PERCEPTION AS A CHARACTERISTIC OF DECISION MAKING IN A DEFENSE CONTRACTOR'S PROPOSAL PROCESS

David Nixon

David G Nixon is a Doctor of Management candidate at the University of Maryland University College. He received a Master's of Business Administration with a concentration in Finance from the University of Baltimore in 2001 and a Bachelor's of Science in Electrical Engineering from Morgan State University in 1995. He is currently employed at General Dynamics Advanced Information Systems. His interests are in leadership and decision-making, particularly in the areas of Business Development, Capture and Proposal Management, and Program and Project Management. *Dave.Nixon1@comcast.net*

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ABSTRACT

Every year, the federal government spends billions of dollars purchasing equipment and expertise from contractors to continue its ongoing mission to serve the citizens of the United States. This paper will discuss how contractors pursue contracts and the impact perception has on the decision process in four major decision areas. When pursuing these opportunities, contractors are bound only to meet the minimum criteria to compete and respond to the requirements of the RFP. This leaves the contractor to develop an internal proposal process that can be used consistently for any bid. Inherently, as part of the proposal process, the contractor will make a series of decisions that can have an effect on the outcome; whether the contract is won by the contractor or not. Perception will be presented as a characteristic of the decision process with a significant impact on the outcome.

Keywords

Perception, defense contractor, proposal, proposal process, decision-making

INTRODUCTION

Each year, the federal government spends billions of dollars purchasing equipment and expertise from contractors to continue its ongoing mission to serve the citizens of the United States. “The purchase of arms to defend this country's borders and to protect its interests overseas has been the main concern of national policy since the earliest days of the republic” (Burnett & Kovacic, 1989, p.4). Contractors from various industries vie for these contracts from multiple government agencies. The amount of revenue that can be attained from doing business with the government is substantial enough for some contractors to thrive as going concerns for generations. Federal agencies operate with annual budgets with which to purchase goods and services. This opens the door for competition among contractors to capture business, particularly major business where the government agency has determined that the procurement will be made on a competitive negotiation.

The Department of Defense (hereafter DOD) is one such agency that makes significant purchases of goods and services through competitive contract proposal and negotiation. In recent history, over half of the government’s annual budget has been allocated to the purchase of goods and services in the defense industry. “Government contracting is a big business. Each year the government spends over $200 billion buying goods and services. The Department of Defense alone accounts for over $120 billion in prime contract awards, more than 60% of all federal procurement dollars (US Congress, 2003c)” (Berrios, 2006, p.119-120). Contractors enter fierce competition for this revenue by responding to government solicitations in competitive negotiations. These responses are crafted in proposals and contractors go through defined internal processes to develop them. The government’s process is structured and defined by law. In the case of DOD, the Federal Acquisition Regulation (hereafter FAR) is the established guide for developing a solicitation and releasing a request for proposal (hereafter RFP). The FAR has the full effect of law.

Contractors are not limited to such a defined structure. Each contractor is bound only to meet the minimum criteria to compete (approved accounting systems, established certifications on internal processes for contract execution, etc.) and respond to the requirements of the RFP. This leaves the contractor to develop an internal proposal process that can be used consistently for any bid. Inherently, as part of the proposal process, the contractor will make a series of decisions that can have an

effect on the outcome; whether the contract is won by the contractor or not. Perception will be presented as a characteristic of the decision process with a significant impact on the outcome. Throughout the course of this paper, reference will be made specifically to the decision maker, as opposed to the leader. Those two may be one and the same, but that is a different concept intended more for a discussion on leadership, whereas the intent here is to determine the thought process of the decision maker; whoever may be defined as possessing that authority at the time of the ultimate decision.

Therefore, the intent of this paper is to discuss the perception of the decision maker about the decision at the moment of choice and how that perception impacts the final choice.

Thematic discussion

Businesses and organizations in general, evolve, dissolve or maintain as a result of a seemingly endless set of decisions. In defense contracting, contractors are constantly making decisions that will ultimately affect the continued success of their business or the misfortune of failure. The proposal process is one such critical area where these types of decisions are made. Contractors are not bound by government statute to operate under a certain set of laws or guidelines in developing their proposal response to government solicitations. The contract, however, is a binding agreement between the government agency and the contractor. This means that the contractor must be careful to propose something that the contractor can execute if they are awarded the contract.

Another component of the proposal process is competition.

"The Competition in Contracting Act of 1984 (CICA) requires DOD to use 'full and open competition' through the use of competitive purchasing procedures. The Defense Authorization Act of 1986 bars DOD from beginning full-scale development for major systems until the Secretary of Defense has given Congress an 'acquisition strategy.' This strategy must provide that there will be competitive alternative sources available for the system (and each major subsystem) under the program throughout the period from the beginning of full-scale development through the end of production" (Burnett & Kovacic, 1989, p.7).

In a competitive negotiation, other contractors are attempting to secure the same contracts. According to the FAR, each contractor is to be provided the same information with which to produce their proposal response. The challenge is the individual competitor's conceptualization

of the information provided and the ultimate proposal response. The varying differences between contractors are likely to have an impact on who will win the business and who will not.

In some instances, DOD will award a contract to multiple contractors. In these instances, the effort associated with the contract is divided into smaller portions of effort. This is usually done as a means of insuring competition for the smaller portions of effort. Contracts, such as some indefinite-delivery indefinite-quantity contracts (hereafter IDIQ), can be awarded to multiple contractors with the intent being that each contractor that was awarded the IDIQ is now eligible to compete for portions (delivery orders, task orders, etc.) of the overall contractual effort. At the task order level, a single competitor is awarded that portion of the contract. For the purposes of this paper, multiple awards and single awards will not be differentiated. The only point that will be considered is reaching the point of award or not. In the case of a single award contract, winning that award is the ultimate goal. In the case of a multiple award, the goal is two-fold. First the contractor must win the right to compete for the resulting delivery orders and task orders. Second, once selected, the contractor must compete for actual work. The principles of winning are the same, because the concept and process of receiving an RFP and responding with a proposal are the same, just at different levels. Winning will be the definition of success or failure.

Considering the subtle differences in successful and unsuccessful proposal efforts, the thesis is that critical differences in contractor perception are a primary determinant of success or failure in a defense contractor's attempts to acquire contracts. Contractors face several decisions during the course of developing a proposal response. Four major decisions are the decision to bid, whether to enter into a partnership and with whom, what is an acceptable price, and acceptance of negotiated terms during discussions (formal government term for negotiations). Contractors are faced with internal uncertainties regarding the contract deliverable and external uncertainties regarding competition and the customer. The contractor's perception of the environment and available relevant information at the time of choice are critical to success.

The problem

The problem addressed in this paper is relative to the contractor's eventual outcome. Generally speaking, for every DOD solicitation there are winner(s) and loser(s). To the bidder(s) that was unsuccessful, there are considerable consequences: loss of contract, loss of investment

towards acquiring the contract (sometimes millions of dollars), loss of market share, and possible loss of staff (human resources moving to the winning contractor). A pattern of losing attempts to acquire contracts can ultimately lead to the collapse of the business entity. “Because program costs are often very large, winning (or losing) important roles in a program has potentially significant effects on the size, rate of growth, and profitability of contractors” (Burnett, 1987, p.23) In light of this, defense contractors are intent on being as competitive as possible for revenue opportunities and success is vital to corporate survival.

It is likely that contractors fail to secure contracts, because they are unaware or ignorant of the components and characteristics of the decision process that impact them the greatest. Significant attempts at a proposal response can be unsuccessful because they fail to consider the context from which critical decisions were made and how that impacted the response. If this contextual perception could be recognized by the decision maker at the time of making a decision, perhaps a more sound and appropriate response could be attained. From a meta-theoretical perspective, a pattern of sound decision making within an appropriate contextual perception of the decision problem should lead to more successful outcomes over time. For the defense contractor this means approaching pertinent areas of the proposal process with a sound contextual perception of the decision area at the time of making a choice. Ideally, this should lead to improved decision making in the proposal process and ultimately result in more contract awards.

MAJOR DECISIONS IN THE PROPOSAL PROCESS

Contractors provide a unique set of skills and expertise that help the government agencies meet their objectives. Some contractors have a focused skill set while others span a broad range of capabilities necessary for the government, particularly DOD. The government simply cannot afford to develop and maintain the internal capability required to produce some of its desired acquisitions. This leads to the government’s intent on outsourcing. For various reasons, the government inevitably will have to purchase some necessary assets and services. When the government agency decides to outsource, there are many ways in which to do so according to the FAR.

Contract by negotiations essentially means there will be a solicitation for goods and/or services. At some point there will be a release of an RFP, of which qualified bidders will be able to respond with proposals. Since the proposal process of each bidder (contractor) is not specifically defined by

the statute or law, contractors will work internally on developed procedures to formulate their best proposal response. “Some of the disadvantages with the negotiated contracts are: the subjectivity and judgment that is involved in the decision and the administration of these contracts tends to be more costly because it involves more documentation and takes more time” (Berrios, 2006, p.120).

Inherent in this process are multiple critical decisions with which the contractors must navigate towards a successful proposal. Four major decisions facing each contractor in this process are:

1. The decision of whether to bid on the contractual effort or not. This is commonly referred to as the Bid / No Bid decision.
2. The decision of whether to establish partnerships with other contractors, either dictated by the terms of the solicitation (such as in the case of segregating a percentage of work for small business) or for strategic advantage over the competition. Identified as teammates, strategic partners, alliances or subcontractors, this relationship is known as a teaming arrangement.
3. The decision regarding determining the price of the effort that is presumed to be acceptable by the government and strategically considered best value among all the competitors.
4. The decision to accept resulting terms and conditions from contract negotiation. Upon submittal of the proposal, the government agency is able, according to the FAR, to have discussions (negotiations) with contractors who meet certain acceptable criteria for award. Acceptance of these final terms and price is the decision surrounding contract negotiation.

These areas of decision are considered focal decision points in the proposal process. The actual proposal is only a small part of the entire proposal process. Many contractors will consider aspects of the proposal process to fall more in line with their business development or program management procedures. Since there is such overlap in categorization, this paper will simply rely on the fact that these steps, or decision points, are critical in the process of being awarded contracts. The proposal is the catalyst to success or failure, so while not each decision point is specifically written in the proposal, each decision point impacts the proposal and the contract award. Therefore these will be defined as decision points in the proposal process.

Each of these decision points has a unique set of characteristics that make that decision point a challenge. Invariably, each proposal process has certain internal and external uncertainties that must be addressed.

"Uncertainty has internal and external components. External uncertainty, in part flowing from the extended periods required to develop and deploy new weapons, is associated with such things as changes in Congressional funding for defense, changes in assessments of threats to national security, and changes in the availability of substitute weapons. Internal uncertainty is primarily associated with overcoming scientific and technical problems encountered during the development and production process. The required simultaneous innovation in several fields multiplies the risk of delay, cost overruns, and failure to meet performance objectives" (Burnett, 1987, p.20).

These internal and external uncertainties are considered on the surface level of the proposal process, but each decision point also contains a more specific set of risks and uncertainties. There are aspects of the four decision points that open the door for decision making to influence the outcome. Each will be considered independently.

The bid / no bid decision

Most scholarly literature on bid decisions is focused on the construction industry. Fortunately, considerations of this industry are consistent with many of the considerations in the defense industry, particularly as it relates to uncertainties and risks in competitive bidding. "The bid/no-bid decision is both complex and dynamic, involving many factors (Shash, 1993), while the selection of the most appropriate projects for which to bid is fundamental to a successful commercial strategy. Moreover, the decision to bid, as with that of determining the project mark-up, is very important as success or failure of a contractor's business lies in the outcome derived from those decisions" (Lowe & Parvar, 2004, p.643). As with contractors in the construction industry, defense contractors depend on winning contracts to sustain their enterprise, which is only done by first making a decision to bid on a contractual effort. This decision is not considered casually as it requires investment of resources and financial capital to develop a bid; sunk costs if the bid is not won. However, contractors must consider the loss, or opportunity costs of not bidding.

The decision to bid implies the incurring of substantial costs which may not be recovered immediately. The value of the decision outcome is not

defined. That is, if the contractor decides not to bid, an opportunity loss might be incurred. On the other hand, if the contractor decides to bid, the direct and indirect costs that the project will consume have to be estimated" (Shash, 1993, p.111).

Literature suggests that decisions that are this important are still determined by subjective means. Decision makers rely on experience and assumption concerning key aspects of the bid decision. By this very notion of subjective decision making, uncertainty is increased beyond the inherent risks that accompany the project. Based on Lowe & Parvar's (2004) research, there are 21 factors grouped into seven categories that aid a contractor in determining whether to bid on a contract. Since this list is specific to construction, some items likely do not apply to defense. However, each of the groupings of categories has relevance.

"The decision whether or not to bid for a project is a strategic decision requiring the consideration of strategic intent, competency acquisition and the long-term aims and objectives of the organization. Analysis of the literature identified 21 factors considered to be important in the bid/no-bid decision process.

1. *Opportunities - economic contribution of the project; strategic and marketing (non-monetary) contribution of the project; competitive analysis of the tender environment; and feasibility of alternative design to reduce cost.*

2. *Resources - resources to tender for the project; internal resources (managerial and technical) to support the implementation of the project; financial resources to support the implementation of the project; and external resources (plant, materials and subcontractors) to support the implementation of the project.*

3. *Project relationships - the current relationship with the client; and the current relationship with the client's professional advisors.*

4. *Project procedures - form of contract; contract conditions; and tendering procedure.*

5. *Project characteristics - competency – project type; competency – project size; competency – location; and experience.*

6. *Risks - the risks involved due to the nature of the project; financial capability of the client; and the speed of payment of the client.*

7. *Competitive advantage - lowest cost" (Lowe & Paver, 2004, p.646).*

Factors focusing on location are less likely to be of major impact in the bid decision process for defense contractors. In some cases, government agencies are known to require contractors to be within a certain radius of the government installation for certain types of work. This is not a major problem for most defense contractors, as they have offices near and around most major government installations across the country. However, the remaining factors present significant hurdles in the bid decision process. Decision makers must be careful to navigate them with the utmost scrutiny and yet still, a vision for the future of their company.

Teaming arrangements

Typically, major proposals provided to the government are done in multiple volumes. An example of the volumes that might be provided to DOD for a major bid would be the Technical Volume (outlining the technical approach to reach contract objectives), Management Volume (explaining the management approach to successfully negotiate the requirements of the contract, including strategically identified teaming arrangements), Cost Volume (detailing the cost factors associated with performing the effort), and possibly a Past Performance Volume (displaying prior experience with a particular technology and knowledge of the government agency policies and procedures). These various volumes make up the total proposal response. The better the relationship the contractor has with the customer, the more fine-tuned these volumes can be. The manner of relationship between DOD and defense contractors has evolved over the last 30 years. A drive by DOD to maintain a balanced field of suppliers through competition has made for a relatively different business environment for defense contractors from times past.

For most of the postwar era, defense procurement regulation was modeled after regulation used to control public utilities. The recent competition experiment departs from this model and substitutes rivalry

among defense suppliers to ensure good performance throughout the acquisition life cycle. Although rarely mentioned in scholarly discourse concerning adjustments in federal regulatory policy, the DOD competition initiatives of the 1980s constitute one of the country's most significant modern regulatory reform efforts (Burnett & Kovacic, 1989, p.2).

Some literature suggests that defense contractors previously operated in an environment where contracts and corporate revenue were assured, if limited. This likely fostered an individualistic nature among contractors, where strategic sharing of information for innovation was limited. However, rapid advances in technology may have preempted this management style over the last couple decades. "The do-it-yourself option has limitations in a fast paced, highly competitive environment. It is costly in terms of both resources and time, even assuming that the organization has the capacity to handle the new task successfully. Acquisitions are similarly costly; and they entail an obligation to manage all that comes with the package, furthermore, it is harder to move in and out of full-fledged ownership positions than more limited arrangements that offer more flexibility" (Kanter, 1989, p.184).

Through a series of legislative acts such as the Competition in Contracting Act of 1984 (CICA), the Defense Authorization Act of 1986, and the Department of Defense Appropriations Act of 1987, Congress has worked to modify the DOD procurement environment. Through these efforts, Congress stipulated that competition will exist. Instead of the previous environment where contractors received some portion of government work as almost a type of entitlement, now they would have to compete. "A major result of the existing weapons acquisition environment and of the specific terms of current programs is that firms form teams to develop and produce systems" (Burnett & Kovacic, 1989, p.9). Now defense contractors have the challenge of deciding whether or not they should enter into teaming relationships with organizations that might be teammates on one endeavor and competitors on another.

When considering teaming, a decision maker has to consider several advantages and disadvantages. One advantage is the spreading of risks, both technical and financial, associated with a contract. Another advantage could be the development of a superior niche technology.

"One source of risk is the paucity of programs and, consequently, the shrinking number of production contracts that enable firms to maintain and extend their technical capability.

Teaming also can reduce the financial risk arising from current requirements that force contractors to bear more of the costs of developing new systems, to provide stronger warranties, and to accept fixed-price contracts for relatively early phases of the procurement cycle.

Teaming can be viewed as a response to DOD efforts to seek significant simultaneous technological gains in numerous areas" (Burnett & Kovacic, 1989, p.10).

On the other hand, there are substantial disadvantages of teaming as well. The interrelationship among teammates makes it critical for contractors to protect company proprietary data. This can hinder full cooperation amongst teammates that anticipate future bidding as competitors.

"The establishment of overlapping, mixed teams lays the foundation for at least two types of destructive internal conflict. The first takes the form of one firm's reluctance to provide a team member with proprietary data or know-how that the team member might employ in a second program in which the two firms are opponents. At a minimum, overlapping team membership would seem to entail complex, costly efforts to ensure that proprietary data and know-how do not flow beyond the bounds of the collaborative venture" (Burnett & Kovacic, 1989, p.11).

These risks present a challenge for the decision maker in which contractor, if any, to develop a teaming arrangement with, and how that relationship will be managed. "Appropriate decisions linked to partner selection and alliance governance positively affect the likelihood of success of every alliance. However, to realize the expected benefits, firms must also proactively manage an evolving entity such as an alliance *after* it is up and running. Two factors are especially important during the post-formation phase of the alliance life cycle: managing coordination between partners and developing trust between them" (Kale, 2009, p.50).

The price to win

One of the most challenging decisions in contract acquisition is the determination of price. The decision is not one of an either-or scenario; rather it is more of a range of possibilities depending on various factors. The culmination of these considerations is usually a pricing strategy developed to maximize profit and still win the award. "A pricing strategy is the means by which a pricing objective is achieved" (Noble, 1999,

p.434). Developing a winning price in the defense industry is particularly difficult due to some of the industry's inherent characteristics.

"Important features of the defense industry are (1) an unusual product market, (2) heavy use of quickly changing technology, (3) multiproduct firms, and (4) regulation. The product market is unusual on the demand side because it is dominated by a single customer, the federal government" (Demski &Magee, 1992, p.732).

The federal government is unique in that it is the major buyer of defense products and yet, it can regulate the suppliers of those products. The government imposes restrictions on the amount of profit contractors can make on their products, yet, the government recognizes that there is benefit in ensuring that the contractors receive a fair and reasonable amount of profit.

A contractor is faced with immense uncertainty surrounding price. Lloyd (1944) points out several factors for contractor consideration. While they are taken from the government's perspective, they are equally important factors for the contractor in trying to determine a winning price. Lloyd's factors are:

"Specifications.-It is obvious that differences in specifications may justify or require differences in prices

Size of the Order.-No argument is necessary to establish that the factor of volume may have an important influence on the comparability of prices

Delivery Schedules.-A contract calling for deliveries over a long period of time may have higher prices than a contract providing a shorter delivery schedule, because there are greater uncertainties and hence greater risks under the longer-term agreement.

Government-Furnished Materials and Facilities.-Where the Government supplies a contractor either materials or productive facilities, or both, it is manifest that the price of that contractor is not comparable with prices of other producers who are not receiving similar treatment, unless an appropriate adjustment is made.

Financing Provisions.-In a case where the Government assists a contractor in financing his operations, by way of advance payments, unit payments, progress payments or the like, his prices are not fairly comparable with those of other producers without an adequate adjustment.

Royalties.-An adjustment is also necessary when one producer pays for the use of patent rights and the others do not.

Subcontracting.-The influence of subcontracting on the comparability of prices is subject to no single generalization. In some cases it may result in higher prices, in other cases the prices may be lower. It is generally difficult to evaluate the effect of subcontracting on the price of a given producer" (Lloyd, 1944, p.240).

The decision maker for the contractor should be considering each of these factors as a price is being developed. Several methods are available to the contractor in the development of the price; some use a top-down approach, others use a bottom-up approach. There is also a performance-based approach. Each of these approaches takes into account the factors mentioned with differing results. "The proper choice between working top-down or bottom-up depends upon the context and purpose of the estimate" (Pugh, 2004, p.44).

There are three reasons why developing a bid price contains so much uncertainty. "One major reason is the fact that often the specifications for the work are not well defined. A second reason is that frequently the work has never been done before with the result that there is no prior cost experience available. Finally, there is the fact that cost estimates are by their very nature only accurate within certain limits since they are based on forecasts of future events" (Pugh, 2004). By virtue of these issues, a certain price for the kinds of products and services provided by defense contractors is an approximation at best.

To refine their pricing on major contracts, defense contractors will use available public information about competitors costing associated with previous winning bids to estimate where their competitors may price a current competitive bid. Usually, very little corporate specific information is available as it is most likely company proprietary information, but some generalized information such as salary range for personnel is possible to attain. Through this, some contractors will develop possible comparison prices to be bid by their competitors. These

prices are considered to be the prices to beat, or the Price to Win. After developing an internal price for a contractual effort, contractors will compare that price with the best available intelligence about the likely price of a competitor. The decision maker for a contractor will now have to consider the whole host of internal and external factors and decide on a price in the midst of severe uncertainty and culpable risks.

Contract negotiation

Once a contractor has developed and submitted a formal proposal response to a government RFP, the acquisition process moves into the final phase of the contractor's proposal process; sustaining competitive advantage through possible negotiations. In some cases, the government can elect to award contracts without negotiations, forcing the contractor to produce their best proposal at the onset. However, it is typically stated in the RFP as to whether that will be the case. Therefore, contractors submitting proposals for significant contracts (loosely defined for this paper as an estimated contract value of several million dollars or more) can anticipate feedback from DOD regarding their proposal submission and likely enter into discussions (negotiations).

"In the negotiation of government contracts the major portion of time is spent in arriving at the contract price. Individual contract terms and clauses are in most cases not subject to negotiation by the parties because they are prescribed by statute, regulation, standard form, or Government requests for proposals" (G, 1968, p.506).

While evaluation teams at the government agencies review the validity of the entire proposal, negotiation is usually focused mainly on price. The contractor's price is usually a determinate of how the contractor develops costing information through approved internal accounting and estimating practices, and as a result of technical requirements of the scope of effort defined in the Statement of Work (hereafter SOW). The challenging for the contractor is to establish the maximum profit possible while still producing a proposal cost low enough to win. The goal for DOD is to reduce financial impact and determine a fair and reasonable cost to accomplish the goal of procuring the desired goods or services.

"Since many acquisitions involve products being manufactured for the first time, prices cannot be determined by the normal forces of supply and demand. Consequently, the contract price must be fixed after extensive negotiations based upon cost projections. But government

negotiators generally must rely on cost and pricing data furnished by contractors" (MJG, 1968).

"Many government procurement projects have complex technical products that are uncertain in outcome in terms of cost, and thus the government has developed various types of contracts; rather than using formal advertising and low bid selection. Negotiations by an agency of the government have allowed more discretion in contract awards" (Agapos,1970, p.88).

The government has various options to distribute risks between themselves and the contractor; one of which is contract types. The contractor must consider how much risks are assumed based upon the contract type. This inevitably becomes part of the contractor's initial pricing and eventual negotiation strategy. However, since the government has to rely on the information provided by the contractor, Congress instituted the Truth in Negotiations Act to aid the government agency.

"In 1962, Congress enacted the Truth in Negotiations Act, which compels contractors to submit certain cost and pricing data to government negotiators before an agreement on the contract price may be reached. The disclosure mechanism was designed to give purchasing authorities stronger means for observing contractor costs and for evaluating the reasonableness of sole-source suppliers' pricing proposals. The grant to the government of broad access to contractor records ensures that required disclosures are made. Congress and DOD have established nominal limits on the profitability of defense contracts by setting contract profit ceilings. Below these ceilings, the target profit in any weapons acquisition contract typically is set through negotiations between the supplier and the purchasing authority" (Burnett & Kovacic, 1989, p.5).

Furthermore, the government has a unique advantage over contractors in negotiations because the government agency is largely in control of the future sustainability of the contactor. "Considerable potential negotiating power is vested in the purchasing military service, largely because of the significance to the firm (in terms of future revenues, profits and other financial rewards) of being selected. This often imposes extreme competitive pressures on contractors" (Burnett, 1987, p.28). On the other hand, the contractor is likely more in tune with technological advances and the relative cost to produce current technology and future innovation. Although Congress has legislated most of the negotiating advantages for

DOD, contractors possess the technological expertise and may be more closely related to the economic conditions that determine the costs to produce it. Agapos quotes from Hitch and McKean's book, *The Economics of Defense in the Nuclear Age* (1960):

"The following two quotes illustrate some practices common in the contract negotiations: (a) "too often, at present, the process takes on the following pattern; the contractor prepares his estimate of target cost, anticipating that the military service will ruthlessly bargain for a familiar percentage adjustment downward"; and (b) "the Contracting Officer is sure that the contractor has buried at least a 10% contingency in his proposal and feels impelled to get this contingency out by any method, fair or foul. On the other hand, the contractor knows the Contracting Officer is substantially under a firm directive that he must reduce the contractor's proposal by at least 10%. The obvious reaction on the part of the contractor is to put this contingency in the initial proposal so the Contracting Officer can take it out and make the record of negotiation look good" (Agapos, 1970, p.1095)

Winning these negotiations is not the focus of this research; rather the issue here is that the decision to accept negotiated terms is an area of uncertainty and risk for the contractor. Herein lies the heart of what the decision maker must decide upon; does the decision maker believe they can produce the SOW within the negotiated price and conditions which may vary somewhat (significantly or not at all) to the information provided in the contractor proposal.

DECISION MAKING & PERCEPTION

Up to this point in the paper the focus has been on the development of the decision areas for contractors. Four areas have been provided where contractors have to make critical decisions that have significant uncertainty and risks. As with any business, surviving this onslaught requires capable decision making by the contractor. Indeed, the success or failure of any business or organization is inextricably tied to that organization's ability to make sound decisions. In the case of the defense contractor's proposal process, the decision maker must make sound decisions in these four critical decision areas in order for the contractor to acquire and sustain contracts.

Decision making is a field of management with considerable research, the main points of which will be discussed for the benefit of understanding how to approach decisions in the proposal process. In

many cases, groups of talented individuals will work together to determine decisions for their organization, however, there is, usually an ultimate responsible authority that must give approval to a selected course of action. That approval, in effect, is a major decision, so while there is validity in pursuing group dynamics in decision making at some point, the research discussed here will address literature concerning the decision making of the individual.

In this paper's review of existing literature concerning the decision making of the individual, cognition will be a central theme. To understand how a decision maker approaches and reaches a decision inevitably leads to a discussion of how the decision maker's pattern of thought concerning the decision evolves. That is the heart of this research -- to discover, from a theoretical context, how the patterns of thought concerning a particular decision develop and the impact that these patterns can have on the resulting decision. Simply put, this research is an attempt to look inside the individual, figuratively speaking, and understand a decision maker's thinking process; what is perceived about the decision, what that decision maker thinks about a decision near the time he or she is about to decide, and determine how that impacts the resulting decision.

As part of this paper, literature concerning the following areas is presented: intuition, judgment, systems 1 & 2 thinking, bounded rationality, expected utility theory and framing. These were chosen from the literature as overarching principles in individual decision making. For the purposes of this paper, these will be the focal points of individual decision making and conclusions will be drawn on individual decision making using these as the basis for determination.

Intuition versus judgment

There is a great deal of scholarly literature regarding the role of judgment. This is also significant research on intuition. The two areas are often presented together; so much that many scholars define an area of judgment as intuitive judgment. It does appear that the two areas are distinct even though they tend to be closely related. Max Bazerman's book, *Judgment in Managerial Decision Making* is a reference that makes concise explanations of known research concerning judgment in the decision making process. The clarity of the material is a significant strength, as these complicated concepts are easy to follow in Bazerman's writing. Bazerman defines judgment as the "cognitive aspects of the decision-making process" (Bazerman, 2006, p.3). The cognitive aspect

implies that judgment incorporates some level of thinking, possibly intuitive, upon which the decision making process is, at least in some part, dependent. Herbert Simon is probably best known for his contributions on bounded rationality in his book, *Administrative Behavior* (Simon, 1957) which will be discussed later in this paper. However, he also postulated about judgment and judgmental decision making.

"Sometimes the term rational (or logical) is applied to decision making that is consciously analytic, the term nonrational to decision making that is intuitive and judgmental, and the term irrational to decision making and behavior that responds to the emotions or that deviates from action chosen "rationally."

In logical decision making, goals and alternatives are made explicit, the consequences of pursuing different alternatives are calculated, and these consequences are evaluated in terms of how close they are to the goals

In judgmental decision making, the response to the need for a decision is usually rapid, too rapid to allow for an orderly sequential analysis of the situation, and the decision maker cannot usually give a veridical account of either the process by which the decision was reached or the grounds for judging it correct" (Simon, 1987, p.57).

Some literature suggests using judgment or intuition alone is insufficient for a decision making process. Etzioni is a sociologist recognized for work in socioeconomics. His article, "On_thoughtless rationality," (Etzioni, 1987, December) identifies flaws and assumptions in intuitive decision making. The notion of something being a rule-of-thumb is used so often, that the idea of something being categorized as such almost seems to lend credence and credibility to its use. However, Etzioni delves deeper, qualifying first that rules-of-thumb are the identification and adherence to a particular set of rules. These rules are the mechanism by which the simplifying process is enacted. "Rules are provided to individuals by their culture, organization, or are products of their previous experience" (Etzioni, 1987, p.496). Since rules are dependent on the background of the individual and are likely culturally influenced, there is a propensity for rules to be individualistic and present the possibility of inaccurate usage, or application of certain rules where that

application is not appropriate. Etzioni quotes a study performed by Nutt to elaborate on this point:

"'Nutt (1984) studied 78 decision-making profiles of predominantly service or voluntary organizations. He finds that managers violate all the rules advocated by academics for good (rational) decision-making. The managers assume away uncertainty and treat causation and desired results as clear and specific thereby creating a false sense of security: Nutt reports, they have a predisposition to focus their rule search very narrowly as they have low tolerance for ambiguity and a high need for structure' [1984, p.446]" (Etzioni, 1987, p.503).

On the other hand, intuition can be a valuable asset in the decision making process. Daniel Kahneman has written extensively on many areas of decision making, such as judgment and utility. In his article, "A perspective on judgment and choice," Kahneman (2003) points out some of the benefits of intuition. "Intuitive thinking can also be powerful and accurate. High skill is acquired by prolonged practice, and the performance of skills is rapid and effortless. Klein (2003, chapter 4) has argued that skilled decision makers often do better when they trust their intuitions than when they engage in detailed analysis" (Kahneman, 2003). Peters, et. al. (2006) talks about "hot processes" in decision making when reference is made to the emotional aspect not normally considered in decision making research.

"By translating more complex thoughts into simpler affective evaluations, decision makers can compare and integrate good and bad feelings rather than attempt to make sense out of a multitude of conflicting logical reasons. This function is thus an extension of the affect-as-information function into more complex decisions that require integration of information. It implies that affective information can be more easily and effectively integrated into judgments than less affective information" (Peters, et. al., 2006, p.80).

Building on scholarly work from Vroom, scholars have connected judgment and the decision processes to emotion. Maitlis and Ozcelik (2004) go so far as to discuss negative emotional impacts on decision making to the point of calling them toxic. "The concept of a toxic decision process thus connects high-intensity negative affect and decision making in organizations" (Maitlis & Ozcelik, 2004, p. 375). Sadler & Shefy (2004) present an article that argues for the practical application intuition by executives. "Intuition and rationality are complementary to the extent that executives need to be able to learn how

to use each to fit the demands of particular decision-making situations" (Sadler & Shefy, 2004, p.89).

Simon also declares "Intuition is not a process that operates independently of analysis; rather, the two processes are essential complementary components of effective decision-making systems" (Simon, 1987, p.61). The point is that sound decision making is such that it incorporates some portion of a judgmental process along with intuition. He states three critical aspects for improved decision making: knowledge of judgment and intuition, understanding of relevant knowledge required for tasks, and understanding of cues that determine which knowledge is relevant. "With our growing understanding of the organization of judgmental and intuitive processes, of the specific knowledge that is required to perform particular judgmental tasks, and of the cues that evoke such knowledge in situations in which it is relevant, we have a powerful new tool for improving expert judgment" (Simon, 1987, p.61).

System 1 and system 2 thinking

In response to the understanding that some decision making was rapid, automatic and effortless, while others were more logical and methodical, scholars develop a categorization to describe the different approaches. Kahneman (2003) provides a thorough understanding of the terms: system 1 thinking and system 2 thinking.

"There is considerable agreement on the characteristics that distinguish the two types of cognitive processes, which Stanovich and West (2000) labeled System 1 and System 2. The operations of System 1 are typically fast, automatic, effortless, associative, implicit (not available to introspection), and often emotionally charged; they are also governed by habit and are therefore difficult to control or modify. The operations of System 2 are slower, serial, effortful, more likely to be consciously monitored and deliberately controlled; they are also relatively flexible and potentially rule governed" (Kahneman, 2003, p.698).

System 2 is a more logical reasoning process where all available data is analyzed in an attempt to determine a clear decision. However, each time System 2 processes are used; it is likely that System 1 information is accessed as part of the analysis. The information that is accessed is likely to be intuitive in nature. Simplified concepts, available in System 1 thinking, are typically applied to System 2 thinking processes.

"The operating characteristics of System 1 are similar to the features of perceptual processes. On the other hand, the operations of System 1, like

those of System 2, are not restricted to the processing of current stimulation. Intuitive judgments deal with concepts as well as with percepts and can be evoked by language.

The perceptual system and the intuitive operations of System 1 generate impressions of the attributes of objects of perception and thought. These impressions are neither voluntary nor verbally explicit. In contrast, judgments are always intentional and explicit even when they are not overtly expressed. Thus, System 2 is involved in all judgments, whether they originate in impressions or in deliberate reasoning. The label intuitive is applied to judgments that directly reflect impressions—they are not modified by System 2. People are not accustomed to thinking hard and are often content to trust a plausible judgment that quickly comes to mind" (Kahneman, 2003, p. 699).

For clarity, System 1 thinking typically refers to intuitive thinking processes that are involuntary. System 2 thinking processes refer to more rational processes of thought that are slow, methodical and effortful. While the two systems tend to work in tandem, at least when decision making is done effectively, there are times when decision makers find themselves solely in one system or the other. In this instance, the decisions are likely to be less reliable. This is not to say that the decisions are wrong; rather it is to imply that the decision process is incomplete and the best possible solution, or decision, may not have been attained. Decision makers have to become attuned to when they need to move between systems and how to combine them when necessary.

Bounded rationality

Most of the characteristics that are considered System 2 thinking fall into the category of being rational. This is essentially rational decision making, which represents decision making in an ideal state:

- The decision maker has sufficient time and information from which to make a qualified choice.
- There is a near perfect knowledge base from which to draw on the part of the decision maker, and near flawless recognition of relevant data.

Human beings are not capable of controlling all of the events that impact a complex decision, nor are they able to complete the thorough analysis that would be required for a completely rational decision. Simon declares that the rationality of a decision is thus bounded or limited. He attempts

to draw scholars to the concept that understanding how individuals make decisions is best done through an examination of cognition. He draws a neurobiological hypothesis that seems to support his argument:

"A word must be said about the "two brains" hypothesis, which argues that rational and intuitive processes are so different that they are carried out in different parts of the brain. The primary evidence behind this dichotomy is that the two hemispheres exhibit a division of labor: in right-handed people, the right hemisphere plays a special role in the recognition of visual patterns, and the left hemisphere in analytical processes and the use of language" (Simon,1987, p. 58).

Expounding on Simon's bounded rationality, Bazerman offers the following:

While the bounded rationality framework views individuals as attempting to make rational decisions, it acknowledges that decision makers often lack important information on the definition of the problem, the relevant criteria, and so on. Time and cost constraints limit the quantity and quality of available information. Furthermore, decision makers retain only a relatively small amount of information in their usable memory" (Bazerman, 2006, p.6).

Corner, et. al. (2001), use Simon's premise in a discussion of problem structuring. Corner is ultimately focused on how to approach dynamic decisions. The argument is that, first there must be some level of structuring the decision problem. Herein lays the impact bounded rationality, because as Simon postulates, there is only some much information that can be controlled in a structuring exercise. Eisenhardt (1997) considers bounded rationality to be one of three basic approaches to strategic decision making. "Strategic decision makers are rational, but only within the limits of their own capacities. They aim for an outcome which is 'good enough' rather than the best; they rarely explore options comprehensively; and they often redefine their goals during the process of choosing" (Eisenhardt, 1997, p.1).

Quinn (1989) presents an article, "Strategic change: Logical incrementalism" which argues, in line with bounded rationality, that strategic decision making takes an incremental approach. "When well managed major organizations make significant changes in strategy, the approaches they use frequently bear little resemblance to the rational analytical systems so often touted in planning literature. The full strategy is rarely written down in any one place. The processes used to arrive at the total strategy are typically fragmented, evolutionary, and largely intuitive" (Quinn, 1989, p.7). Dean and Sharfman (1993) have

collaborated on several articles, but specifically in "Procedural rationality in the strategic decision making process", they attempt to expound on Simon's concept of procedural rationality. Essentially, there develop an argument some decisions are made relative to the amount of information available, thus the boundedness of the decision is correlated with the amount of available information.

Since it simply isn't possible to draw completely from a rational process, decision makers will and should rely on intuition, biases and heuristics. "In contrast to formal theories of belief, intuitive judgments of probability are generally not extensional. People do not normally analyze daily events into exhaustive lists of possibilities or evaluate compound probabilities by aggregating elementary ones. Instead, they commonly use a limited number of heuristics, such as representativeness and availability. The term *judgmental heuristic* refers to a strategy-whether deliberate or not—that relies on a natural assessment to produce an estimation or a prediction" (Kahneman, 1983, p.294). There are three prominent heuristics in scholarly literature: (1) availability heuristic, (2) representativeness heuristic, and (3) affect heuristic. These heuristics play a large role in assisting the decision maker in dealing with the boundedness of his or her human capabilities.

Expected utility

Inevitably a decision maker is faced with options, the choice of which may benefit the decision maker or establish some level of preference of the outcome. This benefit or preference is known as utility. "Daniel Bernoulli (1738) first suggested replacing the criterion of expected monetary value with the criterion of expected utility. Expected utility theory suggests that each level of an outcome is associated with an expected degree of pleasure or net benefit, called utility" (Bazerman, 2006, p.42). Bernoulli's discussion on utility as translated from Latin to English in *Exposition of a New Theory on the Measurement of Risk* states:

"But anyone who considers the problem with perspicacity and interest will ascertain that the concept of value which we have used in this rule may be defined in a way which renders the entire procedure universally acceptable without reservation. To do this the determination of the value of an item must not be based on its price, but rather on the utility it yields. The price of the item is dependent only on the thing itself and is equal for everyone; the utility, however, is dependent on the particular circumstances of the person making the estimate. Thus there is no doubt

that a gain of one thousand ducats is more significant to a pauper than to a rich man though both gain the same amount" (Bernoulli, 1954, p.24).

Simon also presents information of a variant on expected theory.

"Central to the body of prescriptive knowledge about decision making has been the theory of subjective expected utility (SEU), a sophisticated mathematical model of choice that lies at the foundation of most contemporary economics, theoretical statistics, and operations research. SEU theory defines the conditions of perfect utility-maximizing rationality in a world of certainty or in a world in which the probability distributions of all relevant variables can be provided by the decision makers.

It (SEU) assumed that a decision maker possessed a utility function (an ordering by preference

among all the possible outcomes of choice), that all the alternatives among which choice could be made were known, and that the consequences of choosing each alternative could be ascertained (or, in the version of the theory that treats of choice under uncertainty, it assumed that a subjective or objective probability distribution of consequences was associated with each alternative).

By admitting subjectively assigned probabilities, SEU theory opened the way to fusing subjective opinions with objective data, an approach that can also be used in man-machine decision-making systems" (Simon, et. al., 1987, p.14).

Dean and Sharfman (1996) explore the connections between rationality and expected utility. "Economists equate rationality with utility maximization, a particularly stringent form of rationality in which individuals seek to maximize their expected utility *{e.g.* Bell *et al.*, 1988). This concept is elaborated in decision theory by normative models such as the subjective expected utility (SEU) model *{e.g.* Von Neumann and Morgenstern, 1947). Rather than directly observing individual decisions, economists accept as evidence of rationality-as-maximization its consistency with aggregate economic data. The descriptive accuracy of SEU is not a major concern of the field" (Dean & Sharfman, 1993, p.588).

Other theories concerning utility permeate decision making literature, such as Kahneman and Tversky's prospect theory which argues that

individuals make decisions with respect to their outlook on gains and losses. “Prospect theory distinguishes two phases in the choice process: a phase of framing and editing, followed by a phase of evaluation (Kahneman and Tversky 1979). The first phase consists of a preliminary analysis of the decision problem, which frames the effective acts, contingencies, and outcomes. Framing is controlled by the manner in which the choice problem is presented as well as by norms, habits, and expectancies of the decision maker” (Kahneman, 1986, p.S257). .Rieskamp (2008) presents a more recent alternative to expected utility theory with an article about the priority heuristic.

“The probabilistic nature of preferential choice is manifested in two phenomena. First, the same individual does not always make the same choices in the same (or nearly the same) situations; that is, people make inconsistent choices. Second, when repeatedly encountering nearly identical choice problems, people show varying magnitudes of inconsistency. In other words, for one choice problem, a person might prefer a particular option 99% of the time, whereas for another choice problem, she might prefer a particular option just 60% of the time” (Reiskamp, 2008, p.1446)

“In conceptual terms, the priority model assumes that several comparison processes lead to subjective differences that can vary from context to context as well as over time, explaining the probabilistic nature of choices” (Reiskamp, 2008, p.1448).

Differences in utility have an impact on decision making, because they indirectly infer how a decision is approached. The expected utility theory and other theories of preference in decisions, imply that most decisions don’t allow for perfect utility, so decisions present compromises. Sometimes decisions are made simply on the basis of satisficing.

“Most current work in this domain still assumes that economic agents seek to maximize utility, but within limits posed by the incompleteness and uncertainty of the information available to them. An important potential area of research is to discover how choices will be changed if there are other departures from the axioms of rational choice — for example, substituting goals of reaching specified aspiration levels (satisficing) for goals of maximizing” (Simon,et. al., 1987,.16).

“In the older interpretation of utility, the question of whether choices maximize utility has a simple meaning: do people choose the options that

they will most enjoy? In modern decision theory, which ignores the distinction, the question is quite different: are preferences consistent with each other and with the axioms of rational choice? A long series of modern challenges to utility theory, starting with the paradoxes of Allais (1953) and Ellsberg (1961) and including framing effects, have demonstrated inconsistency in preferences" (Kahneman, 2006, p.222).

Inevitably the goal in a decision process is to make decisions that successfully meet the intentions of the decision maker. Utility is a way to categorize and explain a decision maker's preference. These preferences of decision makers are individualistic and impacted by the individual's frame of reference, or framework.

Framing

Bazerman states that "framing refers to alternative wordings of the same objective information that significantly alter the model decision, though differences between frames should have no effect on the rational decision" (Bazerman, 2006, p.43). This means that basically the presentation of the decision problem has influenced the decision maker's model of approach to decide. The material components of the decision have not changed, thus, the decision should not change under rational conditions. However, as previously noted, decisions are frequently made outside of a completely rational method. In fact, some decisions are entirely intuitive. Scholarly research has begun to consider the effect of framing on a decision maker.

"A decision problem is defined by the acts or options among which one must choose the possible outcomes or consequences of these acts, and the contingencies or conditional probabilities that relate outcomes to acts. We use the term "decision frame" to refer to the decision- maker's conception of the acts, outcomes, and contingencies associated with a particular choice. The frame that a decision-maker adopts is controlled partly by the formulation of the problem and partly by the norms, habits, and personal characteristics of the decision-maker" (Kahneman, 1981, p.453).

Framing does not materially change the conditions of the decision environment; rather it alters the presentation of the information. Framing then, is not so much the intent to change the decision problem, but it is more of an attempt to change the thinking process of the decision maker. Beach (1990) makes contributions to framing in a discussion of image theory. Beach says framing occurs in relation to images. "Images

represent the cognitive structures that summarize a decision maker's knowledge of what is to be accomplished, why, how, and the results of action. The value image represents the decision maker's values, standards ideals, precepts, beliefs, morals, and ethics. Framing occurs as the decision maker utilizes recognition or identification of the current context to define a subset of the constituents of images as having particular relevance for a decision to be made. Meaning comes from the image constituents so activated" (Beach & Mitchell, 1990, p.110-111). Payne, et. al. (1992) put forth an exhaustive article of research concerning behavioral decision research. In this article, Payne expounds on two types of framing: cost benefit and perceptual framework.

"Perceptual frameworks may be the most relevant for the noticing process, whereas cost/benefit notions may be more relevant for determining what to do to take advantage of what has been noticed. A third opportunity for integrating the two frameworks would be to consider that individuals' assessments of costs and benefits for any heuristic may be greatly influenced by perceptual concerns such as how information is presented or how the problem is framed" (Payne, et al., 1992, p. 116).

Einhorn and Hogarth (1981) provide similar research on behavioral decision theory. In a discussion of problem space, they mention that, "it is now clear that the process of representation, and the factors that affect it, are of major importance on judgment and choice" (Einhorn & Hogarth, 1981, p.57). Much of the literature that references framing talks in terms of frameworks that ultimately impact a decision process. Either way, it seems clear that the presentation of a decision problem has an effect on the decision maker. Perspective and perception are two ways in which this effect can occur.

Perspective versus perception

Recent developments in social psychology have begun to focus on the notion of perspective, or cognitive perspective. There is little scholarly research that develops any sort of distinction or comparison with the notion of perspective and the phenomenon of perception. Most literature, as well as dictionaries, refers *to perspective* as essentially an individual's point of view. A considerable amount of literature focuses on a concept of perspective known as perspective taking, in which scholars discuss the impact of differing perspectives.

"Self-consciousness includes the consciousness of one's own mental states, such as perceptions, attitudes, opinions, and intentions to act. Representing and integrating such mental states into a common framework, which represents the integrity of our own mind, requires the ability to take a self- or first-person perspective (1PP).

1PP means the centralization of the subjective multidimensional and multimodal experiential space around one's own body. It can be opposed to the third-person perspective (3PP), in which mental states are ascribed to someone else. This phenomenal level needs to be clearly distinguished from an underlying representational level, on which different reference frames representing the locations of entities in space can be differentiated" (Vogeley, et. al., 2004, p.817).

Vogeley explains that perspective is a phenomenon that happens relative to an individual's frame of reference. This principle is extrapolated and applied to perspectives in decision making; essentially an individual's mental state is imposed upon a decision situation. This theoretical understanding of perspective from cognitive psychology along with a basic definition of the term, perspective, will offer a clearer understanding of the phenomenon. The definition of perspective is: "(a) the relationship of aspects of a subject to each other and to a whole, (b) subjective evaluation of relative significance; a point of view, and (c) the ability to perceive things in their actual interrelations or comparative importance" (Dictionary.com, 2009). This is critical to the decision making process, because it is essentially where the decision maker uses past experience and attained knowledge as a way of sorting through information in a decision.

Once the decision maker has grasped the information associated with a decision, he or she attempts to formulate relationships amongst the data. The relationships that the decision maker is able to draw are correlated to the decision maker's perspectives. Mintzberg's argument on unstructured problems alludes to the manner in which perspectives are applied to a decision.

"The research on individual decision making, perhaps best represented by the Newell and Simon book Human Problem Solving (1972), relies largely on eliciting the verbalizations of decision makers' thought processes as they try to solve simplified, fabricated problems, such as in cryptarithmetic or chess. These are then analyzed to develop simulations of their decision processes. This research indicates that, when faced with a complex, unprogrammed situation, the decision maker seeks to reduce

the decision into subdecisions to which he applies general purpose, interchangeable sets of procedures or routines. In other words, the decision maker deals with unstructured situations by factoring them ***into familiar, structurable elements****. Furthermore, the individual decision maker uses a number of problem solving shortcuts—"satisficing" instead of maximizing, not looking too far ahead,* ***reducing a complex environment to a series of simplified conceptual "models"*** *(Mintzberg, 1976, p.247).*

This speaks to the bounded rationality of the individual. Given an unstructured decision problem, the decision maker will ultimately draw upon perspectives to reduce a complex problem into smaller and more familiar structurable parts. These smaller, more familiar parts are deduced by the point of view or vantage point of the decision maker.

On the other hand, *perception* has not been fully defined perhaps because it is commonly accepted as dealing solely with the senses. One the surface, perception is information gained through the senses for the development of knowledge. However, there has been significant research on perception in the field in psychology. Gibson (1976) acknowledges the following concerning perception and the information processing movement:

"The information-processing movement in psychology takes for granted that sensory inputs are the basis of perception. Everybody knows what inputs are. They have been studied in sensory physiology and sensory psychophysics for more than a century. Inputs are transmitted along channels, that is, nerves, and the special senses are defined by the nerves that transmit. The sensory inputs have to be processed because they are by themselves insufficient for perception. Processing occurs in the brain. But, instead of describing it as the operation of the mind on the data of sense as the ancients did, modern psychologists use new terms either from Gestalt theory or computer theory or both. Mendelson and Haith are in favor of terms like 'information-acquisition routines'" (Gibson, 1976, pp.62-63).

Gregory (2008) uses a discussion on illusions to draw conclusions about cognition and perception.

"Recognizing is not from matching the present image to a remembered image; but rather to a web of associations stored in memory, and these tend to be very different for people sharing the same experience, making testimony puzzling and hard to trust.

Rich cognitive processing fits Helmholtz's account of perception as Unconscious Inference, especially as inferences are from descriptions, and never directly from facts or phenomena. Perceptions seem, indeed, to be like hypotheses of science, being largely fictional accounts but indirectly related to objects and events.

Recognition is not from remembered retinal images; but rather from all manner of associations, depending on individual knowledge and interests. So recognition of the same object or event can be very different, for each observer or witness" (Gregory, 2008, pp.408-409).

Max Wertheimer is recognized for Gestalt theory. Gestalt theory is a concept of perception that alludes to the idea that a perceived whole is greater than the sum of its parts.

"Viewing wholes as the mere sum of their component parts, he argued vehemently, does violence to the true nature of these wholes; parts must be seen in terms of their place, role, and function in the whole of which they are parts. While a few wholes in nature in some sense are just the sums of their parts (perhaps a pile of pebbles or a handful of coins), such instances are rare cases of an extreme of inertness. In the great majority of cases, the whole does not equal the sum of the parts, nor is it merely more than the sum of the parts—the typical whole is so different from a sum of its parts that thinking in any such summative terms yields only a distorted, impoverished caricature of genuine reality" (King, et. al., 1994, p.911).

Built mainly from this concept of the whole being greater than the sum of the parts, Wertheimer's argument presents that human perception is more than the acquisition of information from sensory systems, but also the whole of applied experience, meaning and individual context (King, et. al., 1994). Wertheimer is said to have, "believed that meaningful comprehension arrives only when details are seen in their interrelatedness" (King, et. al., 1994, p.912)

Along with the theoretical understanding concerning perception, a basic definition is helpful in developing a premise. Perception is defined as: "(a) The act or faculty of apprehending by means of the senses or of the mind; cognition; understanding, (b) immediate or intuitive recognition or appreciation, as of moral, psychological, or aesthetic qualities; insight; intuition; discernment, (c) the result or product of perceiving, as distinguished from the act of perceiving; percept, (d) a single unified awareness derived from sensory processes while a stimulus is present"

(Dictionary.com, 2009). Therefore, as a decision maker uses senses to apprehend information, he or she is also cognitively, whether consciously or unconsciously, attributing meaning to, and exhibiting awareness of that perceived information. The decision maker is trying to "make sense" of the information gained without yet applying or imposing any point of view upon it.

"Cognitive scientists suggest that how individuals make sense of and act within their environments is tied to their cognitive frameworks or mental models (Abelson 1976, Fiske and Taylor 1991). At the most basic level these frameworks can be defined as "abstract representations" of things or events (Weick 1990, 1995). They are developed over time through experience, vicarious learning, and direct communication from others (i.e., teaching) (Fiske and Taylor 1991). The development of these frameworks is path dependent; as individuals interact with their environments and build cognitive frameworks, they use those frameworks to make sense of future interactions. Thus, the past shapes the template for understanding the future.

Cognitive frameworks affect each component of a sensemaking process (Daft and Weick 1984). They influence what is noticed by making some stimuli more salient than others; they provide rules and relationships that infiuence the interpretation of what is noticed, and they suggest what actions should be taken by which individuals (Galambos et al. 1986).

When confronted with stimuli, these frameworks enable managers to "comprehend, understand, explain, attribute, extrapolate, and predict" (Starbuck and Milliken 1988 p. 51)" (Bogner, 2000, p.213).

When a decision maker perceives external stimuli, they gather information and associate meaning. It is the perspectives of the decision maker, developed over time through skills and experiences that shape the decision maker's interrelationships of the meanings of the external stimuli. Therefore, as a decision maker applies perspectives to a decision environment, the decision maker is actually broadening or narrowing his or her overall perception or what is perceived, of the decision environment, thus affecting the decision. It is this overall perception of a decision environment, affected by the perspectives of a decision maker, which has such an impact on the decision process. People bring differing perceptions to decisions that affect how their decisions are made. Hunt

describes how decision makers with different styles of thinking can perceive information differently.

"A related set of categories contract "Analytic" and "Intuitive" individuals. The analytic individual is seen as concentrating on detail and thus breaking that which is observed into component parts. In contrast the intuitive individual comprehends the field as an integrated whole. Such consistent differences in individuals' perception and assimilation of information amount to "styles" of thinking which define how a person comes to grips with complex problems, both in terms of conscious strategies and unconscious habits" (Hunt, 1989, p.439).

Decision perception (concept and characteristics)

Based on literature, judgment and intuition are critical aspects of decision making. Judgment is implied in decisions that are both intuitive and analytical, while intuition is related to decision processes that are rapid. However, some literature suggests that intuition is not independent of analysis. System 1 & 2 represents ways to categorize the distinctiveness of decisions that are rapid (system 1) versus those that are slower and more methodical (system 2). Bounded rationality establishes that human capability can only go so far. Therefore the ability of the decision maker to make a rational decision is bounded or limited based on the limits of the human brain. Framing is a way of presenting the circumstances of the decision situation. Perspective and perception are related to the decision process in different ways. However, some literature and definitions of perspective and perception have lead to a conclusion about their connection. Perspectives sort through information to find interrelationships amongst data according to a decision maker's expertise, experience, biases and skills. Perception is the apprehension of data gathered through the senses and the association of that data into meaning. In a decision process, perspectives and perception appear to have a connection. The connection being that the perception of a decision, in an overall sense, is dependent upon the perspectives and associated meanings of data by the decision maker. This overall perception that affects the decision process establishes that perception is a characteristic pertinent to decision making.

Perception is critical in the decision making process, because it defines internally how a decision maker cognitively understands the decision problem that he or she is addressing. While the information being

perceived is likely to be constant, and observable by others, that information may be conceptualized far differently between individuals. By virtue of the different experiences, skills, and backgrounds that various individuals bring to a decision, the perception is individualistic. Decision criteria are susceptible to varying interpretations based on differing perceptions of people.

A decision maker's perception can fall anywhere in a large spectrum of possibilities between completely intuitive to completely analytical reasoning. Given that decisions have components that can be addressed "analytically" (Hunt, 1989) and others addressed "intuitively" (Hunt, 1989), it seems plausible that decisions could be made better when both components are considered. Analysis of current relevant data is important to establish validity of a decision in its current environment. Intuition is a rapid application of knowledge learned from previous insight and expertise assisting in the confidence of the outcome. Ideally, there is a perceptual range in which the decision maker is most likely to make the best decisions. This perceptual range is the conceptual area where a decision maker approaches a problem with ample insight and expertise, and sufficient analysis of current data. Therefore, Decision Perception stipulates that decision makers are more likely to make sound decisions when approaching the decision from an *ideal perceptual range* (see figure 1 in the Appendix at the end of the paper). The ideal perceptual range is theoretically intended to assist a decision maker in drawing conclusions about decisions in their most true contextual circumstances. It is conceivable to consider this perceptual range as an attempt to offset excessive erroneous biases and preconceptions with relevant data, and offset endless analysis with ample expertise. It is an attempt to approach decision making from an ideal middle-ground. It should be noted that in order to satisfy the requirement of being analytical and intuitive, decisions made from an ideal perceptual range are those made when the decision maker has sufficient quantity and quality of current data for analysis and ample expertise and insight for the interpretation of meaning and interrelationships of data.

In a decision problem, the conditions are likely to be known and possibly constant. The perception of the decision maker is more likely to be influenced by various factors.

"*A simple schematic model of decision making would conceive it in terms of three interacting components, namely, the decision maker, the task, and the decision context or situation. These components are assumed to influence both the decision process and eventual decision outcomes.*

To illustrate: a decision maker may be viewed as a stable personality bringing to a task certain beliefs, predispositions, skills, experience, and a distinctive cognitive style, all of which sum-up to describe the decision maker's personality. Meanwhile, a focal decision task is a 'demand' property of an actor's environment that serves to orient attention. It would be describable in terms of its structure and content. Finally, the decision situation refers to ecological or contextual factors or conditions, both conceptual and circumstantial, in which both the decision maker and the task are embedded, such as time pressure and decision importance, for instance" (Hunt, 1989, p.440).

Hunt's final point on contextual factors is pivotal, particularly as his point portrays these factors as circumstantial. The decision situation being faced in inevitably grounded in a series of stable facts. While perception of the facts may be varied, the conditions or circumstances of the decision situation are likely stable. Therefore, if framing represents the varying perspectives of the decision maker on the decision problem, then the constant aspects of the decision environment can be thought of as the context of the decision. Thus the decision context is the circumstantial conditions that make up a decision situation. Hence, decision context is the concept that there exists a grounded set of circumstantial conditions that make up any decision situation.

"Fox and Irwin identify factors that influence people's interpretation of uncertainty statements made by others. Although this article focuses on the interpretation of statements father than on the explanation of events, it is comparable to Monis et al.' s in its recognition of the importance of the social context and its integration of social phenomenon with decision making. They argue that an answer to the question, "What do these statements mean?" will not be complete without an understanding of the broader social context in which such statements are made. More specifically, the authors identify social, informational, and discourse factors that influence the creation and interpretation of qualitative nsk statements. Drawing on decision making, social psychology, and risk communication literature, they specify the broader social context that needs to be considered, including:

1. The receiver's prior beliefs and worldview.

2. The receiver's interpretation of the context in which the sender's beliefs were formed.

3. The receiver's assessment of the sender's decision tendencies.

4. The receiver's interpretation of the context in which the sender's beliefs were stated.

5. The receiver's understanding of information.

6. The receiver's interpretation of the context in which the statement was embedded" (Bazerman,1998, p.89).

APPLICATION OF DECISION PERCEPTION TO THE PROPOSAL PROCESS

"This is not the decision making under uncertainty of the textbook, where alternatives are given even if their consequences are not, but decision making under ambiguity, where almost nothing is given or easily determined" (Mintzberg, 1976).

The proposal process presents a significant number of opportunities to view perception as a determining factor in the decision process. While components of the process are fixed, such as requirements and deadlines, meeting those criteria presents challenges in the forms of decisions that could sway the ultimate award of the contract. This paper will now focus on ways in which perception impacts the four decision areas identified earlier.

Decision perception in the bid / no bid decision

The decision to bid is critical, and the perception of the decision maker to do so or not ultimately impacts the success of the business. The contractor must view the possibilities of pursuing the bid with the costs, both financial and otherwise, of not pursuing the bid. Herein lays the greatest perceptual problem. Does the decision maker believe that the bid will lead to a successful profitable contract for the company? The decision maker may perceive this as an opportunity to excel in the market place, block the accent of a competitor in the market place, or simply take advantage of superior capabilities the contractor has. The cost of pursuit is also a major consideration. If the proposal is lost, the company could lose substantial sums of investment, market share in the industry, or key personnel required to pursue future bids.

Some of the literature has shown that many contractors make these critical decisions by subjective means. Calculations of resources, project relationships, and risks are considered primarily based on intuitive examination with little attention given to in-depth analysis. This is not to say that the decisions made are incorrect. This is to say, however, that the highly subjective nature in which many of these decisions are approached lends credibility to the possibility that these decisions are predicated on a significant amount of perceptual understanding and likely outside of a theoretical ideal perceptual range. A significant knowledge of the context in which a decision situation exist would offer insight as to whether data available at the time is of sufficient quality and quantity to incorporate reasonable analysis and lead the decision maker more into an ideal perceptual range.

Decision perception in the teaming arrangement decision

Some of the literature alludes to the idea that working alone in the defense contracting industry limits competitiveness. Major contracts in the market today are won by contract teams. That means that a decision maker at a contractor is faced with a decision on whether to team, if permitted to bid without teaming, and with whom. There are advantages and disadvantages to both, if given the choice to decide by the requirements of the RFP. Even in those instances, when the RFP stipulates that certain teaming must take place, such as in small business requirements, the question remains which contractor represents an adequate partner.

It shouldn't be difficult to see that this presents a real problem for the decision maker. Does the decision maker perceive that a particular relationship with a strategic partner today might prove to be a strategic problem on a future bid? How much and what part of the contractual effort will be proposed as being shared with the teammate? There is evidence of successful teams in defense contracting and there is evidence of unsuccessful teams in the industry. The decision maker must view the landscape and decide. In the context of the RFP, the contractor must determine how much teaming is mandated, such as small business requirements, and choose teammates accordingly. The ideal perceptual range in this case includes the point where possible teammates and their capabilities are known. The ideal perceptual range here also includes the point where the requirements of the RFP and SOW (statement of work) are clearly understood, so as to establish technological advantages. Last, internal competitive advantages should be closely guarded as the sharing

of information is prevalent among teams. The perception of the decision maker about these considerations is likely to move the contractor in one direction or another, and it could be the direction that leads to a path of success or failure.

Decision perception in the price to win decision

Price is the one area amongst the four decision areas identified in this paper where the overemphasis on analysis, the more likely the error. Due to the large span of possibilities for price on defense contracts, decision makers are typically inundated with price analysis data with which to make a decision. Defense contractors are still businesses attempting to make a profit, so the ultimate goal is clear, try to earn more than it cost to perform the service or produce the product. Working with the government is unique in that the government dictates how much profit can be made. Therefore, contractors have several factors to consider when developing a price.

When considering price, there is no lack of information, and the information provided may still not be enough. Contractors have data such as the salaries of their personnel, hours required for services, or material required for products, delivery schedules, costs associated with possible teammates, financing provisions, and requirement specifications when the decision on price is presented. There are many other factors as well. Are the employee costs covered? How fast are the delivery dates? What are the probable costs of teammates? What are the payment terms? How much profit is allowed? The challenge for the decision maker is to review the data and make an assessment on what it means. In such cases, the more intuitive qualities of the decision maker assist in bringing the decision maker back into an ideal perceptual range.

As discussed earlier, sometimes the specifications are not definitive and the type of work may never have been done before. Contractors might be able to specify with measureable certainty what the price would be for more define requirements, but in this instance, the contractor is required to make subjective projections of what the costs will be for uncertain requirements. The end goal might be specific, but the path is undetermined. Also, sometimes contractors have general information about their competitors that now have to be considered. Now, not only does the contractor have to develop a price that can win and offer a reasonable profit, but the contractor must develop a price that will be considered more favorable in comparison to the competitor. That doesn’t always mean a lower price than the competitor, but the

competitor's position and price must be considered. The goal is to win the contract, by beating the competitor when those conditions are present. Since the competitor's price and capabilities are not known as a certainty, any consideration of the competitor is a perceptual consideration and the decision maker's response should be one that is made within the bounds of an ideal perceptual range.

Decision perception in the contract negotiation decision

Once a proposal has been submitted, the proposal process goes to a final phase. In most competitive bids, the contractor may reach a point where they will have negotiations with the government agency, in this case DOD. As mentioned earlier, these negotiations are focused mainly on price, but there could be technical or managerial aspects for clarification that get addressed in these negotiations. The government has the responsibility to procure goods and services at a fair and reasonable price. They may bring various financial aspects of the proposal into question for that purpose. The decision maker is likely aware of the possibility that the government will challenge costs factors, even when there is little else than the contractors knowledge of the technological landscape and competition to determine a reasonable price. The contractor may rely on intuition, among other things, to determine whether to price a contract without contingency costs (costs the contractor assumes will be removed after negotiations).

Whether or not contingency costs are incorporated in a contractor's bid, negotiation is likely to take place and DOD may determine that costs need to be reduced or adjusted in some fashion. During these negations, time may allow for revised pricing efforts or it may not, so the decision maker must weigh the possibilities. This is where perception plays such a heavy role. Absent any change in the scope of effort, if costs are reduced, can the contractor successfully complete the effort with a reasonable profit? Is the negotiated profit reasonable? Can the contractor reduce human resources or purchased material to meet financial targets and still meet technical requirements and internal profit expectations? Time does not usually permit the decision maker to make thorough analysis on these new considerations, so analytical preparation is usually made in advance. However, making decisions of this nature still requires ample expertise to approach an ideal perceptual range. Regardless of the amount of effort made in the earlier stages, insufficient decisions made outside of an ideal perceptual range could still lead to failure at this late stage in the proposal process.

SUMMARY

The decision areas in this paper have been approached separately, but the decision areas are actually quite intertwined. There are few instances, if any, where the decision to bid doesn't consider aspects of teaming, price, and possible customer negotiations. Similarly, a major consideration in teaming is price and bid scenarios. No pricing efforts are initiated without a decision to bid, nor are they finalized without a consideration of teaming. These areas make up only a few decisions facing the contractors, but they are critical to the process.

Inherent in these decisions are places where subjective intuition seems to have a priority in decision making, while others lend themselves to more objective and analytical decision making. This paper has presented that sound decisions are more likely to be made when the decisions are considered from the context of both intuition and analysis. This is because perception has been shown to impact the decision maker and ultimately affects the decision process. Therefore, a decision maker must diligently work to recognize the perceptual effects and strive to level the decision making process by entering into a more balanced ideal perceptual range when making decisions.

Understanding the impact of perception in the decision process is critical, because just as this paper has proposed concerning defense contractors, many decision makers may not be aware of the components of the decision process that affect his or her decisions. It is not enough to accept that a decision maker has biases; rather it is important to dig deeper to understand how those biases and preconceptions impact the decision process. It is this understanding that assists the decision maker to use that knowledge to either nullify its impact or use this knowledge to his or her advantage. Categorizing decision perception as a characteristic of decision making is intended to shine light on the phenomenon, so that managers and leaders at all levels might understand how they are internally influenced by and how they internally impose influence upon a decision situation. Possibly, the channeling of this perceptual understanding could prove to be a valuable part of leadership training in the future.

Theory begets practice and concepts are the prelude to process.

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Appendix

The Ideal Perceptual Range Diagram

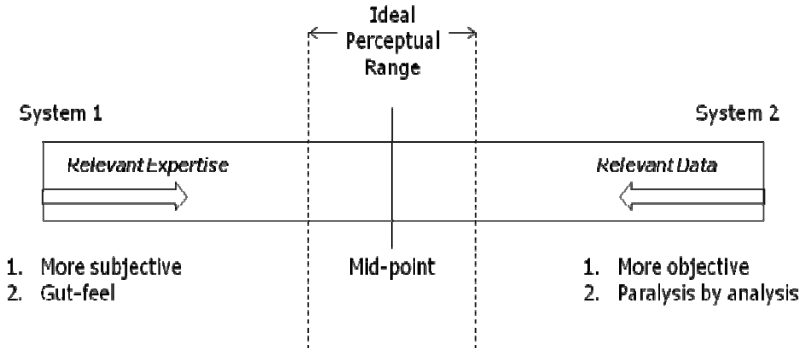

Figure - 1