

OBSERVATIONS ON THE CONCEPT OF RISK AND ARAB CULTURE

Donald G. MacGregor¹

Joseph R. Godfrey²

ABSTRACT

Western science has developed powerful techniques for modeling and aiding important social decisions. One such technique is risk assessment. The relationship of risk to cultural context is apparent in a number of its facets, including its dependence on values and the (potential) clash between probabilistic versus deterministic views about states of the future. This paper is an examination of the concept of risk using as a lens ideas and concepts about risk that are prevalent in Western culture, and applying these concepts to existing literature (in English) on Arab culture that provides information relevant to risk. The goal of the paper is to amplify our understanding of how Arab culture conceptualizes elements of risk and its assessment as understood and practiced in the West. A background for this synthesis is an overview of the history of risk in Western cultures that traces the evolution of modern ideas about risk as both a mathematical and a social development. Current research on risk in Western literature is used to frame key risk issues in terms of their potential fit (or misfit) with features of Arab culture. The paper concludes with a number of speculative recommendations for research and practice that suggest a cautious approach with regard to applying risk-related principles in Arab cultural contexts that place a relatively high value on traditionalism.

¹Contact Author. Donald G. MacGregor, Ph.D., MacGregor Bates, Inc., 1010 Villard Avenue, Cottage Grove, OR, 97424. Electronic: donald@macgregorbates.com

²Joseph R. Godfrey, Ph.D. Winset Group, LLC, 4031 University Drive, Suite 200, Fairfax, VA, 22030.

INTRODUCTION

Western science has developed powerful techniques for modeling and aiding important social decisions. One such technique is risk assessment. Elements of risk assessment, including the identification of hazardous events and conditions, the assessment of uncertainties and the meaning of consequences, are found not only in the direct application of risk assessment as a formal approach to support risk-based decisions, but also in everyday decision making that is part of personal health and safety. Thus, risk assessment has its conceptual elements embedded in our Western cultural matrix.³

The relationship of risk assessment to cultural context is apparent in a number of its facets. First, risk assessment depends upon the identification of those things that are “at risk” and does, therefore, draw upon the values and objectives of individuals and social organizations (e.g., governments). In formal applications of risk assessment the quantification of values and objectives is a central feature and enters into important decision processes such as prioritizing risks and risk management.^{4,5} From a cultural perspective quantification itself defines important decision content as either admissible or not depending upon if and how it is measurable. Although almost any construct or concept can be cast in terms of utility theory and constructed quantitatively in terms of utility units, the plausibility and acceptability of these transformations may conflict sharply with cultural definitions of value and importance. Decision content that cannot be quantified may be omitted entirely. Furthermore, attempts to quantify important decision content may be objectionable on the grounds it violates cultural precepts.

With respect to the uncertainties inherent in risk assessment, there are cultural questions with respect to the meaningfulness of representing uncertainty numerically in risk-based problems, and the issues of whether or not “chance” is a suitable and appropriate way to represent the unknown. Cross-cultural issues concern the potential

³Throughout the paper we use the term “Western culture” (and related terms such as “the West”) to refer to societies that have a high level of industrialization and that have a long history of embedded formal economics underlying all aspects of social life from that of the individual to political organization. The countries of Western Europe, Canada and the United States are prototypical of what we mean by Western cultures. On occasion we will be specific about which Western culture, and particularly when the discussion turns to U.S. or American culture.

⁴Saaty (1980).

⁵Haimes (1998).

clash between the states of the world as probabilistic versus deterministic (or fatalistic). The latter implies that what will happen is already known and pre-determined; it is just not known to those in the here and now. In a more extreme cultural interpretation probabilistic reasoning may be seen as an insult to a deity in that it could represent a breach of faith in a cultural religious tenet.

Finally, there is a tendency in the West is to base our societies on the principle of reasoned action, by which we identify our needs, gather information, formulate courses of action and evaluate the best action among those we have identified.⁶ Underlying this cultural philosophy is the principle that we can identify and isolate separable and distinct wants and needs, and then through a process of focused deliberation (including risk assessment) close the gap between the situation as it currently exists and the situation as we would most like it to be. An alternative view is that the problems we characterize as, risk-based decision problems are more complex than they appear to be, and are immersed in a context that is dynamic and interactive with interconnected feedback loops. We see features of this worldview in system dynamics as applied to complex problems such as business management.⁷ More recently, concepts from complexity theory are being employed to describe social systems.⁸ Some research has drawn relationships between current theories of complexity and system dynamics, and historical cultural principles rooted in religious philosophy.⁹

This paper is an examination of the concept of risk using as a lens ideas and concepts about risk prevalent in Western culture, and applying these concepts to existing literature on Arab culture.¹⁰ The goal of the paper is to amplify our understanding of risk as it might apply to traditional Arab cultural values, and to broaden awareness of how Arab culture conceptualizes elements of risk assessment as understood and practiced in the West. As a practical matter, we can say that the paper is addressed to helping answer the question: When we are faced with someone from the Arab world, which is to say

⁶e.g., Ajzen (1991).

⁷Sterman (2000).

⁸Miller & Page (2007).

⁹Marks-Tarlow (2008).

¹⁰Western culture shares deep roots with Arab culture, but we will regard these as distinct for purposes of this paper.

someone from a historical tradition, that emphasizes or believes “X” rather than “Y” what are we dealing with and how we can understand and appreciate the difference?

We also use the term Arab culture, though here it is more difficult to define with precision what is meant by that cultural referent. Over a dozen countries are populated by Arabs, and although Egypt has held a prominent position for a number of years as a key Arab nation, many other countries are contained within the Arab sphere.¹¹ Thus, to say that there is an Arab culture, is also to recognize national, regional and even familial (lineage) distinctions within the culture that exert influences on it and create differentiation that we will not consider in our analysis here, though that is certainly a worthy and necessary aspect of developing a complete understanding of the problem we are addressing in this paper.

To many people in the West, Arab culture is synonymous with Islam. Although the historical roots of Islam reside in the geography of the Arab world, these two ideas have become associated in ways that can be distracting. The vast majority of Arabs are Muslim, but approximately 8% to 10% of Arabs are not.¹² Looking at Muslim representation worldwide, Arabs comprise only about 12% of the world’s Muslims. Given the centuries-long relationship that the Arab culture has had with Islam, and the fact that under Islam the Qur’án can only be read properly in Arabic, it is difficult at this point to unravel their mutual effects on one another. For the purposes of this paper we regard members of the Arab world as influenced by Islam whether they are Muslims or not. Indeed, a parallel exists in the West with regard to Christianity and its influence on Western cultures: although representation of various religions in the U.S., for example, varies widely the culture itself is predominantly based on values, beliefs and attitudes that are linked to the Judeo-Christian tradition. The pervasiveness of these traditions are sometimes very difficult for individuals to see, even if they do not practice devoutly a particular religion. Even religious secularists are influenced by the larger cultural traditions of which they are a part.

¹¹As of this writing the Arab countries/areas of the world are (alphabetically): Algeria, Bahrain, the Comoros Islands, Djibouti, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Mauritania, Oman, Palestine, Qatar, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, United Arab Emirates, and Yemen.

¹²This percentage is difficult to estimate and sources vary in their estimates from something like 4-6% on the low end to 12%-plus on the high end.

Finally, there is the matter of which Arab culture we are talking about, or perhaps more accurately the “when” of Arab culture. Our perspective here is to focus on the enduring features of Arab culture – those that remain despite the influences of modernity, what we might consider as “legacy influences.” With regard to the transition of Arab culture into modernity, we can see some of the most acute “pain points” of this transition in how Arab societies are making linkages and engagements with the world of Western commerce. In this very practical area, we see some of the most visible artifacts of the tension between core Arab cultural principles that reflect Islamic precepts and core concepts in Western economics as embodied in the area of financial risk.

It is tempting to take a view that Arab culture today bears little relationship to the Arab culture of the past with its emphasis on traditionalism. However, the trappings of modernity, including urbanization and exposure to Western values and culture, do not necessarily erase the culture of the past. As an example, consider the United States, where less than 100 years ago the majority of the population lived (and worked) on farms, most of them small, supported, in part, by a set of American agrarian values imported from the immigrant cultures that comprised the bulk of the nation.¹³ Although today most Americans live in urban or suburban environments and have only a faint connection to agriculture, a study of American culture would certainly consider agrarian values to be a cornerstone of American culture today, and would likely find agrarian values resident in American attitudes about religion, economics and social life (including features such as the school year, with long summer vacation, debates about the role and size of government, etc).

Our approach in this paper is dialectical in that we begin with a look at risk in Western cultures to establish a basis for a familiar perspective on risk, and then synthesizing the observations of writers on the topic of Arab culture. We turn first to a brief history of risk in the West.

A BRIEF HISTORY OF RISK IN WESTERN CULTURES

The concept of risk is so ubiquitous in modern, Western cultures that it is difficult to imagine that it wasn’t always the way it is today. Indeed, how we conceptualize risk and

¹³<http://www2.census.gov/prod2/decennial/documents/00165897ch15.pdf>

define the role that it plays in commerce, health and even daily life is so integrated into our modern view of the world that its roots are not readily discernible. Historically the concept of risk and its role in society has undergone significant change in the past two millennia. Recognizing how risk has come to be what it is today is critical to understanding how our relationships with non-Western cultures are, in many ways, framed (either directly or indirectly) by risk considerations. And, how non-Western cultures can view our interventions and engagements as inconsistent or contradictory to their interests and cultural values.

Historically, humans have always experienced loss and have, in all likelihood, always experienced concerns about the future and what the future might hold for them. For centuries, soothsayers, fortunetellers and oracles (for example) have sought to provide visions and imaginations about what the future might bring. Some of society's earliest dilemmas with risk can be seen in confrontations between the mercantile (or merchant) class and the Church. To see this, we have to recognize that although "risk" has had a long history as a human concern, it has not always been seen as such and treated with the degree of intellectual precision typical of that in Western, industrialized societies.

Even during the Roman period, it was recognized that some form of contract needed to be devised to promote the development of commerce through insurance, though it was neither called nor recognized as such at the time. Thus, we see some of the earliest concepts of risk emerging in the shipping trade, generally in the form of risk-transferring devices. A prevalent example of such a device was the *maritime loan*, by which a monetary loan was made to support a trading venture.¹⁴ The loan provided the funds for the borrower to supply a ship or purchase goods for trade. The lender bore the risk associated with the venture because a feature of the agreement was that the loan and its interest was to be repaid only on the safe arrival of the goods and/or the ship at an agreed upon destination. Higher than usual interest was paid on such a loan because of the risk associated with the venture. These contracts provided a shift of the risks associated trade from one person to another, thereby increasing opportunities for the growth of

¹⁴Van Niekerk (1999).

commercial trade by providing access to capital through a sharing of the burden of risk between ship owner and other interests who hold capital.¹⁵

Over several centuries, and primarily from the 16th to the 19th century, the utilization of contract mechanisms by which loans with interest were made under varying stipulations served to essentially create insurance, typically by providing for non-repayment of maritime loans should specific events either occur or not occur. For example, early insurance contracts sometimes appeared as contracts of sale with unusual terms. Typically, a ship owner would “sell” their ship to a capitalist who would “buy” it, under the sale condition that the transaction was nullified if the ship returned safely. In the event of loss, the buyer would be required under the contract to pay the seller the value of the sales contract. Although transfer of risk was not a primary objective of such contracts, the commercial trend was strongly in the direction of the more modern concept by which the transfer of risk is the primary objective, as is the case with insurance today.¹⁶

Such carefully constructed mechanisms reflected two (not necessarily independent) matters. First, although the concept of risk was understood (historically) at least to the extent of realizing uncertainties exist in ventures and have potential losses associated with them, mechanisms for utilizing risk in financial agreements required a more careful evolution to create fairly complex contracts. Second, and perhaps a more potent impediment to the elaboration of the concept of risk, was suspicions and concerns by the Church and canonical scholars that such agreements were morally invalid and encroached on the prohibition of usury (discussed below).

It is significant that the application of the concept of risk and its formalization in contract relationships found its roots in the mercantile shipping industry, where uncertainty played a major role in determining the financial success of a mercantile shipping venture. The seas have always been a source of hazards: weather, navigation, and piracy to name a few. Furthermore, shipping ventures placed a great deal “at risk” ... not only the monetary value of a ship and its goods, but also the lives of its crew. However, prior to a time *circa* early 19th century, the concept of lives “at risk” in a

¹⁵Examples of maritime “insurance” occurred as early as 1800 B.C.E. in the form of “bottomry” – a financial arrangement in which a sum of money was paid if a ship did not return from its voyage.

¹⁶See Van Niekerk (1999).

mercantile adventure would likely have been an unrecognized (or at least inappropriate) use of the concept. For the most part, mercantile activities were undertaken for the purpose of trade and the transfer (or accumulation) of wealth. The hazards to such enterprises, while to be avoided, were generally viewed as in the hands of God. Though one might be aware that loss could occur, where or when (or to what degree) such might happen was a matter of speculation at best, and intrusion on the province of the divine at worst.

It is this latter aspect of risk that has undergone significant change in the approximately 2,000 years of Western development, and largely in the past 400 years since the occurrence of the major theoretical and conceptual breakthroughs of Pascal, Bernoulli and others that have provided the mathematical foundations for risk as we think of it today.¹⁷ The *intellectual inventions* that occurred from about the 16th century onward could be called discoveries, but were less properties of the physical world than interpretations of the physical world. In essence, they had values (human values) attached to them.¹⁸ The conceptual and moral leap over centuries has centered around resolving the dilemmas with the Church and with interpretations regarding what is proper for humans to profit from and what is not: essentially, what is divine property?

We can see a reflection of this dilemma in the relatively late arrival of life insurance. Although a predecessor of life insurance was available during Roman times, this was in the form of a “burial club” that covered members’ funeral costs and provided monetary payments to survivors. The modern concept of life insurance did not appear until the 17th century in England and in the late 18th century in the United States.

Contemporary life insurance is a complex arrangement that uses a complex analysis of mortality statistics to essentially place a bet on the probability that a given individual (i.e., an “insured”) will survive a specific number of years beyond the date of an insurance contract sold by the “insurer.” The contract pays to a third party (i.e., a “beneficiary”) on the death of the insured, a monetary amount agreed upon at the sale of the contract. Usually, payments on the contract are made over a period of time (e.g.,

¹⁷See Bernstein (1998) for a readable historical treatment of the mathematical development of risk and finance.

¹⁸Utility theory is an example of such an invention, as it attaches meaning to events in terms of human values that vary from individual to individual and according to the accumulation of such values. This is essentially the basic concept that Bernoulli contributed to risk and to economic theory.

monthly for a number of years), and the insurer is betting that the payment stream (and associated returns such as interest on the stream) will exceed the amount of the payout. The difference represents a profit to the seller of the contract (i.e., the “insurer”). From a religious perspective, the moral dilemma here is more straightforwardly obvious. Not only do life insurance contracts involve what is essentially a lottery on “God’s will” (i.e., the time of a person’s death), the fundamental purpose of the insurance enterprise is the realization of a profit, which can only be obtained by assessing in some way when God’s will is likely to be exercised. In this sense, the human intrusion into the domain of God is via the concept of time, for time is measured or gauged by events.¹⁹ To expect to profit from events one must understand their relationship to one another in time. For example, the more precisely understood is a sequence of events, the more predictable is the future. The relationship of these notions to ecclesiastical concerns is fairly straightforward.

USURY AND RISK

Our understanding of the evolution of the concept of risk can be informed by a related concept, namely that of *usury* (the Arabic term is *riba*). In its simplest form, usury is the charging of interest on loans, such as loans of money. Historically, this has long been problematic and prohibited or highly constrained by religious texts and institutions. Within Jewish history, for example, the charging of interest was acceptable when done with strangers, but not acceptable between people close to each other or between family members.²⁰ In the New Testament similar themes reflect a pejorative, though not necessarily prohibitive, stance toward charging interest on money. For example, the following passage from the Parable of the Talents sheds light on the charging of interest and its moral implications:

And another came, saying, ‘Lord, behold, here is thy pound, which I have kept laid away in a napkin.

For I feared thee, because thou art an austere man: thou takest up what thou layest not down, and reapest what thou did not sow.’

¹⁹In modern physics, the measurement of time is done with reference to events.

²⁰Deuteronomy 23:19. “Thou shalt not lend upon interest to thy brother: interest of money, interest of victuals, interest of any thing that is lent upon interest.” (21st Century King James Version)

And he said unto him, 'Out of thine own mouth will I judge thee, thou wicked servant. Thou knewest that I was an austere man, taking up what I laid not down and reaping what I did not sow.

*Why then gavest not thou my money unto the bank, that at my coming I might have required mine own with interest?'*²¹

The charge by the servant that his master takes what is not his and gains from what he does not do, is rebuffed by the master with a challenge that if the servant believes such, then he might as well have taken his money and deposited it with the usurers. The passage draws an equivalence between usury and taking what one is not entitled to take.

The religious prohibition with regard to usury has generally centered on using something one does not own or cannot control for the purpose of making a profit. In the case of usury, that is *time*. Being paid, for example, for the passage of time is to be paid for something one does not own and cannot control. Essentially, profiting from time is tantamount to getting something for nothing, or at least getting a return from work that one has not performed or (from a theological perspective) God has performed (cf. Parable of the Talents above). Nothing has been done to warrant a profit. From the perspective of the Church, the parallel here to risk is along the lines of an intrusion into the realm of God.

RISK REGULATION

Although risk has long been based on the idea of an “event” (e.g., loss of a ship, a safe arrival at a port, loss of a life), it has generally been the case that specific transactions concerning risk were between individuals (e.g., a ship owner and a capitalist). For the most part, governments and social institutions did not take an active or direct role in risk, perhaps with the exception of the Church who for centuries was the key social institution that guided (and often impeded) the way that risk entered into society. Essentially risk was not a basis for social regulation until a time near the beginning of the 19th century. By this time, technological advancements such as railroads and weaponry posed hazards to public safety. Likewise, the burgeoning insurance industry exposed society to the hazards of its business approach. In general, the 1840's represented the beginning of “risk regulation” as an aspect of risk in Western societies. By 1871, U.S. federal regulation of

²¹Luke 19:20:23. 21st Century King James Version.

the insurance industry was initiated to bring a consistent standard to insurance regulation that heretofore had occurred only at the state level.

We hypothesize that the general direction of the change in risk regulation has been along three dimensions:

- From *informal* to *formal*,
- From *experiential* to *analytical*,
- From the level of *activity* (e.g., situation specific, contextual) to the level of *enterprise* (e.g., general, conceptual).

This typology can be seen in the discussion so far. For example, initial and *informal* concerns about shipping losses produced formal arrangements between ship owners and capitalists (e.g., contracts). From a modern perspective, these early insurance contracts were very likely not optimally priced as they would be today. That is, however risk was assessed by a ship owner and a capitalist with respect to the implied insurance premium was very much a matter of experience and having a “feel” for the risk associated with a shipping venture. By the 17th century, powerful analytical tools were developed that provided greater sophistication to the determination and specification of risk in such a way that the nature of the risk-related transaction was more completely understood. To borrow a legal concept, the shift from an experiential to an analytical basis for risk-based decision making underwent a “state of the art” shift, and thus the standards for risk changed. These are seen appearing in the 19th century in the U.S. with the growth of risk regulation keyed to risk-related enterprises, such as insurance and subsequently to commerce, health and public safety.²² All of these changes were predicated on the conceptualization of risk in terms of events that occur with some probability and resulting in a loss.

Modern risk regulation can be regarded as benchmark for the arrival of a society or culture at a level of sophistication that requires extensive analytical capabilities as well as

²²As an example, consider the evolution of food and drug regulation in the United States. Law (2010) notes that “[F]rom colonial times until the mid to late nineteenth century, most food and drug regulation in America was enacted at the state and local level (pg. 1)” and focused on specific food products (Hutt & Hutt, 1984). By the early 1900’s, this piecemeal approach to food risk regulation gave way to broad scale formalized regulation with the 1906 Pure Food and Drugs Act and the 1906 Meat Inspection Act. Both of these congressional measures resulted, at least in part, from the development of analytical chemistry and related technologies that made it more difficult for consumers to discern for themselves the content and safety of food products (Law, 2010).

the ability to collect, store and synthesize information relevant to risk management decisions. It also requires a *cultural congruence* with modes of thought that permit the interpretation and translation of events in terms that lend legitimate meaning with respect to the future.²³ Western societies are, for the most part, fully engaged in risk and risk management to such an extent that other societies not so engaged may seem irrational or even primitive in their views about risk. However, there are some important caveats here. Non-Western cultures (including Arab cultures) may be at a stage of development, (at least in some cases) that better typifies Western cultures at an earlier stage of their development, particularly with respect to working through the religious and moral dilemmas that are inherently a part of risk issues.

RISK AS ENTERPRISE

By the late 20th century, and generally after World War II, the science of risk made significant leaps, largely due to the need to understand better the complex engineered systems that were an outgrowth of the war itself and the industrial changes that accompanied the economic growth of the 1950's. For example, the advent of nuclear power and the modern air transport system signaled a need to analyze and manage in great detail the myriad of pathways to failure associated with such complicated technologies. Over the past 50-plus years, risk science has melded with other disciplines to yield a rich professional field that encompasses a number of aspects of risk, including analysis, communication and management. To think of this field broadly, we can conceptualize it as the *risk enterprise*.

The risk enterprise is a framework that contains five elements.²⁴ The enterprise provides an integrating framework for applying scientific knowledge and data to the process of making risk management decisions, and monitoring the results of such

²³Cultural congruence is defined as the compatibility between concepts underlying the methodology of risk assessment and the cultural context within which risk assessment is applied or deployed. The concept is derived from work in community psychology that emphasizes the need for cultural sensitivity in developing and implementing interventions (Resnicow, Soler, Braithwaite, Ahluwalia & Butler, 2000). With respect to the discussion of risk in this paper, the essence of achieving cultural congruence lies in assuring that the processes associated with formulating and implementing risk assessment are supported within a culture with respect to *production* of a risk assessment and *acceptance* of its results (MacGregor & Slovic, 1986).

²⁴This formulation is based on a risk analysis framework described in National Research Council (2008).

decisions in light of new information and changes in the social values with respect to the need for risk reduction and/or regulation.

All risk problems require clarification, including the identification of relevant stakeholders and the problem to be solved. How a problem is framed influences what information is included, whose values are considered and what the alternatives are for risk management. Developing a problem frame involves capturing the expertise of a number of scientific and professional specialties. In many situations, conflict will arise as to the goals and objectives of the problem approach, and resolving these conflicts will be a significant aspect of the analysis.

Risk assessment is the process of identifying hazards and quantifying the risks that the hazards pose. An exposure assessment is required to establish the relationship between the presence of a hazard and the effect of exposure to the hazard on those things of value (e.g., health, safety). In general, the linkage between hazard, exposure and consequence is expressed in terms of uncertainties quantified as probabilities. For many risk problems, significant elements of risk perception exist. Risk perception is concerned with the psychological factors that have an influence on how people experience risk. These factors are many, and include emotion, personal knowledge, experience and beliefs.

A key element of risk-based problem solving is risk communication. This can be thought of in terms of two broad aspects: internal and external. Internal risk communication is that occurring within an organization or groups (or set of groups) that are part of or closely associated with the risk problem itself. External risk communication is that associated with related to a range of stakeholders who may be impacted by the analysis and the risk management resulting from it. Both internal and external risk communication pose their unique challenges, brought about in part by the desirability of diverse participation and representation of affected individuals and groups.²⁵

Risk management is the process of developing approaches to exercise an influence over some aspect of a risk problem in the interests of reducing its impact or to facilitate

²⁵See National Research Council (1996) for an in-depth discussion of the relationship of risk communication to other aspects of risk analysis.

recovery from an unwanted event. In essence, risk management is a decision making problem where decision alternatives represent actions that can be taken to reduce the effect of or to eliminate a hazard. Developing risk management alternatives depends on a clear understanding of the nature of the problem to be solved and the relationship between the hazards revealed by a risk assessment and the potential for various strategies to manage those hazards in such a way as to mitigate loss.

TAKING STOCK

We have presented this brief history of risk as a vehicle to demonstrate not only the high degree of sophistication of the approach taken by Western cultures with respect to risk, but also to set out in at least some detail the elements of risk that are addressed explicitly in the way risk-based problems are formulated and resolved. Underlying these formulations are numerous cultural assumptions that occur at several levels. Near the surface, these assumptions include what is important for a society or culture to address, and amount and level of detail in how it addresses such problems, and what sociocultural interests should be engaged. We could see these issues as a matter of intellectual or technological evolution: a non-Western culture can become “Western” in its approach to risk simply by developing the requisite knowledge of how to use Western methodologies and practices. In short, a non-Western culture could be trained or educated to practice according to the standards (both scientific and professional) of the West. Indeed, the risk enterprise (presented above) encapsulates these Western practices and makes direct connections to techniques and methods for their implementation.

At a deeper level, however, culture exercises its effects less in terms of the content of knowledge and experience (e.g., that which is trainable and educable), and more in terms of perspectives and orientations that leverage different understandings of the way the world works and the constituents of ideals and goodness. To a culture unaccustomed to perceiving, thinking and feeling in terms of the elements of risk so common and familiar to Western cultures, risk and its management viewed through a non-Western lens may seem less an exercise in rationality and more a process that lacks integrity and legitimacy.

The history of risk in Western cultures is not only a mathematical journey. It is certainly the case that mathematical discoveries have facilitated some aspects of our

relationship with risk. And, those discoveries have allowed us in the West to engage in a type of quantitative analysis that provides rich insights into the nature of the hazards that we face, both natural and human-caused, and their consequences. Sometimes, through that process, we find ways to exercise control over our fate, be it the result of fate or our own ineptitude. But beyond mathematics and the quantification of risk is a broader and deeper cultural transformation that is less readily seen. It is a transformation that has occurred over centuries, whereas risk science as we see it today is immediate and visible. Its roots are well documented in the fashion of which only science can boast. What is unseen and less readily gauged is the degree to which Western culture has undergone significant conflicts, as we have seen in the early relationship between mercantilism and the church. Now resolved, or at least eclipsed by time, we tend not to take account of them. The alternative social reality that might have come to be had those conflicts not been resolved is not here for us to measure ourselves against. Along with that foregone social reality is the alternative rationality that would have accompanied it.

We turn now to Arab culture and an examination of its relationship with risk.

INTERPRETTING *GHARAR*

A quick perusal of information resources with regard to risk and Arab culture reveals the convenient availability of the term *gharar* in the Arabic language that is often translated as meaning *risk*. But a deeper consideration of *gharar* suggests a more complex interpretation of its meaning, one that provides insights into the difficulties of translation with concepts as rich and culture-laden as risk. Such consideration also reveals important mismatches between the way the concept of risk is approached in Western cultures and its meaning in Arab culture. To the degree that *gharar* has been given consideration in Arab culture it has been given so largely in the context of finance and related enterprises (e.g., insurance, contracts). For our discussion of *gharar* here we draw upon the work of Mahmoud A. El-Gamal,^{26,27} as well as other scholars.

The literal meaning of the term *gharar* is “that which has a pleasant appearance and a hated essence.”²⁸ (according to Qadi Iyad [c.f. Al-Qarafi (n.d., vol 3, p. 266)] cited in

²⁶El-Gamal (2001).

²⁷El-Gamal(2006).

²⁸According to Qadi Iyad (c.f. Al-Qarafi [n.d., vol 3, p. 266]) cited in El-Gamal (2001).

El-Gamal, 2001). The origin of the term is a three-letter past tense verb *gharra*, meaning “to deceive.” Taking a liberty and overlaying an English verb format on the Arabic term, we could frame this translation as an infinitive “to gharra” by which one commits *gharar*. In English, risk can be a noun, but it can also be a verb as in “to risk.” One does commit risk in some sense. For example, one buys or sells or gambles or speculates, or risks . . . but we are, in the Western sense, always risking in everything we do whether we acknowledge it nor. To the Arab mind, the question would be not so much about whether risk is somehow a fact or element of life, but whether it is a matter of volition or active choice. To say that one “risks” implies that one chooses to take a risk, with some assumed purpose in mind, be it material or otherwise. To the Arab, the choice is at the will of God; the pathways that God has provided may or may not result in loss and the time and place of that loss is not a matter for human determination.

Thus, *gharar* as *risk* can only be regarded as so in a very limited and constrained context, such as finance. Furthermore, “to take a risk” is not necessarily *gharar*. Indeed, most of the time we take risks without *gharar* being a consideration. Also, that the verb *gharra* is in the past tense suggests that we can only know if *gharar* was committed with reference to hindsight. Thus, the term *gharar* refers to something that one commits, just as one might commit a sin or a transgression. To deceive someone is an act of commission along these lines. However, risk as applied in Western cultures is a *foresight* concept . . . we take risks (implying a future) in the interests of a potential gain (or avoidance of a loss).

We gain additional insights by examining interpretations of the concept *gharar* advanced by several scholars.²⁹

²⁹As reported in Al-Zuhayli (1997, vol. 5, pp. 2408-3411), and summarized by El-Gamal (2001).

Scholar	School	Interpretation	Notes
Al-Sarakhsi	Hanafi	“ <i>gharar</i> is that whose consequences are hidden.”	How are they hidden? Hidden by what or by whom? Deception?
Al-Shiraaazi	Shafi’i	“ <i>gharar</i> is that whose nature and consequences are hidden.”	What does “nature” mean in this context? Uncertain? Other qualities? Forbidden or prohibited? Deception?
Al-Isnawi	Shafi’i	“ <i>gharar</i> is that which admits two possibilities, with the less desirable one being more likely.”	So, is this a matter of problem framing and preference reversals? Again, are we talking about deception here?
‘Ibn Taymiya	Hanbali	“ <i>gharar</i> is that whose consequences are unknown.”	Uncertain, or unknown? Unknown to whom? For what reasons? Absolutely unknown and unknowable, or made unknown or unknowable with intention?
‘Ibn Al-Qayyim	Hanbali	“it [<i>gharar</i>] is that which is undeliverable, whether it exists or not.”	Suggests that a transaction cannot be concluded, and that deception is involved regarding that matter.
‘Ibn Hazam	Zahiri	“ <i>gharar</i> is where the buyer does not know what he bought, or the seller does not know what he sold.”	Ignorance in some sense. So, if the buyer does not know in totality, is that the same as not knowing in terms of feature or quality? Is complete knowledge required to avoid <i>gharar</i> ?
Dr. Al-Zuhayly		“ <i>gharar</i> sale is any contract which incorporates a risk which one or more of the parties, and may result in loss of property.”	A more formal definition. Here, <i>gharar</i> is something qualitatively different than risk (as we use the term in the West). Invokes the concept of a <i>contract</i> (see notes below). In Al-Zuhayly’s definition, <i>gharar</i> is the quality of a sale or a type of sale, not necessarily one in which includes risk and something more. <i>Gharar</i> is that something more.
Prof. Mustafa Al-Zarqa		“ <i>gharar</i> is the sale of probable items whose existence or characteristics are not certain, due to the risky nature which makes the trade similar to gambling.”	How does “probable” as used in this context, differ from “not certain?”

A number of these definitions (if not all) evolve (directly or indirectly) from the perspective of a *social contract* that exists (implicitly or explicitly) between a buyer and a seller. All of them appear to struggle with a set of ideas that includes something being unknown, but with the “unknowingness” being intentional on the part of an individual or an agent of some sort. It is not that we are unable to equate *gharar* with the *danger of*

loss, which is an aspect of Western definitions of risk. It is that the danger of loss in *gharar* appears to refer not so much to that what in the West might think of as *natural causes* (e.g., luck of the draw, probability of loss), but rather a defect in (or transgression against) a social ethic. Kaplan and Garrick provide an enduring quantitative definition of risk as an event, its probability and its resulting consequences.³⁰ Although events, uncertainties and consequences are a general part of the concept of *gharar*, their meaning does not contain the intentionality that is part of *gharar*. For example, as Kaplan & Garrick point out in the opening of their paper: “. . . we are not able in life to avoid risk, but only to choose between risks.”³¹ Could we as well say “. . . we are not able in life to avoid *gharar*, but only to choose between circumstances involving *gharar*?” The meaning implied is very different in the latter case where it is the Arab cultural intention to avoid *gharar*, or at least to not undertake actions that involve it. In the West, we regard risk as an inevitable part of life, and a phenomenon upon which we can construct methods for making a profit. Indeed, for Westerners risk is treated as a resource that, like any other, can be legitimately exploited for a profit.

It is with respect to profit that we see a tendency in the West to regard risk as a commodity – something that can be quantified and traded or exchanged for the purposes of providing a return. The commodification of risk places it on an equal footing (or nearly so) with that of goods and services, which are generally consider the products of human effort. Thus, risk in the Western world has some of the qualities of human invention and, therefore, has utility and is a legitimate basis on which to build an economy. Taken in the extreme, we can see this effect in the West in business sectors such as derivatives markets that trade exclusively in risk as a commodity.

Perhaps due to our long-standing relationship with risk in the West and with centuries-old changes in the stance of the Church with regard to prohibitions against usury and risk, we have become somewhat inured to risk in terms of its appropriate role in society. While at one time risk was controversial due largely to the harm that was considered to be caused by human intervention into the domain of God, today risk is an enterprise in its own right and figures significantly into how we as a culture manage not

³⁰Kaplan & Garrick (1981).

³¹Kaplan & Garrick (1981).

only our financial dealings, but also our health and safety. In essence, the detailed management of risk has left less up to the divine and attempted to put more control over fate and destiny in the hands of humans.

For Arab culture, and particularly with respect to the influence of Islamic principles on Arab culture, quite a different pale is cast on risk. Keeping in mind the underlying connotation of deceit as an aspect of risk, it is likely a tendency of Arab culture to perceive risk in terms of dimensions different from those in the West. Studies of risk perception in Western cultures have generally found that risk is strongly related to ideas of personal agency and control over the consequences that befall us (see discussion below). In Arab culture, strong attachments to and respect for religious principles that place God in the position of not only controller of destiny, but also the ultimate will.³² If we substitute the words “Westerner” and “Arab” for the words “Christian” and “Moslem” in the following passage from Islamic scholar Frithjof Schoun, we get a sense of the how Islamic-influenced Arab culture regards destiny and human will:

“ . . . the Christian always sees before him his will – this will that is as it were himself – and so is confronted by an indeterminate vocational space . . . The Moslem . . . sees before him not a space for the will . . . but a system of channels divinely predisposed for the equilibrium of his volitive life.”³³

The term *volitive* here refers to that which originates in the will, that involves a conscious choice and that represents an expression of a wish or a seeking of permission. In the Arab mind, *will* is in not the construction of a personal direction based on an idealized sense of self-determinism and control, but rather a voluntary choice among a set of divinely determined options. Operating from this perspective, we would not “risk” in the interests of our will for that would be to tread upon the province of the divine. Nor are we able to choose between the risks of life, for that is the province of the divine as well. The implications of these cultural views of risk will be discussed further below.

THE SEAT OF PROVIDENCE

When we look across the landscape of risk analysis and risk management as conceptualized and applied in the West, we see an enterprise that is intended largely to

³²Schuon (1998).

³³Schoun (1998).

unlock secrets of the future by applying intellectual alchemy to the past.³⁴ The presumption in analysis of risk is that events can be understood in terms of their relationship to one another in time, and though the causes of events may not be known in terms of necessary and sufficient conditions, the potential for their reoccurrence in the future can be gauged and expressed in terms of probabilities, which is to say, through the language of uncertainty. The essence of this view is that events can be made discrete and compartmentalized in such a way that they can be understood in their own right. A context for understanding them can be developed by the identification of meaningful causal theories (or models) that form the events into a sequence.

From an Arab perspective, the relationship between the past and future is less (or not at all) through a human theoretical reconstruction and interpretation of events, but rather is a matter of divine providence. To be providential means to arise or occur due to divine authority or intervention. Thus, the root of meaning or understanding of past and future resides not within the application of theories and models to the past (and projecting them forward to the future), but rather in appreciating the role of divinity in ones' life. As Patai comments in the context of long-range planning (of which risk assessment is a contributor):

“[T]here is something sinful . . . because it seems to imply that one does not trust in divine providence” (pg. 160).

For the Arab, perhaps more than for the Westerner, the seat of providence is not with humanity but with God, and intrusions into that domain through human intellect represent a transgression and a blasphemy.

RISK, PROBABILITY AND LOSS

A classic definition of risk is based on a three-element vector: event, probability and loss.³⁵ This vector leads to definitions of risk along the lines of “the probability of a loss” or “exposure to a hazards that with some probability results in damage or loss.” This is very much along the lines of the historical evolution of risk discussed in earlier sections of the present paper.

³⁴See Bernstein (1998) for a distinctly Western perspective on this view.

³⁵(e.g., Kaplan & Garrick, 1981)

Three distinct definitional issues bear examination in this context. The first is the meaning of probability, the second is the meaning of loss and the third is the relationship between a probabilistic definition of risk and other definitions of risk that focus on contextual factors and/or the psychosocial experience of risk. We begin with probability.

Probability is a term used frequently in the language of the West to express or communicate uncertainty. Indeed, probability is the mathematical language of uncertainty, and as a mathematical language obeys prescribed axioms.³⁶ The question of relevance to our discussion here relates to the distinction between probability as a subjective descriptor of belief, as opposed to probability as a metric of the “objective” rate of occurrence of events of interest. The objective perspective is *frequentist* in that it relies on an external (non-subjective) reality and assumes that regularities exist in that reality that can be captured by tabulating their relative frequencies and codifying them as probabilities.³⁷ From a cultural perspective, the idea that reality is in some way regularized such that relative frequencies can be used as the basis for codifying and understanding uncertainty is an important consideration. As we have already discussed, traditional Arab culture appears to take view of events that is less temporally sequenced and organized than is the case in the West. We might argue that independent of

³⁶While the mathematical formalization of probability is an important topic, our purpose here to explore possible cultural factors associated with how probability as an expression of uncertainty is understood and experienced.

³⁷The subjectivist-objectivist debate has been the focus of philosophical and practical attention for a long number of years. Subjectivists argue that probabilities reflect degrees of belief about uncertain propositions and are properties of human experience. As such, they should reflect what people believe about the world and how those beliefs should be modified by new experiences. Proponents of a purely subjective approach to probability draw their perspective from Thomas Bayes, an early 18th century British cleric (Presbyterian) and mathematician. Beginning from an interest in inverse probability problems, Bayes formulated a definition of probability that is based on the ratio between one’s *prior* belief about the likelihood of an event’s occurrence, and the likelihood given that the event actually does occur. The resulting ratio represents a *posterior* belief, conditioned on the additional information contained in the knowledge of the event’s occurrence. For “Bayesians” the problem of probabilistic inference is one of coherence; that is, assuring that there is a consistency in how probabilistic expressions are assessed and combined. For example, if there are only two possibilities (e.g., propositions) that can occur (e.g., A and B), the probability of A and the probability of B cannot be more than 1.0. Frequentists, on the other hand, concern themselves with the problem of the external correspondence or “calibration” of probabilities. In assuming that probability is a property of objective reality, they seek to assure that probability assessments obey a relationship to the occurrence of events. Probability assessments are said to be calibrated if for all events assigned a probability value of X%, the long-run proportion of such events that actually occur is X% (Brier, 1950). From a practical perspective, subjectivism and objectivism merge into a single problem, that of probability assessment and inference that obeys both axiomatic coherence (i.e., is Bayesian) and at the same time exhibits correspondence with an external reality (e.g., Dawid, 1982; Draper, 2004).

theological concerns about the meaning of uncertainty and the advisability of human intrusion into the realm of the divine, that a frequentist perspective on probability may collide with cultural norms that do not favor detailed temporal representation of events and experiences in such a way as to yield probability values that have meaning and value for the culture. Thus, probabilities based on relative frequencies may have little resonance as a way of communicating and managing risk, particularly in sub-cultural contexts that are more focused on traditional temporal norms.

We turn now to the matter of loss and its meaning. We begin here by noting a Western tradition with respect to decision making: we make decisions for two reasons – to obtain the things we want, and to avoid the things we don't want. This can be rephrased as: we take risks to obtain the benefits we desire, and we manage risks to avoid losses. There are multiple aspects to loss. First, loss is a matter of values and what a culture holds as important. The same is likely true for individuals. Most of the resources consulted as part of the present project identified values that are significant in the Arab culture, and we will not tabulate those here. Indeed, much of the advice given on Arab culture is, in one way or another, a communication of values and how the relative importance of specific Arab cultural values may differ from that in the West. Temporal traditions, punctuality and the like, the starting point for this paper, can be seen as part of a value system, one that differs appreciably (and potentially deeply) from that in Western cultures. Thus, differences in how risk may be understood as a phenomenon or applied as a tool may be a matter of context.

Second, loss is a matter of both psychological and social experience. Here, it is less clear how values relate to loss and, therefore, to risk. We do have some evidence from the resources we consulted that as a culture, Arabs tend toward “emotionalism.” For example, according to Alexander Abdennur (2008), this emotionalism arises due to a cultural tendency to combine attitude and affect in both thought and expression. Although observations such as this require additional theoretical and empirical substantiation, we can link these ideas with an important risk-related notion from Western behavioral economic and psychological theory, namely prospect theory (Kahneman & Tversky, 1979). Prospect theory postulates two significant human tendencies with respect to gains and losses. First, that for objectively equivalent

prospects involving gain and loss, the psychological reaction is asymmetrical: losses are felt more extremely than are gains for an equivalent objective change in one's position from a given reference point. Second, because the loss function is steeper than the gain function, loss incurs a greater emotional cost, the result of which is to provoke a tendency toward regaining the original asset position.³⁸ Thus, losses tend to lead to risk-seeking behavior – a tendency to take greater risks to regain a prior asset position, and a discounting of the likelihood of such occurring. In other words, individuals will tend to take greater risks to recover from a loss than they would take to gain an equivalent amount given they have already gained. Indeed, under conditions of achieving a gain from a reference point, the tendency is to avoid risk associated with gaining additional amounts. A psychological explanation of this phenomenon points to the differential affective experience associated with gains and losses, as well as the emotionally-induced tendency toward differential (dis)satisfaction with changes from a prior reference point.

Returning to the matter of Arab culture and experience of loss, we can see that there may be conditions under which more extreme emotional responses to change (particularly negative change) could lead to risk-seeking behavior that is also more extreme than might be seen in Western cultures. We need to be cautious here about overstating the case, and at the same time be mindful that potential culturally-related variances in reactions to loss need to be considered when dealing with risk-based decision problems in an Arab context.³⁹

³⁸Although prospect theory does not directly address why a differentially strong tendency exists to restore one's asset position in the case of losses, we can find a reasonable explanation by considering that the emotional experience associated with loss triggers a homeostatic response. Homeostasis provokes a tendency toward seeking emotional equilibrium that is particularly strong for losses, since they are experienced more extremely than gains. On the side of gains, the tendency toward an even more positive emotional condition that would result from risk-seeking may provoke a tendency toward anticipatory regret associated with perceiving the potential negative reaction associated with a loss of the gain-producing uncertain prospect.

³⁹Frithjof Schuon (1998) writing on Islamic views of life comments "...the European temperament does not readily tolerate exaggeration as a mode of expression, whereas for the Oriental hyperbole is a way of bringing out an idea or an intention, of marking the sublime or of expressing what cannot be described ... An Occidental attaches importance to factual exactitude, but his lack of intuition regarding the 'immutable essences' counterbalances this, greatly diminishing the range of his spirit of observation' an Oriental on the contrary has a sense of the metaphysical transparency of things but is apt to neglect ... the exactitude of earthly facts; for him the symbol is more important than the experience." (p. 32). Other writers, including Patai (2007), Nydell (1987) and Abdennur (2008), comment on the Arab tendency toward exaggeration in their speech and mannerisms. In general, these writers attribute this to psychological tendencies associated with a different emotional tonality than people in the west. Schuon presents a slightly different take on this, and views it as a result of a kind of exoteric amazement at the

RISK-RELATED ATTITUDES: RISK AVERSION AND RISK SEEKING.

Up to this point we have been dealing with risk largely as a matter of its cultural aspects written fairly broadly. The focus has been on risk as a social phenomenon. In Western societies, we are fond of characterizing individuals in terms of risk-related epithets, and describe their behavior in risk-related terminologies. For example, in conversation we may refer to someone as a “risk taker.” A term frequently used to describe individuals in the West is “risk averse.” This tendency derives in part from the emphasis that Western cultures place on risk as a feature of social institutions, and the inclination to describe people along these lines is a natural concomitant of the centrality that risk plays in our Western cultural orientation.

It is interesting to note that of the key resources used as a basis for Arab cultural knowledge in preparing this paper, that none of them referenced the term “risk” in their indices, save those texts that discussed economics.⁴⁰ That is, the concept of risk does not appear as a descriptor of individuals in Arab culture, or as a feature of Arab culture, among those who write about it in English. However, other concepts that relate to risk and risk attitudes do appear and will discuss these as well as their potential relationships to risk.

We have discussed (above) the concept of *gharar* and its relationship to what in the West we interpret as risk, noting that the roots of *gharar* and its meaning in Arab culture is, potentially at least, quite different from how risk is conceptualized in the West. It is worthwhile to note here that although the concept of *gharar* and the concept of risk may have some similarities in the context of economics and finance, those parallels likely disappear when we consider risk in a larger social context, and particularly when we think about characterizing individuals, their attitudes and their beliefs.

A risk-related term frequently used to characterize individuals is *risk averse*. Risk aversion does have a specific economic meaning, and refers to the preference an individual holds to receive some payoff with certainty rather than accept an uncertain prospect albeit with a higher expected payoff. A person is said to be risk averse if in a situation involving a choice between a sure thing and a gamble, their tendency is to avoid

fact of the creation, which in the Islamic view is symbolic of God. Also in Schuon’s characterization is the observation of the strong preference for exactness so prevalent in the Western mind.

⁴⁰e.g., El-Gamal (2006).

uncertainty. That is, their preference is for a sure thing of lesser value than the expected value of the gamble. Alternatively, one who prefers a gamble (uncertain prospect) to a sure thing of the gamble's expected value (or greater) is considered *risk seeking*.⁴¹ A critical element of risk aversion (and risk seeking) is that they are referenced to an alternative in a choice problem: in this case, to the expected value of an uncertain prospect. This is very important because in economic theory an individual cannot be determined to be either risk averse or risk seeking without resort to an underlying decision, and therefore to a reference point.

From the perspective of normative economics, risk averse and risk seeking are value-free descriptors of economic choice behavior. However, to a non-economist, but nevertheless Western reader, the terms risk averse and risk seeking carry judgmental valences; that is, risk aversion generally carries a negative connotation, while risk seeking may carry either a positive or negative connotation depending on the context, including the age of the individual, their occupation and their experiences with risk-related activities. Indeed, it is the presence of a context that makes these two descriptors of risk-related decision behavior complex and potentially difficult to either use or interpret in cross-cultural contexts. It is the highly contextual nature of individuals' risk-related behavior that makes it difficult to use risk aversion or risk seeking as stable trait descriptors.

In addition, the concept of risk aversion is most useful when it can be indexed to a reference point. However, in a social context as a descriptive term for an individual it is often referenced to either nothing at all or it is reference to the behavior of what another individual might do. So, for example, when one individual refers to another as risk averse, it is often an implied reference to a preference they hold, which may be based on a very different set of values or conditions.

Risk attitudes have, in the West, been shown to relate to individual differences factors, or "personality" variables within a class of contexts. For example, health-risk behavior has been demonstrated to relate to the *conscientiousness* factor of the Big Five personality theory, a dominant framework for characterizing individual differences in the

⁴¹See Raiffa (1969) for the relationship to decision analysis.

U.S.⁴² Indeed, in the West we have a great deal of research on individual differences that has produced rich and varied classification frameworks for codifying personality.⁴³

When, however, we turn to current writings on Arab culture, we find that the orientation is toward describing something akin to the Arab personality; that is, how Arabs as a category differ from some other category of people (e.g., Arab-Israeli's, Westerners). Thus, we have no research at the present that gives an indication of how Arabs describe themselves in terms of their individual differences with respect to one another, aside from (perhaps) familial designations (e.g., lineages). We have nothing comparable to the personality or individual differences frameworks that we have in the West to characterize individuals in terms of enduring traits and the relationship of those traits to behaviors. At the outset of this paper we made note of the dangers of assuming the monolithic Arab and we reiterate that caution here.

RISK PERCEPTION

The study of risk perception has been central to risk management in Western cultures at least since the 1960's, beginning in the U.S. At that time, risk regulators were intensely concerned with the development of risk management strategies that were both consistent and efficient in terms of economic principles and sensitive to broadly held public attitudes about risk regulation. The search for suitable regulatory standards for risk led to the examination of past risk decisions as a basis for new management strategies. Motivated by the question "How safe is safe enough?" early researchers looked to quantitative measures of risk, such as expected loss or cost per life saved, as potentially solving the dilemma of what standards to set for new risks for which there was little (or no) economic or regulatory experience. Early studies were particularly important in identifying factors that offered an initial description of how non-technical perceptions of risk play a role in the relative level of societal resources committed to reducing different kinds of risks.⁴⁴ Subsequent work focused on a deeper examination of factors that

⁴²e.g., Bogg & Roberts (2004).

⁴³See John & Srivastava (1999) for an overview of contemporary theories of personality.

⁴⁴Starr (1969).

contribute to people's judgments and perceptions of risk and the fundamental differences that exist between lay perceptions of risk and those of experts.⁴⁵

The results of this line of research ultimately identified two basic factors at work in determining how lay people perceive risk.⁴⁶ One factor can be characterized as an emotional or affective factor comprised of properties such as *dreadedness*, *control over exposure* and *potential for catastrophe*. A second, and slightly less potent factor, relates to perceptions of uncertainty about a hazard including the level of knowledge of experts about the hazard.⁴⁷ Thus, risks having a high emotional or affective charge, accompanied by a relatively high level of uncertainty concerning the state of one's personal knowledge about the hazard or the state of knowledge of experts are of particular concern. Other studies of risk perception have shown that these concern relate strongly to protective behavior that people in Western cultures take to either reduce their exposure to risk, and to people's desire for risk regulation.^{48,49}

Subsequent interest extended to risk in cross-cultural contexts and multiple studies were conducted in number of countries. In general, these studies have found some differences between cultural contexts, but for the most part the central emotional/affective factor associated with the psychometric paradigm identified in the early studies in US context has appeared to be a consistent driver of risk perceptions.

For purposes of the present paper, we focus on three concepts that have been identified by research on risk perception that have pertinence for characterizing differences between Western and Arab culture: personal control (controllability), optimism bias (belief that personal risk is lower than that of others) and equitability of risk/benefit distributions. Personal control and optimism have been found to differ even between Western cultures and between Western and some Asian cultures, with American samples having higher levels of perceived control and greater optimism about risk-related

⁴⁵Fischhoff, Slovic, Lichtenstein, Read & Combs (1978).

⁴⁶This framework for characterizing non-expert perceptions of risk has come to be known as the *psychometric paradigm*, so named because it grew out of research utilizing psychophysical scaling and multivariate analysis techniques to produce representations of attitudes and perceptions (e.g., Fischhoff, *et. al.*, 1978).

⁴⁷Slovic, Fischhoff & Lichtenstein (1986); Slovic (1987).

⁴⁸Slovic, MacGregor & Kraus (1987).

⁴⁹Slovic, Fischhoff & Lichtenstein (1986).

outcomes than non-American samples.⁵⁰ With respect to life events (e.g., illness, injury, financial conditions), Canadians tended to be more optimistic about both positive and negative events than did Japanese.⁵¹ More recently, cross-cultural risk perception of disasters again found that U.S. samples were more optimistic and perceived less personal vulnerability than either Argentine or Japanese samples.⁵² The general trend for American samples to exhibit greater optimism and less personal vulnerability across a range of risk-related issues, including events in one's personal life, suggest that some important factors may be present when contrasting U.S. risk perceptions with those of Arab culture. We noted earlier in this paper the importance of predestination as a key feature of Arab culture. Although empirical research is required to substantiate cultural differences, we speculate that as a general cultural tendency Arab culture may exhibit lower levels of optimism and personal control over risks and hazards than Western cultures, and particularly American culture. Some observers of Arab culture have pointed to a tendency toward fatalism, which is strongly related to limited perceptions of personal agency and control.⁵³

Turning to equity of risk/benefit distributions, a finding from risk perception research has shown that (generally using samples from Western cultures) risks are perceived to be greater than the benefits associated with the risky activity do not accrue to those who are exposed to the risks. Essentially, risks are perceived to be greater when benefits are perceived as unfairly distributed. In Western cultures, this sense of unfairness can be associated with a number of factors, including who gains and who loses, as well as who bears the risks (e.g., working in hazardous environments) versus who receives the benefits (e.g., economic returns from the hazardous work). The importance of this factor in Arab culture, though not as yet demonstrated empirically, is a potentially important one. To appreciate this potential, we need to consider a historically-important Arab cultural concept first advanced by the 14th century Arab philosopher and historian Ibn Khaldûn, that of *asabiyyah*. *Asabiyyah* can be interpreted in terms of a number of Western concepts such as social solidarity, cultural unity, social

⁵⁰Klein & Helweg-Larsen (2002).

⁵¹Heine & Lehman (1995).

⁵²Gierlach, Belsher & Beutler (2010).

⁵³e.g., Nydell (1987); Patai (2007); Al-Omari (2008).

cohesion and group consciousness. It can also be thought of as the *group feeling* that accompanies Arab life.⁵⁴ Note that it is not a sense of collective power, but rather addresses the connectedness inherent in Arab society. *Asabiyyah* can also refer to the cohesive strength that binds individuals into a group.⁵⁵ The communal bonds created by *asabiyyah* are, to this day, influential in how Arab culture fosters and maintains its social order. In our earlier discussion of *gharar* (see above), it is the potential violation to *asabiyyah* that causes *gharar* to be of concern and even prohibition. From this perspective, we can see that different forms of “fairness” may be at work in Arab culture than in, say, American culture where inequity (or unfairness) operates at the level of the individual. Arabs may be more likely to regard unfairness in risk/benefit distributions as not so much a violation of an individual’s rights, but rather a hazard to *asabiyyah* and, thereby, to social cohesion.⁵⁶

CONCLUSIONS AND PRACTICE IMPLICATIONS

We have very little empirical evidence to support what we have synthesized from the available literature on Arab culture. Nonetheless, we can make some guarded and speculative suggestions for how the information we have discovered could be made useful in the context of interactions with Arab culture. We leave it to readers to determine the “fit” between the situations relevant to them and the guidance we cautiously offer here.

At the outset of this paper we warned against assuming the Arab culture to be monolithic. Indeed, there is likely to be a great deal of intra-cultural variability along quite a number of dimensions. Emerging cultures can have that quality. Also, the surface trappings of modernity can make it seem that a traditional culture has moved

⁵⁴*Group feeling* is the term provided by Rosenthal for *asabiyyah* in his translation of the *Muqaddimah* (Khalidûn, 1967), the original treatise in which the concept is first defined and described by Ibn Khalidûn.

⁵⁵Arab culture is sometimes characterized as “atomistic” in that it arises from the properties of the individual, and the individual is the essential element of the culture. *Asabiyyah* can be regarded as the countervailing force that balances the pre-eminence of the individual and creates a sense of collective. In addition, *asabiyyah* is defined by Ibn Khalidûn to originate in kinship: “Group feeling (*asabiyyah*) results only from blood relationship or something corresponding to it.” (Khalidûn, 1967; p. 98). *Asabiyyah*, a term created by Ibn Khalidûn, is described (and even prescribed) in the *Muqaddimah* as an essential condition for leadership and religion.

⁵⁶There are parallels to *asabiyyah* in the Western concept of social capital, and particularly to social trust, both in terms of the cohesion formed by the existence of social capital and by the fundamental family values and shared ethical principles that are the traditional roots of trust (Fukuyama, 1995).

more in the direction of adopting Western viewpoints than is actually the case. Adoption of new technology (e.g., internet) and even Western-style media (e.g., film, music) is not necessarily a sign of abandonment of older views and deep cultural values. The trends and tendencies that we have been discussing in this paper may not always be evident on the surface of cultural relations, but likely reside as cultural predispositions that exert subtle influence particularly in circumstances that are unfamiliar or where the context poses stress or pressures on an individual or a group to conform to a non-traditional standard or mode of relating. Negotiations, for example, are one such set of circumstances. Adherence or adoption of new cultural or social norms is another. Interpersonal relationships and situations involving privacy or intimacy (social or otherwise) are other examples. In terms of applying or deploying risk assessment and, in general, risk management methods, the following observations and hypotheses may prove useful either as guidance or as directions for further research:

- It is worthy of note that even in the West today, we do not have a consistent definition of risk. Although the history of risk has been in part a mathematical evolution (see earlier discussion) it is also the case that as risk assessment in the West has been applied to both technological and social endeavors it has also gained in terms of controversy with respect to its meaning and value as a basis for risk management.⁵⁷ Evidence of this contentiousness can be found in many places, and largely in the disparity between the way technical experts model, evaluate and judge risk, and the way it is seen by those who are exposed to risk.^{58,59} Recent experience in the U.S. with regard to risk associated with capital markets and the pricing of mortgage-based derivatives suggests that even within the technical realm in the West, risk can be poorly (or at least insufficiently) understood. If at times Arab societies today should seem reluctant or slow to embrace the methods and approaches to risk as exercised in the West, it may be due to a precautionary stance that recognizes some of difficulties that the West has experienced (and is currently experiencing) in how risk assessment and

⁵⁷See Slovic (1999) for a characterization of this controversy as a social battlefield.

⁵⁸See Flynn, Slovic & Mertz (2006) for a discussion of this issue as it applies to the establishment of a high-level nuclear waste repository in the U.S.

⁵⁹See MacGregor, Slovic & Malforms (1999) for a discussion of the variability of the meaning of exposure in the context of chemical hazards.

management has been applied. In many respects, the West has led the way in advancing risk assessment; on the other hand that leadership has revealed not only technical but also significant social challenges. Some elements of Arab culture may opt for a more conservative and traditional approach to risk that is perceived to offer greater social cohesiveness, or at least is seen as placing less at risk with respect to social divisiveness.

- A tendency in the West is to base our societies on the principle of reasoned action, by which we identify our needs, gather information, formulate courses of action and evaluate the best action among those we have identified.⁶⁰ Underlying this cultural philosophy is the principle that we can identify and isolate separable and distinct wants and needs, and then through a process of focused deliberation (including formal analysis) close the gap between the situation as it currently exists and the situation as we would most like it to be. An alternative view is that the problems we characterize as, for example, decision problems are more complex than they appear to be, and are immersed in a context that is dynamic and interactive with interconnected feedback loops. We see features of this worldview in system dynamics as applied to complex problems such as business management.⁶¹ More recently, concepts from complexity theory are being employed to describe social systems.⁶² Some research has drawn relationships between current theories of complexity and system dynamics, and historical cultural principles rooted in religious philosophy.⁶³ Our examination of Arab cultural concepts with respect to reasoning suggests a distinctly non-linear perspective on time, events and causality.⁶⁴ In addition, the general Western model of reasoned action and planned behavior assumes a strong role for human agency in bringing about desired conditions. There is reason to be doubtful that a similar strength of belief in human agency as the basis for change exists in

⁶⁰ e.g., Ajzen (1991).

⁶¹ Sterman (2000).

⁶² Miller & Page (2007).

⁶³ Marks-Tarlow (2008).

⁶⁴ A white paper titled "Arab Cultural Influences on Intertemporal Reasoning" (MacGregor & Godfrey, 2011) discusses the traditions of the Arab culture that favor a worldview more consistent with a systemic representation of causality than is generally encountered in the West.

- traditional Arab culture. This could manifest itself as either a lack of willingness or a reluctance to look upon risk-related technologies such as risk assessment and risk management as appropriate. Or, the application of risk assessment could encounter roadblocks in terms of developing the necessary causal models and hazard chains necessary implement all but the most cursory of assessments.
- In the West, we tend toward preoccupation with safety, as evidenced by our elaborate system of tort procedures, the scope and scale of our risk regulatory structure and the ubiquity of warnings about the hazards of virtually everything we do and use. Arab culture appears to be not simply “behind the curve” on adopting these sophistications, but rather has views relating to risk that do not necessarily support their socio-cultural engagement in risk and risk management to the degree that we see in the West. In addition, some aspects of Western economics (e.g., trading in risk) may seem to threaten the Arab social fabric (*asabiyyah*) and engender a level of concern that is not immediately apparent in terms of its underlying cause. Alternatively, things that to us “threaten” the integrity of our social fabric may not be seen as a matter of risk by those from Arab cultures.⁶⁵
 - Risk assessment requires a number of “inputs,” some of which can come from information databases, but other of which come in the form of judgments and assessment in which an individual or a group (of, for example, experts or members of the public) provides key inputs (e.g., preferences, alternatives, probabilities). These inputs require people, either individually or in groups, to engage in thought experiments that depend for their quality on the ability of relevant individuals to accept the logic of risk assessment and the meaningfulness of the thought experiment. In this area, we have particular concerns about the status of the Arab culture with respect to the assignment of numerical values to statements concerning uncertainty, or probabilities. Our concern here arises from the inherent meaning of probability as a language for representing and communicating uncertainty in the context of a culture that appears to have a

⁶⁵For example, Westerners can be readily insulted by failure of others to keep appointments or to be chronically late for important events or activities, or the inability of another to follow through on agreements.

traditional view of uncertainty as a province separate from human endeavors. We are accustomed in the West to expressing degrees of uncertainty, often through natural language terms and numerically as probability. Though natural language terms for probability are imprecise they are nonetheless common in Western social discourse. We can contrast this with the Arab culture that has yet, even in its considerations of risk in the context of finance, to borrow much from the West with respect to probabilistic expressions of risk.

- A separate white paper report discusses Arab cultural influences on intertemporal reasoning.⁶⁶ That report posits a tendency for the Arab culture to think in associative terms that may be culturally distinct with respect to the value Western cultures attach to exactness and coherence, where exactness is in terms of faithfully representing events as they occurred, and coherence with respect to the temporal relationship between events. Risk (and risk assessment) depends upon events occurring with some repetition (e.g., base rates). Indeed, we can think of risk assessment as a form of historical analysis by which the relative frequency with which a class of events occurs can be interpreted in terms of a probability. Westerners tend to expect events and the associated risks identified on the basis of events to exhibit coherence; that is, to be related in a discernable and ordered way. One such ordering is time, and another is probability. Coherence under uncertainty implies the laws of probability. Differences in cultural viewpoints about events, their meaning and how they could (should) be aggregated can lead to significant differences in the meaning of coherence, and therefore in definitions (or even relevance) of risk. It is reasonable to hypothesize that risk may be more arbitrary under Arab culture than Western culture.
- There is, perhaps, a word of caution here that complex concepts such as risk may not “translate” well and a more appropriate and culturally sensitive approach to understanding may lie in interpretation of a concept which, though more consuming of time and resources, is less likely to result in misunderstanding and conflict. In the case of the Arabic term *gharar*, we have favored an interpretive approach over a translation as a way of developing a deeper understanding of how

⁶⁶ MacGregor & Godfrey (2011).

this Arabic concept relates to what we term as *risk* in Western cultures. We suggest that the concept of risk be studied empirically in current Arab culture, using techniques that involve minimal assumptions about what might be its meaning. From work in our own, Western, cultures if there is one lesson we have learned from empirical science on risk-related topics, it is that there are many definitions of risk beyond technical definitions, and that understanding the meaning of risk to any given individual, group or culture is very much a matter of communication.

Acknowledgements

This project was funded by the Office of Naval Research, Human Social Cultural Behavioral (HSCB) Program, under Contract Number N00014-09-C-0570 to MacGregor Bates, Inc.

References

- Abdennur, A. (2008). *The Arab Mind: An Ontology of Abstraction and Concreteness*. Ottawa: Kogna Publishing.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Al-Omari, J. (2008). *Understanding Arab Culture: A Practical Cross-cultural Guide to Working in the Arab World* (2nd ed.). Begbroke, Oxford: Spring Hill House.
- Bernstein, P. L. (1998). *Against the Gods: The remarkable story of risk*. New York, NY: Wiley & Sons.
- Bogg, T., & Roberts, B. W. (2004). Conscientiousness and health-related behaviors: A meta-analysis of the leading behavioral contributors to mortality. *Psychological Bulletin*, 130 (6), 887-919.
- Brier, G. W. (1950). Verification of forecasts expressed in terms of probability. *Monthly Weather Review*, 75, 1-3.
- Dawid, A. P. (1982). The well-calibrated Bayesian. *Journal of the American Statistical Association*, 77 (139), 605-610.
- Draper, D. (2004). Coherence and calibration: Comments on subjectivity and "objectivity" in Bayesian analysis. *Bayesian Analysis*, 1 (1), 1-6.
- El-Gamal, M. A. (2006). *Islamic finance: Law, economics and practice*. New York: NY: Cambridge University Press.
- El-Gamal, M. A. (2001). *An Economic Explication of the Prohibition of Gharar in Classical Islamic Jurisprudence*. Paper presented at the 4th International Conference on

- Islamic Economics, Leicester, UK, 13-15 August 2000. (Downloaded from <http://www.ruf.rice.edu/~elgamal/files/gharar.pdf>).
- Fischhoff, B., Slovic, P., Lichtenstein, S., Read, S., & Combs, B. (1978). How safe is safe enough? A psychometric study of attitudes toward technological risks and benefits. *Policy Sciences*, 9, 127-152.
- Flynn, J., Slovic, P., & Mertz, C. K. (1993). Decidedly different: Expert and public views of risks from a radioactive waste repository. *Risk Analysis*, 13(6), 643-648.
- Fukuyama, F. (1995). *Trust: The social virtues and the creation of prosperity*. New York, NY: Simon & Schuster.
- Gierlach, E., Belsher, B.E. & Beutler, L.E. (2010). Cross-cultural differences in risk perceptions of disasters. *Risk Analysis*, 30(10), 1539-1549.
- Haimes, Y. Y. (1998). *Risk modeling, assessment, and management*. New York, NY: Wiley.
- Heine, S.J., & Lehman, D. R. (1995). Cultural variation in unrealistic optimism: Does the West feel more invulnerable than the East? *Journal of Personality and Social Psychology*, 68(4), 595-607.
- Hutt, P. B., & Hutt, P. B. II (1984). A history of government regulation of adulteration and misbranding of food. *Food, Drug and Cosmetic Law Journal*, 39, 2-73.
- John, O. P., & Srivastava, S. (1999). The Big Five trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin & O. P. John (Eds.), *Handbook of personality: Theory and research* (2nd ed., pp.102–138). New York: Guilford.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decisions under risk. *Econometrica*, 47, 263-291.
- Kaplan, S., & Garrick, J. (1981). On the quantitative definition of risk. *Risk Analysis*, 1 (1), 11-27.
- Khaldûn, I. (1967). *The Muqaddimah: An Introduction to History* (F. Rosenthal, Trans.). Princeton, NJ: Princeton University Press.
- Klein, C.F.T., & Helweg-Larsen, M. (2002). Perceived control and the optimistic bias: A meta-analytic review. *Psychology and Health*, 17(4), 74-95.
- Law, M. T. (2010). History of food regulation in the United States. Accessed at: <http://eh.net/encyclopedia/article/Law.Food.and.Drug.Regulation>. Last access: 1 Sep 2011.
- MacGregor, D. G. & Godfrey, J. (in press). Intertemporal reasoning and cross-cultural decision making. In G. Salvendy & W. Karwoski (Eds.), *Proceedings of the First International Conference on Cross-cultural Decision making*. New York, NY: Wiley & Sons. Available from the Social Science Research Network at <http://ssrn.com/abstract=1750266>.
- MacGregor, D. G. & Godfrey, J. R. (2011). Arab Cultural Influences on Intertemporal Reasoning. Unpublished manuscript (Office of Naval Research -White Paper

- Report). Available from the Social Science Research Network at <http://ssrn.com/abstract=1966639>.
- MacGregor, D. G., & Slovic, P. (1986). Perceived acceptability of risk analysis as a decision making approach. *Risk Analysis*, 6, 245-256.
- MacGregor, D. G., Slovic, P., & Malmfors, T. (1999). "How exposed is exposed enough?" Lay inferences about chemical exposure. *Risk Analysis*, 19(4), 649-659.
- Marks-Tarlow, T. (2008). *Psyche's veil: Psychotherapy, fractals and complexity*. New York, NY: Taylor & Francis.
- Miller, J. H., & Page, S. E. (2007). *Complex adaptive systems: An introduction to computational models of social life*. Princeton, NJ: Princeton University Press.
- National Research Council. (1989). *Improving risk communication*. Washington, DC: National Academy Press.
- National Research Council (P.C. Stern & H. V. Fineberg, Eds.) (1996). *Understanding risk: Informing decisions in a democratic society*. Washington, D.C.: National Academy Press.
- National Research Council. (2008). *Department of Homeland Security Bioterrorism Risk Assessment: A Call for Change*. Washington, DC: National Academy Press.
- Nydell, M. (2006). *Understanding Arabs: A guide for modern times* (4th ed.). Boston, MA: Intercultural Press.
- Patai, R. (2007). *The Arab mind*. Long Island City, NY: Hatherleigh Press.
- Raiffa, H. (1969). *Decision analysis: Introductory lectures on choices under uncertainty*. Reading, MA: Addison-Wesley Publishing Co.
- Resnicow, K., Soler, R., Braithwaite, R., Ahluwalia, J., & Butler, J. (2000). Cultural sensitivity in substance use prevention. *Journal of Community Psychology*, 28, 271-290.
- Saaty, T. L. (1980). *The analytic hierarchy process*. New York, NY: McGraw-Hill.
- Schuon, F. (1998). *Understanding Islam*. Bloomington, IN: World Wisdom. (Pg. 22).
- Slovic, P. (1987). Perception of risk. *Science*, 236, 280-285.
- Slovic, P. (1999). Trust, emotion, sex, politics, and science: Surveying the risk-assessment battlefield. *Risk Analysis*, 19(4), 689-701.
- Slovic, P., Fischhoff, B., & Lichtenstein, S. (1986). The psychometric study of risk perception. In V.T. Covello, J. Menkes, and J. Mumpower (Eds.). *Risk evaluation and management* (pp. 3-24). New York, NY: Plenum.
- Slovic, P., MacGregor, D. G., & Kraus, N. N. (1987). Perception of risk from automobile safety defects. *Accident Analysis and Prevention*, 19, 359-373.
- Starr, C. (1969). Social benefit versus technological risk. *Science*, 165, 1232-1238.
- Sterman, J. D. (2000). *Business dynamics: Systems thinking and modeling for a complex world*. New York, NY: McGraw Hill.

- Van Niekerk, J. P. (1999). *The development of the principles of insurance law in the Netherlands: 1500 to 1800*. Cape Town, South Africa: Juta Legal and Academic Publishers.
- Vlek, C., & Stallen, P.-J. (1981). Judging risks and benefits in the small and in the large. *Organizational Behavior and Human Performance*, 28, 235-271.

REPORT DOCUMENTATION PAGE					Form Approved OMB No. 0704-0188	
The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. PLEASE DO NOT RETURN YOUR FORM TO THE ABOVE ADDRESS.						
1. REPORT DATE (DD-MM-YYYY) 30-11-2011		2. REPORT TYPE Research Report		3. DATES COVERED (From - To) Sep 2009 - Nov 2011		
4. TITLE AND SUBTITLE Observations on the Concept of Risk and Arab Culture				5a. CONTRACT NUMBER N00014-09-C-0570		
				5b. GRANT NUMBER		
				5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S) MacGregor, Donald G. Godfrey, Joseph R.				5d. PROJECT NUMBER		
				5e. TASK NUMBER 4		
				5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) MacGregor Bates, Inc. 1010 Villard Avenue Cottage Grove, OR, 97424 USA				8. PERFORMING ORGANIZATION REPORT NUMBER MBI-ONR-2011-3		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Office of Naval Research (HSCB Program) 875 North Randolph St. Attention: Ivy Estabrooke Code: 30 Arlington, VA 22203-1995				10. SPONSOR/MONITOR'S ACRONYM(S) ONR		
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION/AVAILABILITY STATEMENT Unlimited Distribution						
13. SUPPLEMENTARY NOTES						
14. ABSTRACT Western science has developed powerful techniques for modeling and aiding important social decisions. One such technique is risk assessment. The relationship of risk to cultural context is apparent in a number of its facets, including its dependence on values and the (potential) clash between probabilistic versus deterministic views about states of the future. This paper is an examination of the concept of risk using as a lens ideas and concepts about risk that are prevalent in Western culture, and applying these concepts to existing literature (in English) on Arab culture that provides information relevant to risk. The goal of the paper is to amplify our understanding of how Arab culture conceptualizes elements of risk and its assessment as understood and practiced in the West. Current research on risk in Western literature is used to frame key risk issues in terms of their potential fit (or misfit) with features of Arab culture. The paper concludes with a number of recommendations for research and practice that suggest a cautious approach with regard to applying risk-related principles in Arab cultural contexts that place a relatively high value on traditionalism.						
15. SUBJECT TERMS Arab culture, risk assessment, history of risk, cross-cultural psychology, anthropology						
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT SAR	18. NUMBER OF PAGES 37	19a. NAME OF RESPONSIBLE PERSON Donald G. MacGregor	
a. REPORT U	b. ABSTRACT U	c. THIS PAGE U			19b. TELEPHONE NUMBER (Include area code) (541) 942-5727	