The Complexity of Creativity and Leadership in Entrepreneurship

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Successful entrepreneurship requires succeeding at many different factors and in their very complex and complicated interactions. Researchers attempting to develop models to predict or guide entrepreneurial success are overwhelmed by all the different ways entrepreneurs manage to succeed, as well as all the ways they manage to fail. Some see the process as simple luck: if enough people try to start businesses, they cannot all get it wrong. Therefore, an investor learns to buy a large portfolio of ventures, so that a few big winners will overcome the losses of the many. Others take and evolutionary approach: new methods of business (seen as random mutations) are copied and spread, leading to success. Others have looked to the concepts of chaos theory and complexity, an analysis that allows one to explain enterprise behavior and success as the result of a specific complex interaction of factors, but does little to predict which enterprise will have the right pattern.

Entrepreneurs see the problem from the other side. They are not trying to predict the average behavior of a group of companies, they are trying to make one company survive and thrive. Fortunately, there is strong evidence that humans can understand and deal with complexity and be successful. There is more to success than chaos and luck.

Having or acquiring resources, knowledge, and relationships is critical to success, but factors such as creativity and leadership have a great deal to do with how effectively these resources are selected and how well they come together. Individuals and teams may vary in their creativity and leadership, but there are also various educational and developmental resources to increase creative and leadership performance.

It is important to note that the creativity and leadership needed by successful entrepreneurs may be different in many ways from the lessons normally focused on in educational and training programs. The ability to help people deal effectively with complexity and complicatedness is one of these critical differences.

The Creativity of Entrepreneurship

Many stories are told of entrepreneurs succeeding through creativity when resources were lacking, leading people to believe that an entrepreneur's life is constantly creative. The fact is that most of what a successful entrepreneur does can be pretty boring. It is doing the bookkeeping, expediting manufacturing and shipping, keeping an eye on all the members of the enterprise and filling in when someone is missing or overloaded. A lot of time is spent selling new customers and building trust with suppliers and investors. Not much is spent getting big new ideas.

Most successful entrepreneurs have learned that one succeeds in large part by relying on proven processes and components, only investing creativity where there is a real impact on market or profitability. An entrepreneur can rarely afford to invent all the elements of their product and

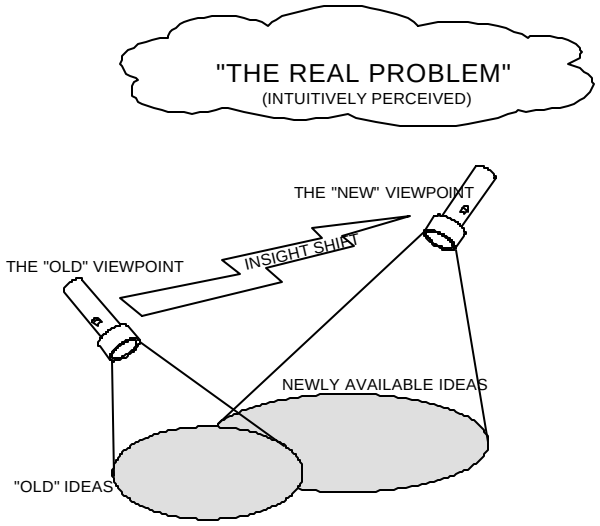
their organization. Edison realized that electric lights were a great idea, but that thousands of smaller problems such as transformers, generators, transmission lines, switches, and trustworthy meters had to be solved before the idea could become an entrepreneurial success. Fortunately, he had adequate staff and funding to carry out that development.

Many entrepreneurs attempting to invent solutions and design elements which will give one a competitive advantage begin to realize that while the energy flow and flexibility of a traditional brainstorming session is important, the solutions required are much more complex and complicated than the short ideas generated by a traditional brainstorming session. Fortunately, tools are available which enable individuals and teams to comprehend and create within the complex dynamics of an enterprise.

Creativity: "Out of the Box Ideas" or "Better Box Insights"?

While it is necessarily true that any creative innovation must somehow be "outside the box" of habitual thinking, successful innovations are a very small part of what is outside the box. Those who say, "Don't raise the bridge, lower the water" are seen as jumping outside the mental constraint implicit in the goal of "raise the bridge". Also outside the box are ideas like blowing up the bridge, or freezing the water and jacking up the bridge, ideas that can really interfere with allowing trains or cars to pass one way and boats the other. They are certainly "out of the box", but do not trigger that same AHA reaction that we all get when creativity occurs. It is not enough to be "out of the box".

In the drawing below, flashlights serve as an analogy for the perspectives we use to focus our thinking. On the "floor" containing all possible ideas and alternatives, each flashlight illuminates only those ideas that fit the perspective, such as all the ways to "raise a bridge". When people say, "Don't raise the bridge, lower the water!" they have changed to a new flashlight, such as "increase the gap" or "get tall boats past the bridge". The picture is designed to illustrate a few points:



- This shift of thinking is shown as a lighting bolt, because it can happen instantly, although it may also take all of our lives to

- The second flashlight is closer to a cloud labeled "the real problem, intuitively perceived." This is meant to indicate that we are aware that the new viewpoint is somehow “closer” to the ultimate and total problem. The closer the second perspective is to fitting the “real” problem as we perceive it, the greater the AHA experience.
- What makes the idea creative is both that it is outside the original perspective (or “box”) **and** that it fits within a perspective that better fits the real problem. This is the “new and better” of the classic definition. This suggests that creativity might more usefully be labeled: “**better box thinking**”. It is critical to recognize that the creators have not changed their more profound values and objectives, just rethought the goals they are targeting in hopes of success, or their assumptions about elements of the solution.
- Once one has discovered the new perspective, all sorts of other alternatives become obvious, including swinging the bridge out of the way and even sinking the bridge below the keel depth of the boats (which is done in parts of Europe).

Note that if a person whose focus is on raising the bridge suggests sinking the bridge, we label them as creative. If a person whose focus is on getting boats past suggests the same thing, we think of them as bright. Therefore, the real creativity does not seem to be in the “idea”; it seems to be in the shift of perspective to be more in alignment with the total situation. Deliberate efforts can discover these shifts, allowing people of less creative habits to perform as if highly creative.

Of course, people have long talked about changing the problem definition, perspective, framing, or “set" as a powerful way to creatively discover new ideas. Therefore, the pragmatic question is: what advantages result from treating the shift of perspective as the creativity and the ideas as simply the result of the creativity. Does it help us better understand and guide the kinds of creativity required of entrepreneurs?

Creativity Types or Creativity Tools?

If we see the essence of creativity as this discovery of new perspectives, investors and entrepreneurs can seek out people who tend to seek new perspectives and/or teach them to seek out this creativity. Psychologist Michael Kirton developed a measurement scale (KAI) that places people on a spectrum between those whose creativity is always within the constraints and specifications given (adapters) and those who find new alternatives by rethinking the constraints and specifications (innovators). People all along the spectrum may be more or less flexible in their thinking, but where they look for possibilities differs. Those with a preference for the innovative might say, “Don’t raise the bridge, lower the water” while those at the adaptive end get their AHA’s about new ideas for raising the bridge. Entrepreneurs need to be able to be adaptive about using well-tested components for most of the business while being innovative about the key areas of strategic advantage.

Fortunately, tools can make the difference. Members of new enterprises can be moved along this spectrum to areas that are outside of their style with various tools such as those that systems thinkers call “black box thinking” and the field of Value Engineering calls “function analysis”. In each case, an attempt is made to mentally separate the focal object or process from the real objectives, then focus the creativity on the objective, not the object. With these techniques, problem solvers are able to choose the most appropriate position for the problem on the Adaptor - Innovator spectrum. These tools would cause you to ask the person specifying "raise the

bridge" to tell you what they are trying to accomplish. When they tell you "get the gap big enough for boats" or "get the boats past" all kinds of new creative possibilities open up.

The Relevant AHA

Another advantage of the shifted insight model is that it acknowledges the value of knowledge in the minds of the creators. When the focus is on simply getting the most ideas of the greatest divergence, it has been found that education, experience, and expertise slow down and restrict production of "out-of-the-box" ideas. Some facilitators even insist on having the newest and youngest employees involved in all deliberate creativity efforts. Some investors have thought that lack of knowledge and experience was a great reason to invest in an enterprise, with very rare success.

What is interesting about the flashlight model is that it acknowledges the obvious fact that a person's AHA reaction is based on their own perspective on, and knowledge of, the area. If creativity is really about improving the perspective of people, it would seem that it is most useful when it affects the people with the most knowledge of the relevant facts and dynamics. Therefore, when the accountant has an AHA about a new programming language, that reaction might not be as relevant as when an expert in that language has the same reaction. When a technologist who lacks strategic perspective has an AHA, the idea probably lacks strategic perspective. Good creative team interactions allow people from all perspectives to learn from each other, accept the disagreements among the perspectives, but gradually become an entity which in total is capable of having a relevant AHA about the system or problem under consideration. This teaming of diverse people with disjoint expertise is a critical challenge for the leadership of enterprises, as discussed below.

Again, the knowledge is critical, but that knowledge can be shallow and rigid, or rich with flexibility and sense of intention and possibilities. One task of the manager is to create situations in which people can become more flexible with their own knowledge.

It may help a manager to think of the enterprise as a group of people who get smarter and smarter about various problems, situations, and goals until solutions are obvious. It may be useful to consider that standard creativity and problem solving tools such as brainstorming, charting, and decision matrices may make greater contributions as a learning tools for the people of the enterprise than they do in their application to the ideas in the system. For example, people in a brainstorming session learn a great deal about each other and a great deal about the various perspectives on the problem situation. Teams working together through a criteria decision matrix on their ideas learn a great deal about the various constraints and stakeholder goals. This learning is critical in developing complexly responsive ideas. Unfortunately, people whose focus was on idea production have found ways such as nominal group technique and computerized meeting support systems that often are used in ways that maximize the length of the list and accelerate selection, but eliminate the learningful interactions and laughter that prepare teams to generate useful insights and ideas

Complexity: Complicated or Conflicted?

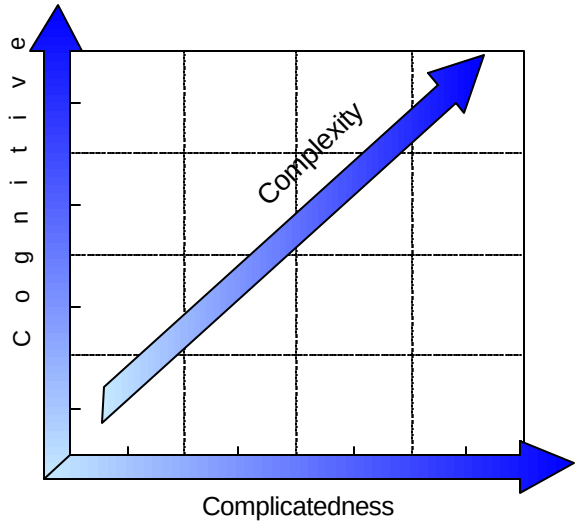
Again, the tools of deliberate creativity need to be chosen for and tailored to the kinds of creativity needed for different aspects of the enterprise. The long lists of simple ideas generated by basic tools of deliberate creativity such as brainstorming, nominal group technique, and group

support systems do well at capturing the laundry list of issues that must be handled, at least adequately, and for listing possibilities for each of the simpler issues. However, the strategic advantage issues are often overcome by the complexity of the real world faced by the enterprise. Deliberate creativity in entrepreneurship must be capable of handling more complicated and complex aspects and ideas.

The complexity faced by enterprises is a blending of at least two different types of complexity, with very different dynamics: the complicatedness of the enterprise's operations and interactions with the world versus the disconnected, conflicting nature the goals and intentions of stakeholders, whether customers, employees, investors, bankers, suppliers, local governments, or others whose attitude can affect the success of the enterprise. This distinction is critical because abilities and tools that increase performance on one type of complexity may reduce performance on the other.

The term “cognitive complexity” is used in psychology for the ability to process information that is not well defined and internally consistent. When manufacturing and marketing experts, both attempting to increase company performance, have completely different and conflicting goals for the same system, it takes people and teams high in this ability to create effective designs.

This complexity differs from the ability to handle many different elements of the same type, a dimension that we might label "complicated".



Some knowledge is low both in complicatedness and in cognitive complexity, and can be processed by most people. Most ideas in brainstorming sessions fall into this category. Some people are able to handle a great deal of complicatedness, as long as the goals are not conflicting and disconnected. This is characteristic of those who score high on IQ tests and who get high grades in educational settings. Other people are adept at balancing multiple conflicting goals and constraints, while remaining lower in their ability to manage complicated operations and interactions. Fewer people are able to excel at both complicated and cognitively complex tasks. Unfortunately, entrepreneurial advantage may require strong performance in both types of thinking.

Problems that are merely complicated require a set of dynamics that are commensurable, able to be related to each other in the same domain of knowledge. For example, once an airline has translated its various criteria and factors about different flights into measurable and commensurable variables, techniques such as linear programming or artificial intelligence can help handle the complicatedness of the problem of scheduling flights, especially as dynamics such as weather and passenger load shift.

Getting those factors of profit and customer satisfaction and the relative importance of on-time service in different markets into that model is cognitively complex because they are not commensurable and because they conflict.

As suggested above, this "cognitive complexity" blends conflicts in perspective and conflicts in values. In a company where everyone is working on the same goal of maximizing profits, different departments have different optimization strategies, which often conflict. Marketing effectiveness is best served by a production system that can deliver a “one of a kind” product by tomorrow morning, and a finance system that gives the customer 12 months to pay. Manufacturing efficiency is best served by receiving orders six months in advance and then making the same version continuously for three months. Accounting is most successful when cash is received before the sale is accepted, so they can purchase the raw materials well in advance for production. Finding the best positioning on manufacturing flexibility and credit flexibility is a cognitively complex task. Ability to memorize theories and findings in finance, production, and marketing do not predict an ability to develop an integrating strategy. Enterprises need to be effective in these kinds of problems, to strategically select the best routes to the overall shared goal of organizational success.

Therefore, it seems likely that greater success of an enterprise can result from increases in the capacity for handling both complicatedness and conflictedness. This can be accomplished both by selecting people with the talent and preference for the needed thinking and by providing tools to help people perform effectively at higher levels of complexity and creativity.

Dealing with Complicatedness

The complicatedness of systems and problems vary with the number of elements and the conflicts and connections among those elements. It can be thought of as the number of states the system can be in and the difficulty of predicting which state is coming. Within the world of mechanical engineering and physics, an automobile engine is far more complicated than a claw

hammer.

Of course, the actual complicatedness is different for different people. The homeowner installing a new kitchen finds it far more complicated than the professional did whose experience and learning has made it a routine task. Therefore, for any complicated process people vary in their familiarity with the process and vary in their ability to remember and comprehend process complicatedness. A manager needing solutions related to highly complicated processes can select people for their existing knowledge, or give them additional training and experience. To choose those with the best return on training, we can select those high in their ability to remember, comprehend, and process complicated systems, and/or use tools to multiply the abilities of those who are available.

Increasing the individual ability

Spatial visualization, the ability to perceive, create, and manipulate images in the mind has long been associated with effective and complex creativity, but it may be that the use of sketches and physical models can compensate for any lack of this talent, while opening the process up to team members and other collaborators. Support for this idea comes from research about testing.

One effective test for spatial visualization is the solving of anagrams, scrambled combinations of letters that can be rearranged to form known words. The better your spatial visualization ability, the faster you can solve these problems. One psychologist discovered that when the anagrams were presented with each letter on a separate movable piece of cardboard, spatial visualization ability no longer affected the speed of solving the problem. As a test developer, he learned that if you want to effectively measure this talent, you must not allow the subject to use any materials that can be manipulated. On the other hand, this research also means that allowing people to move the letters around externally allows those low in spatial visualization to perform as well as those who excelled in it. This is a good thing for deliberate creativity.

Another psychologist took easy, moderately difficult, and difficult problems and presented them as: word problems requiring word answers; picture problems requiring sketched answers; or actually putting the subjects in the physical situation described in the problem. The most difficult problems were only solved by people working in a physical version of the problem. The easy problems were solved quite effectively when given as word problems, and presenting them as pictures or real world situations just slowed down the solution. Problems of moderate difficulty were difficult to solve as word problems, but generally well solved as picture problems, with an actual disadvantage from putting the subjects in the real world.

Therefore, word focused thinking is effective only for the easiest of problems. With more difficult problems, there is an advantage to drawing pictures to understand and solve the problem. For the most difficult problems, it seems that you need to just jump into the situation and muddle around until you get it solved. This sounds like the behavior of some of the most effective entrepreneurs.

External Models and Collaboration

Drawing pictures and manipulating models seems to be very valuable to those working alone, but there also seem to be several advantages for collaborations. Keeping notes of ideas and facts and work in progress in front of a problem-solving group on flip chart sheets around the room

seem to help them handle more complexity.

One critical question is whether it is possible, effective, and efficient to have team interactions among people operating at multiple levels of complexity. In a group setting, it would seem that the interaction complexity must be limited to the lowest capacity present in the group. However, many external models seem to help people of different cognitive levels to work together and/or help people function at a higher level, allowing those of lower levels of cognitive capacity to effectively contribute their unique explicit and tacit knowledge in interactions of higher complexity.

Flexibility and Complicatedness

People can be flexible or rigid in their processing of complicatedness. The methods used to describe and process the complicatedness of systems can greatly affect the creativity and flexibility of the knowledge. One of the developers of PERT charting for project management complained frequently that the process worked a lot better from a flexible possibilities standpoint when it was done with butcher paper, string, markers and tape, and that modern computer printouts often paralyzed the minds of those trying to manage projects.

This flexibility of perspective on the complicated processes is critical to some of the most effective systems developments. Finding and accepting such simplifying models is a big part of effective work with complex systems, as well as science and its attempts to understand nature. Back when everyone believed (or was required to believe) that the sun and everything in the universe revolved around the earth, astronomers invented some amazing and complicated mathematics to calculate the movements of the Sun and the planets. Using the assumption that the Sun was the center of the solar system, Newton was able to predict the movement of the planets with math that was far simpler. Often, successful entrepreneurs are those who discover a simplicity that helps their entire organization think and act more effectively

Leadership and Entrepreneurship

The relationships we label leadership are often vital to the success of an enterprise. It takes leadership to align the members of a new organization to its mission and culture, and even more leadership to motivate them to contribute above and beyond their compensation level (a critical resource for a new organization). It also takes the relationships we label leadership to build trust in investors, lenders, suppliers, and other outside elements to gain their cooperation in building the business. Moreover, it takes a form of leadership to engage the customer to spend their money on the new product or service.

Delivering these various kinds of leadership is often made more difficult by the assumption that leadership is some quality of the person that will let them influence all followers. In fact, followership, the willingness to trust the values and knowledge of another can be quite different from one person to another. Different people have different things that trigger their followership, which can differ by age, gender, nationality, discipline, or other factors. If another person has characteristics or behaviors that trigger an individual's followership, we can say that a leadership relationship has developed. In modern organizations this is critical because characteristics of an entrepreneur that might trigger the followership of one group might completely stop followership by another key group.

Levels of Diversity

The solo entrepreneur may have the easiest internal dynamics, but most enterprises require not only multiple individuals to do the necessary work, but a diverse set of knowledges and perspectives among those individuals to best understand the challenges and invent ways to succeed. A number of people with the same degree, or national origin, or who worked together before, or from the same family might have the highest clarity of communications, but will often lack the breadth of perspective and knowledge necessary for success. In addition, the hierarchies of influence from these various backgrounds may not get the organization to focus its followership on various issues on the person with the greatest knowledge and insight. In many family based companies, followership on everything might be given to the grand-father, while the critical knowledge is available in the youngest daughter whose inputs are ignored.

Effective teams have leadership dynamics that allow followership to be attached to the ones with insight and knowledge, but this is a complex task. Many team-building recommendations are drawn from sports or from factory or service teams who work together constantly. Unity of vision and deep understanding of the capabilities of each other brings increases in coordination and effort that strongly contribute to performance. This teamwork and leadership is extremely beneficial in getting an enterprise to follow a plan, delivering efficient, high quality service and products.

Developing the designs and procedures that have a competitive advantage are often complex, complicated, conflicting, and beyond the ability of any single individual to comprehend in detail. In the cross-functional teams formed to deal effectively with such projects, no one individual comprehends all aspects, but it is hoped that the overlapping knowledges of the various team members integrate to complete coverage.

The differing expertise of team members not only increases the difficulty of clear communication, but also eliminates the ability to build trust based on competence. People playing a sport can quickly tell who plays well and who doesn't. In a team of all one expertise, we can soon comprehend capabilities of each other and adjust our trust to their abilities. Unfortunately, in cross-functional teams, team members rarely have the expertise to evaluate the detailed expertise of other team members. An accountant cannot be expected to be able to check the quality of engineering calculations. An engineer cannot be expected to assess the potential of a marketing plan.

It is helpful to team communication for members of the enterprise to give each other a strategic orientation to their fields and for the management team to form a common language about the project. Some of this can be done with advance preparation, but the only route to the absolutely essential trust building is social. Team members need to have interactions that allow them to assess the character and trustworthiness of other team members. These might be as simple as working together to select meeting places for the team or simple project elements that everyone can understand. Only after this trust is built can people of widely diverging (but adequately overlapping) knowledge work together effectively to discover the greater opportunities.

Leadership, Trust, and Change

Those struggling to make an enterprise succeed must invoke the followership of many different people. In some parts of the world, and throughout history, some entrepreneurs connected only with people like themselves, so the same characteristics and behaviors that they thought of as leadership tended to work with everyone. Most enterprises today have diverse workforces, sell

to diverse markets, have supply chains and marketing channels which span many cultures, and must gain the trust of many regulators and financiers with diverse expectations. Both solo entrepreneurs and members of entrepreneurial teams need to recognize the ways that situations, disciplines, and national cultures affect the building of trust we call leadership.

One very useful model of national differences is that of Geert Hofstede who found that people from different nations tended to have different attitudes about:

- **Power Distance.** Some people are more comfortable with hierarchy and authority relationships. In countries such as Malaysia and Guatemala, people find it normal for someone to have a great deal more power than they do. In countries at the other end of the spectrum, such as Israel and Austria, it is very uncomfortable to have anyone in authority over you. The United States scores 40 out of 100, leaning toward less acceptance of authoritarian relationships.
- **Individualism/Collectivism.** Ties are weaker between members of more individualist societies such as the United States and Australia. People are expected to take care of themselves and not rely upon others. In more collectivist societies like Ecuador and Guatemala, people have strong ties with family, village, society, etc. and success of the whole is far more important than the success of any one member.
- **Uncertainty Avoidance.** People differ in the degree to which they feel threatened by uncertainty. Those from cultures high in uncertainty avoidance, like Portugal and Greece, take strong steps to increase predictability, often with written and unwritten rules everyone must follow. Those low in uncertainty avoidance, such as Singapore and Jamaica are far more comfortable with change, even when they cannot reliably predict the results of the change. The United States leans toward the low end, scoring and index of 46 out of 100.
- **Masculine/Feminine**. This factor has nothing to do with sexual preference. Hofstede has labeled as masculine those cultures in which there is a strong distinction between the strong male role and the nurturing female role, such as Japan and Austria. He has labeled as feminine those societies in which men and women are equally willing to be strong and nurturing, such as Norway and Sweden. The United States leans more toward the masculine with an index of 62 out of 100.
- **Time Horizon**. In his more recent writings, Hofstede has been exploring the fit of these factors to the Chinese and other Asian cultures not included in his original sample. In addition to the four factors mentioned above, he is looking at a dimension he discusses in terms of Confucian values, but which seems strongly similar to the time horizon factor of Elliott Jaques. Some people tend to consider only the immediate impact of ideas and decisions, while others look far into the future. Jaques has found that generally, the higher a person is in an organization, the further they are looking into the future. It is obvious that cultures also differ in their focus on the future. Some only consider today, while others consider generations far into the future.

It seems obvious that people who differ on these various dimensions would respond differently to various "leadership" strategies. People from high power distance cultures might be much quicker to build followership relationships, if you trigger their cultural attributes. Those from low avoidance of uncertainty may simply refuse to argue, giving the illusion of leadership when no influence actually exists. It may be that enterprises operating with people of more collective

cultures must use group and team leadership while those in countries high in individualism count on individuals to build enterprises and see a strong hierarchy in the management of the enterprise.

Understanding these differences and other relevant style differences does not enable an individual to magically trigger followership, but gives hints about which strategies to try first. Each leadership relationship is individual and the real issue is how fast a "leader" learns and links to the expectations of the "follower". Obviously, the diversity of necessary leadership relationships requires a complex mix of behaviors.

Achieving the Necessary Leadership and Creativity

Again, entrepreneurial success may be pure luck, but it seems that those trying to increase the odds use leadership to increase the involvement and effectiveness of all those related to company success and organize themselves to apply creativity primarily to the areas of competitive advantage. Those operating in simple technologies with people of low diversity may achieve great success with simple tools of creativity and leadership. Those seeking greater levels of success by engaging more complex technologies, more complex economies, and more diverse stakeholders will benefit from tools and concepts of more complex creativity and leadership.

References