

PEER REVIEW DRAFT

The Agility Advantage: A Survival Guide for Complex Enterprises and Endeavors

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Chapter 5: Introduction to Agility

Agility is not a way of reducing problem difficulty, but rather a way of dealing with the combined effects of the presence of complexity and uncertainty.¹

Someone reviewing the characteristics of complex situations and systems identified previously could be forgiven if they experienced a sense of frustration and hopelessness. The need to control has been identified as a basic human need. A lack of control has been identified as a major source of stress. However, the characteristics of complexity directly challenge our ability to fully understand situations or control outcomes. Complexity also greatly increases the risks we face.

Let us review the list of truths about complexity and see how its presence reduces our ability to understand, reduces our control, and increases risk.

The whole is more than the sum of the parts.

This property of complexity takes off the table the main approach we have been taught to tackling difficult problems. This approach, known as reductionism, involves breaking up the problem into manageable pieces. That is, to discompose the problems into a series of smaller, easier problems that can be solved.

Small changes in initial conditions may produce large changes in outcomes.

This property of complexity gives us little room for error and makes reliable prediction all but impossible.

The response surface contains discontinuities.

This property of complexity takes away approaches to improving performance based on sustaining innovation.

Even perfect information about the initial conditions is not sufficient to predict behaviors and outcomes.

¹ Even if complexity were not present, certain situations or problems have significant levels of uncertainty that require agility in addition to statistical decision theory.

This property of complexity serves to put a limit on the value of information and call into question the underlying assumptions and the investment strategy of information age organizations that focus single-mindedly on providing the right information to the right place at the right time.

It is beyond our current abilities to establish cause and effect relationships between individual behaviors and outcomes.

This property of complexity makes it likely that we will face situations that we do not completely understand and cannot hope to understand.

Global behavior emerges from the set of local interactions that take place.

If it is local interactions that give rise to the outcomes that occur, we can no longer think about organizing activities solely from a top-down perspective. The simple fact is that complex systems or situations cannot be predicted or controlled. The best that one can hope for is to exert some influence to keep behaviors within acceptable bounds.

As a result, there is virtually nothing left in our traditional tool kit to deal with the degree of difficulty that attends complex endeavors. Agility is not only the logical response to complexity and the uncertainty, risk, and time pressures that are associated with complex situations, tasks, and problems, but perhaps the only response.

Many words have a more specialized definition that is accepted in an academic or scientific community in addition to their meaning when used in everyday conversation. This is a source of confusion, particularly when there needs to be an interdisciplinary conversation, a conversation that includes members from a number of different disciplines, educational levels, and backgrounds. If there is to become a wide-spread understanding of the concept of agility and its application to individuals and the organizations, processes, systems, and products that we design, develop, and use, we will need to avoid jargon. This introductory discussion of agility and the discussion of the basic concepts needed to understand why agility is an existential capability in this new age is intended to level the linguistic playing field and promote meaningful dialogue.

The concept of agility will be explored in depth from multiple perspectives throughout the remainder of this book. Since you, the reader, have almost certainly used the term agility and have come to associate specific ideas and properties with this term, this introduction is provided to help you relate your current view of agility to the concept

that is described in this book. Whether you choose to adopt the meaning of the word as it is employed in this book is not important; what is important is that you understand the sense in which the term is being used here and can translate these ideas into your own language.

Some years ago, when I became seriously interested in exploring agility as a way of dealing with what I thought of as profound uncertainty and, as a practical way of coping with complexity, I began to engage a variety of colleagues. It soon became apparent that there was a wide variety of ways in which individuals articulated their thoughts about agility and the meanings that they attached to terms closely related to agility. Every meeting, it seemed, began with a lengthy airing of individual perspectives and as a consequence, little progress was made. Finally, it was determined that we needed to set aside a number of days to devote to a more systematic discussion of agility and to try to develop a common language. As a result of these meetings, a number of agility-related concepts, alternatively labeled as dimensions, attributes, properties, components, or capabilities, were identified. These included responsiveness, robustness, flexibility, resilience, adaptability, and innovativeness.² I think that the term component is the best among the terms that have been used to date. A component implies that it is a part of something, not just an enabler or influence. In mathematics, a component of a vector is an integral part of the vector's direction. In chemistry, a component is one of the minimum set of substances required. As readers will see later in our discussion, at least two of these components are needed for an entity to exhibit or manifest agility in a particular circumstance. Different combinations of these will come into play as circumstances change.

There was a strong sense among those participating in these discussions that agility was, in fact, an overarching concept that encompassed all of these six properties, or what I call components of agility. Further, that these properties could be associated with a wide variety of entities (e.g., individuals, organizations, processes, systems, machines). A major reason for this was that, in any given entity, these properties of agility are inter-related. Looking at one or any subset of these components was, therefore, going to result in ignoring some, perhaps significant, synergies or adverse interactions between and among them. Thus, to be able to understand agility, or any subset of the components of agility, one needed to look at the concept and the impacts of agility holistically. In other words,

² The specification of agility as a composite or umbrella variable with these six properties was first developed in a US/UK bilateral meeting and first appeared in *Power to the Edge* pp.127–128 (see Acknowledgements).

Agility is more than the sum of its component parts.

Having come to the conclusion that agility was a meta-concept and having settled on its six properties was a major step on the road to developing a useful definition of agility. However, merely listing the components of agility does not provide a useful definition. A useful definition should provide some guidance as to how to answer the following questions. Why would you want to be more agile? How do you know if you are more or less agile? After considerate discussion, the following simple definition was developed.

*Agility is the capability to successfully cope with changes in circumstances.*³

It is important to note here that agility is not simply about being successful; rather it is about maintaining success in light of changed or changing circumstances. Changes in circumstances may be quite predictable or they may be totally unanticipated. Not all possibilities are equally likely. Not all potential changes in circumstances deserve equal attention.

Figure I-3 identified nine categories of risks associated with present or future circumstances. Changes associated with risk areas 1, 2 and 3 may be safely ignored, since lavishing attention on these possibilities distracts entities from preparing for and dealing with legitimate concerns. Learning to ignore these potential distractions frees up time and resources that can be devoted to developing a capability to successfully deal with traditional requirements and with Black Swans. Of the remaining six risk areas, 6 and 9 are associated with events that occur with high frequency. These high probability events are likely to have been experienced in the past, if not by a particular entity then by another entity. Thus, it would be reasonable to conclude that entities would specify these circumstances in any statement of requirements for a systems, process, or organization.⁴ Dealing with these requirements should be, at least in theory, quite straightforward, and entities should be able to anticipate and prepare for them as a matter of course. Traditional preparation activities such as planning, education, training, exercise, and rehearsal are designed to help entities cope with known

³ This simple definition has been modified since to emphasize some aspects of Agility that were felt to be not readily apparent. A more detailed discussion of Agility later in this book incorporates some of the additions to this definition that have been suggested by others.

⁴ If the reader feels that these simplifying assumptions are not appropriate then the solution would be to add additional dimensions to this chart—a third dimension that divides the space into known and unknown, and a fourth dimension that divides the space into familiar and unfamiliar.

requirements. In practice, for a variety of reasons, these often get short-changed and as a result, entities are simply not prepared for the circumstances they encounter. This failure is not a failure to be attributed to a lack of agility but rather to a lack of ability or competence.

Risk area 7 involves rare events that have important consequences. These are one of the most significant challenges of the age of interactions. Events that are (or thought to be) rare present a challenge for planners and decision-makers. This is because the traditional approach to rational decision-making is based on expected values. Very low probability events that have high, even catastrophic consequences have, nevertheless, low expected values, at least for a particular instance of one of these low probability events. As pointed out in the discussion of uncertainty, not only are humans not particularly good at estimating probabilities in general, they are even worse at understanding low probability events. This, plus the fact that there is a huge difference between the probability of a single event and the probability that no low probability-high consequence event will occur, makes coping with Black Swans challenging. For example, if the probability of occurrence is one in a million, people tend to ignore this possibility. If there are 100 equally low probability-high consequence events, the situation is quite different. Many people would conclude that there is only a 1 in 10,000 chance that one of these 100 events will occur, and not feel particularly threatened. In fact, the probability that none of these events will occur is equal to 1 in 100, a far cry from the 1 in 10,000 that many people intuit. Furthermore, there is a time dimension to consider. If this estimate was for a period of a year, then the risk of something occurring in a 10-year period would be not 1 in a 1,000, but approximately 1 in 10. This probability calculus provides at least one explanation as to why what we think of as rare events occur more often than we expect and why we tend to be caught unprepared.

Some readers will conclude that improving education and training in probability theory would enhance our ability to prepare for low probability events, and to some extent it would. However, due to the complexity of our environments and the increasingly complexity of our new self—a heterogeneous collective—being able to estimate these probabilities and being able to understand and develop optimal responses for all or even a small fraction of the relatively high probability events, is unrealistic. We need a different approach, one that improves our agility so we are not so dependent upon making predictions in the head winds of complexity.

In Part IV, Understanding Agility, I will build upon this simple definition. Starting with a more detailed discussion of each of the terms, I will enhance this initial definition to

provide a point of departure from which we can develop an overall understanding of what benefits agility has to offer entities, and to enable entities to make better informed investment decisions regarding how much agility is desirable. These investment decisions, properly framed, will turn out to be a function of the nature of the circumstances faced (relevant aspects of the environment plus the status of self) and the state of our understanding of these circumstances.

Part I Review—Part II Preview

This first part of the book was devoted to a discussion of the fundamental concepts needed to understand the need for and the nature of agility. The three determinants of problem difficulty—uncertainty, risk, and time pressure—were identified. The concept of complexity was introduced. The relationship between complexity and problem difficulty was explained. The reasons why traditional approaches to problem solving were not up to the task of dealing with complex problems and complex endeavors were identified. The inevitable conclusion that a new approach was needed was reached. Part I concluded by introducing the concept of agility and by asserting that agility was the appropriate response to levels of problem difficulty that could not be reduced by other means.

Since some level of complexity has always been a part of our environment and is present in many of the situations we face, readers could well be wondering what's different about this new age that makes dealing with the consequences of complexity more important? Part II will address this question. It will review the developments that have led to the dawning of this new age and explain why the challenges that we find so daunting are a direct consequence of the capabilities that are associated with the information age. It will explain, in greater detail, why the methods and tools of previous ages are no longer as useful as they once were.

In this part of the book, the U.S. military is used as an example of an organization that has invested heavily in information age technology and has sought to transform itself into an information age enterprise. In this discussion, and in the remainder of this book, the focus is on how the information age concepts and technologies have affected the way the military is organized and how it is attempting bring to bear available information and assets in the planning and execution of its missions. It will also look at the ways in which military missions have changed, relate these changes to the realities of the new age, and identify the challenges to information age capabilities that have and

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are being developed by the military. The conclusion that will be drawn is that an information age military is not up to the challenges of the new age.

Fortunately, the information age has provided us with some of the capabilities we need to successfully meet these challenges. Thus, all of us have an opportunity, should we choose to take it, to build on a set of information age capabilities and to develop new age capabilities that will enable us to survive and prosper.