drew temporally nearer to a stressful examination (S. Coren, personal communication, March 1997). Marked reductions in complexity during periods of acute societal stress have also been found in nonspecific archival materials—those dealing with topics other than the crisis and those produced by societal elites not involved in crisis resolution, such as novelists, scientists, and presidents of the American Psychological Association (Porter and Suedfeld 1981; Suedfeld 1981, 1985, 1992^.

One option open to impression management theorists is to reconsider what counts as a truly "private" setting. Even in confidential meetings of elite decision makers, the level of complexity may be chosen with an eye to its effect; and important figures may want to impress the recipient of personal letters or, anticipating that even their private notes and diaries may eventually become public, write with future readers in mind. At the extreme, we are concerned with favorably impressing ourselves, and thought itself becomes a presentation. This formulation makes the impression management hypothesis completely immune from disconfirmation.

Intrapsychic explanations, too, can be applied post hoc. Pre- to postelection shifts in presidential rhetoric may reflect changing impression management goals and strategies, just as individual presidents who do not show such a shift may be revealing their own unchanged goals (Suedfeld 1994; Tetlock 1981b). But low complexity can also be interpreted as caused by the disruptive stress of a gru-

eling election campaign, followed by recovery once the election has been decided (as in Lee's military campaigns; Suedfeld, Corteen, and McCormick 1986), or successful candidates for high office may gain immediate access to information that broadens their perspective and acquaints them with alternate viewpoints and novel possible solutions to problems.

In short, the intrapsychic and impression management explanations are fuzzy sets with overlapping boundaries. The two may interact, or each may become dominant in particular situations. Some types of predictions—disruptive stress, value conflict, correlations with stable personality constructs such as dogmatism—flow more naturally from intrapsychic perspectives, while others—the impact of the anticipated audience or of power and political role—are more clearly derivable from an impression management model. More general explanations, such as the cognitive manager model, can subsume both. A reasonable conclusion at this stage is that integrative complexity has the attributes not only of both a state and a trait but also of both cognitive processes and social influence tactics.

Source Position and Status

Another factor that influences complexity, sometimes related to impression management goals, is the status of the source of the utterance. People and groups who are criticizing an established policy or attacking opponents who hold power generally express themselves at lower levels of complexity than do those who are in power and who are defending their policies or proposing new ones. This pattern has been found in election campaigns (Tetlock 1981b) and environmental controversies (Lavallee and Suedfeld 1997). Previously mentioned complexity differences between liberal and conservative politicians may have been affected by the fact that, during most of the past five decades, liberal parties have dominated the legislatures of the countries included in these studies: Canada, the United States, and the United Kingdom.

A Canadian study (Pancer et al. 1992) found that MPs who belonged to the governing party gave more complex speeches than members of the opposition party. When a minority government was in place, MPs of both parties showed higher complexity, reflecting a greater need to reach mutually agreeable policy solutions. As the

next election approached, but *before* it was called, complexity increased among the governing party—contrary to Tetlock's (1981b, 1985a) findings in American presidential elections—and decreased among the opposition. Once under way, Canadian election campaigns are much more distinct from the "business as usual" activities of elected legislators than is the case in the United States—in fact, Parliament is dissolved when the election is called. However, speeches given *during* Canadian electoral campaigns are characterized by substantially lower complexity than parliamentary speeches (Pancer et al. 1992; Suedfeld et al. 1990).

When the status of an individual changes from being in opposition to being in power, success and long-term esteem accrue to those who move from relatively low to higher levels of complexity, while those who fail to make this change are more likely to lose their position or the respect of posterity. This is true among both revolutionary leaders (Suedfeld and Rank 1976) and elected ones (Tetlock 1981b; Suedfeld et al. 1990). No study has yet appeared that tracks the equivalent change as people lose power and move into opposition.

Other Factors

Another relevant social factor is the nature and perceived opinions of the audience in a persuasion situation (Guttieri, Suedfeld, and Wallace 1995; Suedfeld and Wallbaum 1992; Tetlock 1985^, which influences perceived *accountability* for one's position (Tetlock and Boettger 1989, 1994). In several experiments, integrative complexity was found to increase when students were expected to have to discuss their ideas later with another student, whose opinions on the topics they did not know (Tetlock, Skitka, and Boettger 1989), or with an expert who might judge the quality of their responses (Tetlock and Boettger 1994; Tetlock and Kim 1987). Incidentally, accountability also enhances other cognitive maneuvers such as passing the buck to other decision makers, procrastinating, and paying increased attention to irrelevant information (Tetlock and Boettger 1989). In these studies, the opinion of the eventual audience was unknown to the subject; it is interesting to note that when students were made accountable to an audience either known to agree with them or known to disagree, the former condition evoked higher

complexity—perhaps because of disruptive stress in the latter (Sued-- feld and Wallbaum 1992).

Not much research has been conducted on the effects *Q£groupthink.* on integrative complexity. One could reasonably predict that group-- think—with its emphasis on in-group solidarity, delusions of infal- libility, conformity guardians, and identification with an admired leader (Janis 1972, 1982, 1989)—would lead to simplification. Comparing international crises in which Janis had characterized American decision making as either groupthink or nongroupthink, Tetlock (1979) found that the latter had produced significantly more complex public statements from the U.S. president and secretary of state. However, given recent critiques of the groupthink model and the reclassification of some of the crises previously studied (e.g., Tet- lock et al. 1992), further exploration of this relationship is war- ranted. In an interesting variant, Walker and Watson (1994) found an increase in complexity as British leaders shifted away from group- think to multiple advocacy in deciding on a continental policy vis-a- vis Nazi Germany.

One other social variable that calls for more study is the question of individual differences within leadership groups. Tetlock (1979) reported that Dean Rusk retained a stable level of complexity across both groupthink and nongroupthink crises, but this study (like sim- ilar interleader comparisons of Wallace and Suedfeld 1988) did not examine ongoing interactions among the leaders. Guttieri, Suedfeld, and Wallace (1995), in an intensive analysis of the documents of the inner circle of the Kennedy administration, traced changes in com- plexity during the course of the 1962 Cuban Missile Crisis. This was a decision-making process that had been extolled by Janis as the epitome of nongroupthink approaches. There were no complexity differences between so-called hawks and doves in either public or private communications, but Guttieri, Suedfeld, and Wallace found evidence of cognitive management and disruptive stress: complexity first increased as the importance of the problem was fully recognized and solutions were weighed and then decreased as no resolution appeared and options were closed off. It is interesting to note that the Kennedy brothers—who, alone in the group, knew of a secret agree- ment to trade the withdrawal of Soviet missiles from Cuba for a later

withdrawal of American missiles from Turkey—did not show the decreased complexity of exhausted cognitive resources. Individual differences were also found in British cabinet discussions in the late 19308 (Walker and Watson 1989, 1994), but this whole intriguing issue remains lamentably underresearched.

Problem Characteristics

The nature of the problems being faced or the decisions having to be made is important. As the cognitive manager model predicts, greater complexity is brought to bear on tasks that are both important and difficult. Maoz and Shayer (1987), for example, showed that Israeli prime ministers used more complex arguments when trying to persuade the Knesset to adopt a conciliatory rather than a bellicose stance toward Arab adversaries. This may be viewed as a rhetorical strategy as well as the prime ministers' perception of the conciliatory persuasion task "as more difficult and demanding" (Maoz and Shayer 1987, 575). As Ceci and Ruiz (1992) have pointed out, tasks that are not highly motivating lead to underestimations of the person's capacity for complexity.

Different problems being addressed in the same time period may evoke different complexity levels. Tetlock (1985a, 1988) found that Soviet leaders varied in the complexity with which they approached a variety of foreign and domestic issues, the level varying with (among other factors) the severity of difficulties at a given time. Mikhail Gorbachev, in particular, was consistently more complex in foreign policy contexts than in regard to internal economics and politics (Wallace, Suedfeld, and Thachuk 1996).

Personal crises, such as a marital breakup, the death of someone close, occupational setbacks, and illness, seem to evoke a different pattern from societal hazards such as actual or impending war. It may be that the latter are seen as less amenable to the individual's control or coping strategies. At least among men, personal crises are accompanied by increases in complexity (Suedfeld and Bluck 1993; Suedfeld and Granatstein 1995), which disappear after the crisis ends. Women's complexity has not shown such variability in response to personal problems.

Some interesting data have been collected concerning materials that deal with either past or future events. One case study showed

that retrospection about stressful events reveals higher complexity than material produced at the time of the event (Suedfeld and Granatstein 1995) and that retrospective accounts of life events that were intense, unpleasant, undesirable, and neither controlled nor predicted by the person are more complex than the accounts of events that had the opposite characteristics. This pattern shows no sex-related differences (de Vries, Blando, and Walker 1995). Similarly, both men and women show a significant decrease in complexity as they temporally approach their last and most powerful crisis: death (Porter and Suedfeld 1981; Suedfeld 1985; Suedfeld and Piedrahita 1984), although, in a research setting, thinking about: death itself—especially one's own death—produces higher complexity than thinking about the process of dying (de Vries, Bluck, and Birren 1993).

Technical Aspects

A number of technical issues raised in critiques of the integrative complexity approach have not yet been fully settled.

Source Identity

It is sometimes difficult to establish how completely the material being scored is actually the product of the supposed source. The two most frequently encountered questions are whether the material may have been generated by an assistant, such as a ghostwriter, speech writer, or public relations specialist, and whether the material translated from another language into English can be trusted to reflect the complexity of the source rather than of the translator.

The answer to the first question can only be tentative. In studies that scored both personal letters and public statements of the same political leader, issued in the same time period, no significant complexity differences have been found (e.g., Suedfeld and Rank 1976). Many of the documents scored for complexity either have been holographs or showed extensive editing and annotation in the hand of the named source; the conclusion has generally been that, at least in the case of important statements, leaders either write much of the material themselves (although they may allow others to "polish" the product), set firm guidelines for the writer that embody their own cognitive approach, modify the final product to be compatible with

how they think about the issue, or select writers whose thinking closely matches their own (Suedfeld, Tetlock, and Ramirez 1977; Suedfeld, Tetlock, and Streufert 1992). Last, no consistent differences have been found as a function of whether the material appears in personal or public communications, the latter including those directed to a small group of colleagues as well as those intended for widespread dissemination. On the other hand, as indicated previously, it has been argued that, among eminent people, the realization that even diaries and personal letters may someday be published erodes the border between public and private utterances. The net result of these factors should be a good fit between the information-processing complexity of the named source and the integrative complexity reflected in the product. It is important, however, to be aware of individual and cultural differences: for example, even today some eminent statesmen always write their own material (e.g., Vaclav Havel), and in some cultures a person in a prominent position merely delivers utterances written by functionaries (e.g., the British and Canadian Speeches from the Throne and the speeches of Japanese prime ministers).

The matter of translations is easier to deal with. In a number of studies where both the original statement (in Russian, German, Hungarian, French, or Spanish) and an "official" English translation have been scored, no significant difference has ever been found in the complexity of the two versions. It may be that such differences could emerge if the original were in a non-European language, but there is no a priori reason to expect this to happen. In the absence of evidence to the contrary, we may assume that professional translators are able to reproduce the complexity level of the original statement.

Scorer Knowledge

Another issue is how much background or contextual information a scorer should have (see, e.g., Suedfeld and Bluck 1996). This is particularly problematic when dealing with historical, biographical, and political materials. There is no universal answer to this question, because it is quite feasible for scorers who know nothing about context nevertheless to score passages validly; the problem arises when the scorer's understanding or ignorance of allusions or connotations in the text might alter the score. We have conducted tests with both

informed and naive scorers and so far have found no significant or major differences; but the possibility of this type of confounding should be borne in mind. Incidentally, it is interesting to see that completely naive people—university students serving as research participants—appear to have a good implicit understanding of integrative complexity and of how various endogenous and situational factors affect it (Suedfeld et al. 1996).

Measurement

The material in this section is excerpted from "The Conceptual/Integrative Complexity Scoring Manual" (Baker-Brown et al. 1992).

Integrative complexity scoring proceeds on a 1-7 scale (see table 10.1). Scores of i indicate no evidence of either differentiation or integration. The author relies on unidimensional and evaluatively consistent rules for processing information. Scores of 3 indicate moderate or even high differentiation, but no integration. The passage shows recognition of at least two distinct dimensions of judgment but fails to consider possible conceptual connections between these dimensions. Scores of 5 indicate moderate to high differentiation and moderate integration. The author notes the existence of conceptual connections between differentiated dimensions of judgment. These integrative cognitions can take a variety of forms: the identification of a superordinate category linking two concepts, insights into the shared attributes of differentiated dimensions, the recognition of conflicting goals or value trade-offs, the specification of interactive effects or causes for an event, and the elaboration of possible reasons why reasonable people view the same event in different ways. Scores of 7 indicate high differentiation and high integration. A general principle provides a conceptual framework for understanding specific interactions among differentiated dimensions. This type of systemic analysis yields second-order integration principles that place in context, and perhaps reveal, limits on the generalizability of integration rules that operate at the scale value of 5. Scores of 2, 4, and 6 represent transitional levels in conceptual structure. Here the dimensions of differentiation or integration that would, if clearly stated, justify the next higher score are implicit and emergent rather than explicit and fully articulated.

In integrative complexity scoring, the basic unit is a section of material that focuses on one idea. Usually, but not always, this scorable unit consists of a single paragraph. Occasionally the scorer may divide a long paragraph into two or more scorable units, with each centering on a single idea. On the other hand, several short paragraphs in the original material may be collapsed into one scorable unit. Throughout the manual we refer to the scorable unit as a paragraph.

The first step in sampling paragraphs from archival material is to identify the complete pool of available and scorable paragraphs (some materials, such as quotations, proverbs, or ironic remarks, are not scorable and are omitted). From this pool, at least five paragraphs are randomly chosen for each entry into the data set (e.g., for each person studied at each time period or situation). The mean complexity score of the 5 or more passages represents the datum typically used in further statistical analyses.

A variety of approaches exist for the generation (or the designation) of material that may be coded for integrative complexity. In essence, these approaches fall along a continuum of experimenter control and range from high (i.e., the Paragraph Completion Test [PCT]) to low (archival documents).

TABLE 10.1. ILLUSTRATIVE PASSAGES AT VARIOUS LEVELS OF COMPLEXITY

Score of 1	I'd just use one of the messages he sent us and I'd send it right oft, now. I wouldn't even talk to anybody about it. I'd tell him we're going to conduct surveillance, as announced by the president, and one shot and in we come, and he can expect it. If he wants to sit down and talk about: this thing, he can call off his gunfire and do it right away.
Score of 3	We are working on that. We don't have the answer. We will have to talk with the provinces—what is the extent of the program, the cost, the savings in the hospital in relation to the cost outside the hospital.
Score of 5	If we act now to prevent global warming, we can win on both counts. We can win in respect to jobs and we can win in respect to a cleaner environment. If we get on with it, we can lay the cornerstone for a new, dynamic, and cleaner economy.
Score of 7	The present discussion will benefit our party's work a great deal. It will enable us to turn the passive situation into an active one in certain respects, to further understand the economic laws of socialism, to readjust in time imbalances that always exist, and to correctly understand the meaning of "positive balances."

The PCT (Schroder et al. 1967) was the method of choice in the conceptual complexity research. For the PCT, research participants were asked to complete six sentence stems (i.e., write six paragraphs) addressing important domains of the social cognition: interpersonal conflict (e.g., "When I am criticized . . ."), uncertainty (e.g., "When I don't know what to do . . ."), and orientation toward authority (e.g., "Rules . . ."). Typically one to two minutes were allocated per completion. Subsequent variations on these instructions modified the specific topics, as well as the number of paragraphs to be written, and significantly lengthened the amount of time allowed per stem to as much as ten minutes, in order to use the PCT as a power test rather than as a speed test.

A significant variation, originated by Claunch (1964), has been to present participants with a single topic on which they are asked to write an essay. De Vries and Walker (1987) had participants write an essay on capital punishment, and de Vries (1988) had individuals respond to the question, "Who am I?" More recently, Streufert (e.g., Streufert and Swezey 1986) has used a lengthy guided interview as the basis for the assessment of complexity. Tasks of this sort, when material is being generated specifically in the course of the study, require careful instructions both to ensure that respondents evaluate the materials on which they are writing and do not merely provide descriptive accounts, which are unscorable, and to ensure that the format does not bias the responses in the direction of either low or high complexity.

Comparisons of data-generating techniques such as the PCT, essays, or guided interviews show only minor variations in mean complexity scores. In general, higher complexity scores are found in material that has been generated after some thought or planning has taken place and under conditions of little or no time constraint. Lower complexity scores are found in material that was generated with little prior thought and under strict time-limiting conditions. Written accounts tend to have higher scores than oral material (i.e., transcriptions of interviews), probably because the latter are more spontaneous (less carefully thought out in advance) as well as subject to shorter time schemata.

The basic qualification for becoming a trained complexity coder is to reach a correlation of at least $r = 0.85$ with an expert coder. This

criterion has proven difficult to meet without repeated practice and feedback from trained coders over a period of time. Learning to score texts for integrative complexity has traditionally occurred in training workshops lasting several days and involving detailed examination of problematic cases and group discussion of scoring decisions. More recently, a manual has been prepared to enable people to learn how to score integrative complexity without attending a workshop (Baker-Brown et al. 1992). Several candidates have used it and successfully reached a level of agreement with the expert scores to qualify as independent coders, but so far we have not had enough experience to know whether it will be generally adequate as a substitute for face-to-face training sessions.

Contributors

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