Organizational ingenuity: insights and overview

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The construction of creativity in organizations continues to puzzle scholars. Creativity is often associated with organizational spaces where rules and boundaries are weak to non-existent, and by the same token is considered to decline where they are strong and pervasive. This dichotomy, between organizational freedom and necessity, results in opposing images of creativity and its absence. On the one hand, we have romantic images of entrepreneurs asserting creativity by breaking rules and transcending boundaries and, on the other, institutionalized managers constrained by rules and prevented by boundaries from exercising creativity.

The interplay of freedom and necessity in organizations, however, is more nuanced. Most organizational actors have to operate both within and through existing rules and boundaries to effect creative solutions to existing problems. To meet the challenge of the situation these actors develop a set of skills, social tactics, and mental orientation that express ‘organizational ingenuity’: the ability to create innovative solutions within structural constraints using limited resources and imaginative problem solving.

This book is an exploration of the many facets of organizational ingenuity. When we extended an invitation for contributions to this volume we gave authors the definition of organizational ingenuity provided above, and a general framework that we challenged them to develop. The final selection more than lived up to our expectations: it is rich and varied, and yet relatively coherent. When it came to writing the opening chapter our challenge was to give you, the reader, the perspective needed to appreciate the readings. Reading the contributions it became clear that a single fixed perspective is not sufficient to explore our central construct while at the same time respecting the variety and richness of the chapters in this book. Organizational ingenuity has a number of facets that flow from the original definition, and the contributions in this book focus on one or several of these facets, building and developing them in different directions.

After some discussion we decided to employ a device that is often used in literature, theatre, and cinema: convey key insights about organizational ingenuity by telling a story that is well known, in our case the story of Jeff Bezos and Amazon.com.
Amazon.com today is a US$61 billion colossus that spans the globe. Founded in 1994 by Jeff Bezos, Amazon has become the largest online retailer, which sells everything from books, to jewelry, to toys, apparel and sporting goods. Over the years the rise and evolution of Amazon has been covered in the press and media, and in book length publications. Our intention here is not to recount Amazon.com’s story, but to take episodes that to our mind capture key features of organizational ingenuity and, at the same time, provide background for highlighting how these features are discussed in one or more chapters in this book.

RESOURCE CONSTRAINTS

Organizational ingenuity is the creative attempt by individuals and organizations to solve problems in situations where resources are limited. The paradox of organizational ingenuity is that the innovative solutions that emerge would probably not have occurred if the individuals and organizations involved had all the resources they needed at their disposal. Organizational ingenuity happens when actors refuse to abide by constraints, and instead search for a superior solution sometimes in spite, but often also because, of the constraints. An episode from the history of Amazon.com highlights this point.

Amazon.com is the archetypical garage start-up. Working out of a garage, Bezos and his team were able to grow to five employees, where they developed the necessary software routines to develop the new product. Unfortunately, the circuit breaker in the garage they were working on was insufficient. As a result, the early Amazon.com was developed by using extension cords running from other rooms to provide power. Eventually, they were siphoning off the entire house’s electric supply, which was still insufficient, and they had to move to a slightly larger location (Spector, 2000).

Rather than hire consultants or a marketing firm to evaluate their design, they asked friends and family to enter ‘fake’ orders, under strict secrecy. Once the site was de-bugged and ready to go live, they sent out notices to all their beta testers announcing the launch and encouraging them to spread the word (Spector, 2000).

Frugality, and ingenuity, were embedded into the corporate culture at Amazon.com from the very beginning. Bezos built his first desk out of an exterior door that weighed 80 pounds. These ‘door desks’ became iconic – a measure of how Amazon kept their prices and costs low. They were widely displayed during the first television commercials, and became an integral component of corporate culture. Amazon eventually built several thousand door desks for packing purposes:
In those formative years, Bezos repeatedly reminded employees that Amazon.com’s customers didn’t care what the offices or the desks look like; he continually reinforced the virtue of frugality. All the furniture – with the exception of the door desks – was purchased from garage sales or auction, or wherever they could find it. (Spector, 2000, p. 1471)

The same spirit of ingenuously overcoming constraints pervaded Amazon.com’s work in almost every domain. One of the major constraints of the period was internet browser loading time and modem speed. Many dot.com and bricks-and-mortar companies that went online accepted the constraints, focusing their efforts on the look of the website. As a result, their sites looked great but took too long to load and use. Amazon.com looked at the problem differently. It recognized that website graphics and looks should take second place to functionality. What was important was to build an efficient website that loaded quickly and was as usable. As one book publisher put it:

a lot of people were spending a lot of time and energy making sites that were hard to use because they had all kinds of fancy graphics. Amazon.com was so stripped down. They realized that what they were building was not a brochure; they were building an application. (Spector, 2000, p. 1162)

Constraints are not always technical or financial. Sometimes they are created by industry conventions that are entrenched by decades of use. In the early days, Amazon.com, like most start-ups, wanted to conserve cash by only ordering from wholesalers the minimum number of books required. The major book wholesalers insisted on a ten-book minimum order. They would not budge, even when offered incentives. Bezos found an ingenious way around this constraint. All Amazon.com had to do was order the one book it needed, and add nine out-of-stock books which the wholesaler could not supply.

Many of the conceptual contributions to this volume emphasize the issue of constraints. For example, Aneesh Banerjee’s chapter, ‘The roots of organizational ingenuity: how do qualitatively superior ideas come about?’, develops a theory of constraints, providing a framework for examining how constraints impact resource slack, bricolage and organizational slack. Cunha, Rego, Clegg, Neves, and Oliveira’s chapter ‘Unpacking the concept of organizational ingenuity: learning from scarcity’ examines organizational ingenuity when time, resources, or affluent customers are missing. In their framework, improvisation, bricolage, and frugal innovation are organizational responses to this scarcity. Thus, scarcity triggers the need to adopt some ingenious approach to a given problem.

The empirical contributions to this volume also report the influence
of resource constraints on ingenuity. For example, Stam, Wakkee, and Groenewegen, in their chapter ‘Acting ingeniously: opportunity development through institutional work’ examine the institutional environment of home nursing in the Netherlands. They study an entrepreneur who cleverly denounces and restructures institutional constraints. In this study, they utilize institutional work to highlight a case where there is a gap between the current institutional setting and an ingenious entrepreneurial solution. Judy Matthews’s chapter ‘Stimulating organizational ingenuity with design methods’ examines a design method that stimulates organizational ingenuity, where constraints are used to create possibilities for new ways of working in a company that is a market leader. Tamar Sagiv’s chapter suggests that constraints are not always external to the actors, a byproduct of the system in which they operate. In her study of the evolution of modern dance in Israel she argues that innovative choreographers and dancers are often constrained by their need to preserve and achieve authenticity in their art. The paradox that these choreographers and dancers confront is that, unlike classical ballet which is highly restrictive, modern dance vocabulary is quite open-ended and eclectic. It would be quite easy for these individuals to generate variety and claim differentiation, but their inner integrity constrains their creation of new styles. Sagiv’s chapter points to an elusive factor in creative problem solving: the inner dialogue that often leads innovators to aspire to an ingenious solution even when an adequate solution is readily available.

Ana Cristina Siqueira, Sandra Mariano, Joysi Moraes, and Gregory Gorse explore a very different context than Sagiv, but nevertheless their chapter also looks at the influence of leadership style on ingenuity. Their chapter examines organizational ingenuity by addressing the context of Brazilian community banks providing microfinance in areas with severe economic constraints. The chapter provides a comparative view of two leadership styles that shape the level of impact of these microfinance institutions. They find that leaders’ involvement in local communities and perception of social disparities can increase the likelihood of organizational ingenuity, and that leaders’ organizational ingenuity can increase the likelihood of creative solutions with an impact at the community and national levels.

Ingenious solutions are often obvious after the fact, and for that reason they seem the least risky of the alternatives. In reality, until they prove their value, ingenious solutions are risky – probably more risky than conventional solutions. The risk of ingenious solutions is amplified if they require additional resources. David Methé’s paper is concerned with how Japanese managers view risk in starting up new projects. Risk is perceived
as inherent in the management task and process and all the managers believed that they had to deal with risk by employing strategies of action that would minimize it. Methé maintains that minimizing risk requires entrepreneurial ingenuity and takes the form of re-configuring the sources of risk to provide a solution. The ingenious solution is not a stand-alone action, but usually an ongoing configuring of resources used to solve an evolving problem that may pose a risk to the organization.

INDIVIDUAL INGENUITY

Organizational ingenuity is impossible without individual ingenuity. But arguably within organizations individual ingenuity will not be effective without organizational support. Many organizations do not always support innovation, or welcome it, but they nevertheless depend for their success on ingenious individuals that solve problems caused by the organization’s own constraints and rigidities. This raises the interesting question of whether such individuals are ingenious to begin with, or become ingenious because they simply refuse to accept the status quo to which the rest of the organization has become accustomed.

Jeff Bezos and the story of Amazon.com suggest that the answer may be both. Growing up, Bezos would spend his summers on his grandfather’s farm in Texas. His grandfather, a retired scientist and former regional manager of the Atomic Energy Commission, actively encouraged him to tinker with different projects both around the farm and in the adjoining garage. Bezos busied himself with projects as diverse as windmills, amateur radios, and hovercraft, using whatever resources he could scrounge. His mother referred to his self-sufficiency in this way: ‘One of the things that [Jeff] learned is that there really aren’t any problems without solutions. Obstacles are only obstacles if you think they’re obstacles. Otherwise, they’re opportunities’ (Spector, 2000, p. 5).

Many entrepreneurs avoid established organizations with their routines and suffocating structures. Many who are forced to seek employment in established organizations see a start-up as an escape from unbearable constraints. Jeff Bezos’s corporate career demonstrates that there is no contradiction between entrepreneurial ability and corporate success. After graduating from Princeton in 1986 with summa cum laude in electrical engineering and computer science, Bezos took up employment at a start-up that managed international telecommunications for financial transactions. He next moved to Bankers Trust, where he became vice president of global fiduciary services, the youngest VP in the history of the Bank.
Bezos developed considerable experience in moving past conventional barriers when he worked at Bankers Trust. One of his early assignments was to computerize a bank client’s investment performance. While up to the minute financial reporting is commonplace today, before the advent of the internet investors relied upon monthly and quarterly reports, carefully managed and produced by investment institutions. Many of the established bankers were uncomfortable with clients receiving up-to-date daily investment statistics. As Harvey Hirsch, his boss claimed:

Jeff has a way of stripping away the extraneous and focusing on what’s really important. He sees different ways of doing things and better ways of doing things. He told the naysayers ‘I believe in this new technology and I’m going to show you how it’s going to work’ – and he did. At the end of the day, he proved them wrong. He has no trouble puncturing someone’s balloon if he thinks that they’re proposing to do something the wrong way or in an inappropriate way. (Spector, 2000, p. 14)

In their study of the development of flash smelting in the copper industry Janne M. Korhonen and Liisa Välikangas show how individuals can decisively change the innovation dynamics in an organization that is struggling to survive. Devastated by war, Finland had to pay reparations and cede large parts of its hydroelectric capacity to the Soviet Union. In this context, Eero Mäkinen, the CEO of Outokumpu, a small Finnish mining company, was determined to restore the firm’s refining operations in spite of a ruinous hike in electricity rates which made such a project uneconomical. He empowered a small team of engineers, headed by Petri Bryk, to search for a smelting method that radically reduced energy demand. The team’s ingenious design not only met the requirement laid out by Mäkinen, it also raised the possibility of developing a smelting process that was energy neutral, i.e. sufficient energy being generated during the smelting process to make it practically self-sustaining.

Outokumpu’s process eventually became a world standard, and is today used by 60 per cent of all copper smelting. In their chapter, Korhonen and Välikangas weave together the multiple levels of analysis of how this came about. The research and experimentation that led to the development of flash smelting came from multiple sources, some dating as far back as the middle of the 19th century. But Outokumpu’s success owed everything to Mäkinen’s determination and Bryk’s ingenuity. The context was not propitious, but the individuals that drove the innovation forward knew how to work the system to their advantage.

Whereas Korhonen and Välikangas examine the interaction between individuals and their organization, Masciarelli and Prencipe examine the interaction between individuals and their geographic regions. In their
chapter titled ‘Connecting regional ingenuity to firm innovation: the role of social capital’, Masciarelli and Prencipe analyze the influence within a region of creative actors that possess the ability to create innovative solutions within structural constraints, i.e. regional ingenuity. They find that local social capital facilitates the exchange of information among actors and influences the relationship between regional ingenuity and firm innovation. In effect, they show that both individual and organizational attributes may be agglomerated in the case of social capital.

DEVELOPING ORGANIZATIONAL INGENUITY

Individual ingenuity may be the essential building block of organizational ingenuity. Many successful entrepreneurs are ingenious, but this does not translate into organizational ingenuity. In many instances, this can be traced to entrepreneurial temperament and approach to doing business. Many entrepreneurs see their organizations as a tool designed to accomplish their ideas. They are loath to delegate, and in general prefer subordinates who are enthusiastic when it comes to finding ways of implementing plans drafted at the top, provided these subordinates do not put forward creative ideas of their own. The result is ingenuity at the center, usually confined to the entrepreneur founder, and an organization that is conventional when it comes to solving problems.

Jeff Bezos and Amazon.com are an exception to this tendency. It is likely that Bezos’s experience as a manager taught him the peril of centralizing creativity at the top. It is also probable he looked ahead and understood that developing creative teams is essential for survival in a dynamic environment. One of Bezos’s first tasks when building Amazon.com was to identify good programmers. Rather than choosing individuals who had experience in business or retail software development, he instead chose programmers that were well known for being both creative and interdisciplinary. He thus demonstrated that he was more committed to hiring the best and the brightest, regardless of their previous experience (Spector, 2000).

Amazon employees were carefully selected not only to be highly creative and intelligent, but also to maintain innovation as the highest priority. All employees were interviewed by several Amazon employees, with the goal of raising standards with each entry (Wall Street Journal, 4 May 1999). Applicants were given on the spot puzzle type questions, and were carefully examined for a range of metrics that were an attempt to focus on hiring only the most intelligent staff: ‘Every hire required a unanimous vote, and fantastically enough, Jeff sometimes allowed himself to be
overruled by the majority. Given these stringent procedures, it now strikes me as amazing that we hired anyone at all’ (Marcus, 2004, p. 42).

Organizational institutional characteristics, norms and structures are likely to be an important component leading to ingenuity. For example, Cox, Siqueira, and Shearer in their chapter ‘Organizational ingenuity in the commercialization of early-stage technological innovations’ provide a very interesting case of two institutions – one idea ‘rich’, and one idea ‘poor’, collaborating in order to advance opportunities for both. They report on a pilot test of an ‘Ideation Team Model for IP commercialization’, suggesting that specific institutional structures and procedures may be modified to increase ingenuity.

When innovation and novelty are important, ingenuity is a function of the field in which actors solve problems. In their chapter, Ninja Natalie Senf, Jochen Koch and Wasko Rothmann explore the institutional context of the field of haute cuisine in Germany. The authors claim that chefs are taking an active role in shaping the context in which they work. This spills over to how they develop creative ideas. By resorting to ingenuity, chefs are able to produce an innovative and creative kitchen through working on an authentic and flexible profile that expresses the mannerisms and characteristics of haute cuisine.

Companies such as Amazon.com are not democracies: ultimately Jeff Bezos and outside investors have financial control. From the outset, however, Bezos understood that allowing financial control to become managerial control can easily undermine organizational ingenuity. An early employee of Amazon.com put it this way: ‘In most companies, having the boss join your group would have prompted an orgy of shameless sycophancy. Here he was just one of us.’ (Marcus, 2004, p. 52).

Bezos may be willing to be overruled at times, and he works hard to bridge the gap between boss and employees, but this does not mean he eschews decisive leadership when this is required. In fact, one could argue that staying close to his employees and gaining his trust gives him exceptional insight into their mood and how they see the obstacles they confront. When the young Amazon.com was confronting a move by Barnes and Noble into online book merchandizing, Bezos called together his 125 employees to a meeting to calm their fears. Yes, he told his employees, Amazon.com may be small next to Barnes and Noble with its 30 000 employees and $3 billion in sales, but your thoughts should not be on how Barnes and Noble or other competitors can hurt us, but how our customers see us:

We can’t be thinking about how Barnes and Noble has so much more in the way of resources than we do. I told everyone, Yes, you should wake up every morning terrified with your sheets drenched in sweat, but not because you’re
afraid of our competitors. Be afraid of our customers, because those are the folks who have the money. Our competitors are never going to send us money. (Kirby and Stewart, 2007, p. 80)

Ingenious solutions often come from seeing problems differently than others who are tackling the same problem. For Bezos the problem is not keeping Barnes and Noble at bay, but getting customers to fork over their hard won cash. In his chapter titled ‘Ingenuity spirals and corporate environmental sustainability’, David Zoogah argues that ingenious solutions to environmental problems usually begin with seeing the problem clearly in contexts where perception is often stymied by complexity. But seeing the problem is only the first step. For Zoogah ingenuity is a process that is centered on the problem but expands to mobilize resources during analysis and solution. To develop corporate sustainability it is important for the organization to engage in ingenious analysis, to turn ‘the table upside down, looking in crevices that would typically not be looked into’. In effect, for Zoogah (and arguably for Bezos) organizations should not be satisfied with ingenious solutions, but should aspire to ingenious problem solving processes that defeat the routines and biases that normally constrain individuals and organizations from creatively solving problems.

CONCLUSION

As our technological, political, and economic systems become increasingly more complex and interconnected, the need for institutional ingenuity increases (Homer-Dixon, 2002). However, ingenuity is not always a generic solution to market or human problems. As the various contributions to this book show, there is no general formula when it comes to ingenuity. The way that organizational members deal with resource constraints, and whether this leads to ingenuity, is ultimately context sensitive. Accordingly, we propose that ingenuity is an intentional event or action through which an organization’s members are able to enact effective problem solving techniques that are viewed as positive and important by others in the organization, and often beyond, because they are surprising and non-conventional. Ingenuity is thus an interplay between those who come up with creative solutions and the organization in which he or she works.

As we have shown in our Amazon case, an important contextual factor that influences organizational ingenuity is what some have described as the organization’s ‘DNA’ characteristics, including its values, practices, routines, knowledge, and their managerial blueprint or human relations
practices (Burton et al., 2002). In this vein, the organization’s history is also an important factor in creating a culture of ingenuity. Stinchcombe’s (1965) imprinting hypothesis (see also Marquis and Tilcsik, 2013) claims that the environment and its characteristics, such as social relations, institutions or legal systems, ‘are historically contingent and imprint an organization with the characteristics of the era when it was founded’ (Stinchcombe, 1965, p.142). In other words, the initial conditions at the time of founding, which include the technological, social, political, economic and cultural characteristics, exert enduring effects on future organizational development. Specifically, the imprinting hypothesis encompasses two major aspects that may help us to understand the prevalence of organizational ingenuity. First, elements which form the initial conditions of founding are resilient and remain in the organization during its life cycle. Numerous studies demonstrate the resilience of initial conditions. Burton and Beckman (2007) and Baron and Hannan (2005), using data from the Stanford Project on Emerging Companies (SPEC), examining firm history, demonstrate how initial conditions constrain subsequent organizational outcomes, such as turnover rate of successors who later occupy certain positions, or the composition and the preferred background of the top management team. This implies that values and practices, including those associated with identifying and implementing ingenious actions, are embedded in the organization.

Second, organizational elements and characteristics may be selectively reproduced across time within the organization (Johnson, 2007). Thus, the elements of the initial conditions of founding members may also shape organizational characteristics that could enhance a culture of ingenuity, serving as ‘blueprints’ of human resources practices (Baron et al., 1999) or cultural policies (Johnson, 2007). Consequently, we can explain activation and prospects of organizational ingenuity by the nature and formation of the organization’s core values and practices. Thus, ingenuity is not always an ad-hoc opportunity of exploitation providing surprise and effective solution against obvious odds, but may also reflect deeply ingrained norms in the organizational history. At the same time, the initial founding conditions constrain subsequent capabilities or outcomes, including the propensity for organizational ingenuity.

Although the legacy of organizations exerts lasting effect, the changing context and environment may constrain or encourage organizational ingenuity. Furthermore, when practices and values are perceived as worthy, their preservation serves as ‘templates’ for the new members (DiMaggio and Powell, 1983). In this way, ingenious members of organizations may engage in practices that encourage creative solutions under resource constraints (Lampel et al., 2011). Note that ingenious solutions could take
different forms and actions, including creating, maintaining or disrupting an existing order (Lawrence et al., 2009). Thus, ingenuity relates to the way the organization is reconstructing experience through designing and implementing non-conventional solutions.

REFERENCES
