The Alchemy of Creativity: An Operating System for Innovation, Collaboration and Enhanced Creativity

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The Alchemy of Creativity utilizes tools sourced from historic ateliers of artists and creators with an eye toward its application for innovation. Refined by the artists collectively attracted to the 20th century film and animation industry, this methodology is about creativity and innovation and thus is both art and science. It has been used to develop innovative attributes in the training of creative people. This process, utilized by the animation industry, is compared with the rigorous six sigma approach to innovation used by many corporations. This methodology was codified by former Disney Animator and arts scholar, Dave Zaboski, who witnessed the rise and eventual undoing of a powerful culture of collaboration: "When I was at Disney Feature Animation collaborating in service of an idea over one's own ego was mission critical. Educating talented artists as to how to create powerfully, under intense pressure and collaborate generously was a core tenet. Every few months we'd reserve a room and one of the Senior Animators would give us "The Spiral Lecture." That lecture on the creative process contained everything we needed to know about working together and succeeding on complex, multidisciplinary, high-stakes projects. We were given methods and systems developed by master creators over the past 70 years designed to get our work done on time, in alignment with mutually established goals and up to the legacy standards of those giants who came before us. Eventually, I was the one giving the younger artists the same lecture. Over time I came to see how the core concepts of the lecture intermingle with a universal natural law of innovation. In the reconnecting of these founding ideas with the nearly flawless execution of the animations industry's processes and culture, I believe I have found a method to describe and apply the keys to creative mastery (Zaboski, 2015).

DEFINING INNOVATION AND CREATIVITY

Creativity is the seemingly magical capacity to imagine the unseen. Innovation is the act of manifesting the creative into something tangible. Creativity is very simply the action of turning a thought into a thing. To innovate, the creative process must be constantly revised so that new discoveries move past the border of the known and yet remain relevant. In this way, a study of creativity and innovation are like the study of alchemy; a blending of disciplines.

The term alchemy actually refers to "*Al Chem*" or "coming from the land of Chem." According to the Journal of Academic Chemistry, the word Chem (or Khem meaning rich black soil) is a historic name for Egypt (Loyson, 2011). The study of alchemy goes back thousands of years, finding its roots in the ancient teachings of Egypt. Alchemy is now used to refer to the "transmutation of base metals into gold" (American Heritage Dictionary, 2010). In the middle ages, alchemists were considered magicians; today, we look upon alchemy as the forerunner of chemistry.

For the purposes of this academic paper, the definition of alchemy is the transformation of ideas into realities, paralleling the concept of the transmutation of base matter to gold (Zaboski, 2014). The myth surrounding the transmutation of base metals like lead into gold is simply a coded metaphor. The alchemist's intention was not to gain personal riches but to achieve altruistically, through an enlightened process of creating a golden soul (Burckhardt, 1971).

This ancient methodology was a systematic endeavor to use the heart as well as the mind to turn an idea into reality. The Alchemy of Creativity is an operating system for innovation that promotes the growth of an organic culture of collaboration, fueling on-going, prosperous innovation.

THE IMPORTANCE OF CREATIVITY AND INNOVATION

"Every foundational crisis throughout the history of life on earth has been solved by acts of profound creativity."Dr. Paul Astin

How you innovate can determine what you innovate (Davila, 2013). Today, products, systems and processes for innovation are constantly scrutinized and evaluated for efficiency, productivity and return on investment. From the onset of the industrial revolution, hand tooled fabrications gave way to the assembly line which was replaced systematically by a panoply of imaginative systems for automated manufacturing. Now, with the advent of 3D printing a whole new genre of how we create things is emerging. Each of these production innovations helps accelerate the time it takes to bring products to market. How we turn thoughts into things has become streamlined and large corporations thrive when their systems facilitate a maker to market efficiency. A recent IBM survey asked 1500 CEO's around the world what they thought was the most important quality to be cultivated in their businesses going forward; over 60% said creativity (IBM Press Release, 2010).

Innovation must be integral to the organization's culture and institutionally supported at all levels. At Disney Studios in the late 1990's, a great oversight was that the artists did not invite management to the Spiral Lectures on collaborative creating; thinking the lectures were for artists only (Zaboski, 2014). In reality creativity, innovation and collaboration should be everyone's responsibility. Understanding the nature of creativity becomes the mission and the path to a thriving, innovative culture of cross functional collaboration.

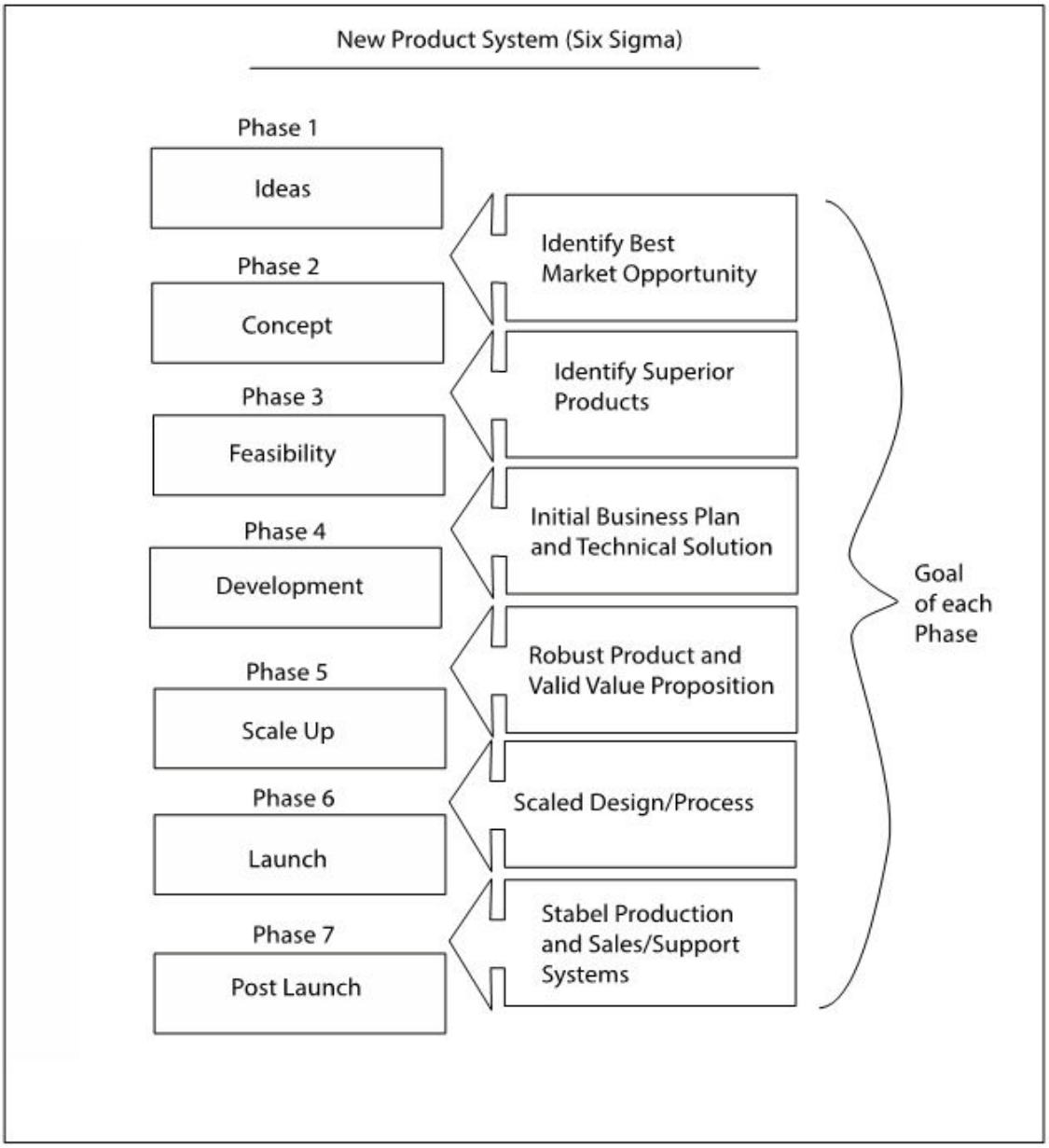
A healthy culture must promote innovation and long-term above irrational development schedules and short-term profits. A company develops innovation through its culture, core competencies and knowledge. A creative culture supported by top management translates into higher productivity, greater employee retention and sustainable profits (Davila, 2013).

When James McNerney become 3M's CEO in 2000, he introduced two Six Sigma tools: the more traditional Design, Measure, Analyze, Improve and Control (DMAIC) method for systematic problem solving; and Design for Six Sigma (DFSS), a linear step-by-step process designed for new product development to help minimize risk by standardizing development. Popularized by General Electric under the leadership of Jack Welsh, these systems combines stringent management gate reviews with Six Sigma quantitative methods (Antony, 2002). Creators could not move forward to the next development stage unless approved by the division operating committee (Figure 1).

THE VALUE OF AN ORGANIZATIONAL STRUCTURE FOR INNOVATION

Stage gates interrupted the creative process when developers were deep in the messy and often unquantifiable process of creating and evaluating new ideas. At critical junctures, McNerney's process forced a shift in attention to report writing and presentation before creation could continue. In the end, implementation of Six Sigma almost destroyed innovation at 3M – it rewarded incremental change and drastically curtailed new product development growth. In Business Week, the new CEO, George Buckley lamented DFSS's negative effect on creativity and innovation (Hindo, 2007).

FIGURE 1
NEW PRODUCT DEVELOPMENT PROCESS



The stage-gate product development process is common in large organizations and when misused encourages incremental versus sweeping change (Rudelius, 2006).The process, improperly implemented, also corrals innovators and incents mediocrity. Control-driven cultures rarely foster true innovation especially when development is not allowed to outpace the understanding of the controlling mechanism. Organizations play not to lose instead of playing to win (Davila, 2013), a conservative approach that results in minor changes to existing products not new ideas.

The most detrimental effect of the stage-gate process is wide-spread adoption of the paradigm that creativity is linear. When creativity is viewed as linear, creators may often appear to be on the "wrong" path. True innovators rarely align with static process deliverables, making project communication and coordination extremely difficult. When creators see their lack of alignment as a failing, they lose inspiration and ultimately disconnect from the organization.

There is dissonance between the conceptual linear development process and the natural way thoughts manifest into things creates a pathology that corrodes the basis for collaborative innovation (Simonton, 1999). When a linear, gated approach is applied, the iteration process and interplay between disciplines is slowed and disrupted. It trades the fertility of collaboration for the sterile pursuit of ensuring each project deliverable and its corresponding review is complete at the same moment in time.

Required effort and pace of development occur asynchronously between disciplines and often do not lend themselves to arriving at a collective "ah-ha" moment. Creators need to iterate and collaborate with others to produce a radical break-through (Bougrain, 2002). Without consideration of the natural way humans explore and evaluate ideas, a static, gated process can be so mechanistic as to sabotage the very creativity it was designed to harness (See Figure 2 and 3).

FIGURE 2
STANDARD MODEL PRODUCT DEVELOPMENT PROCESS

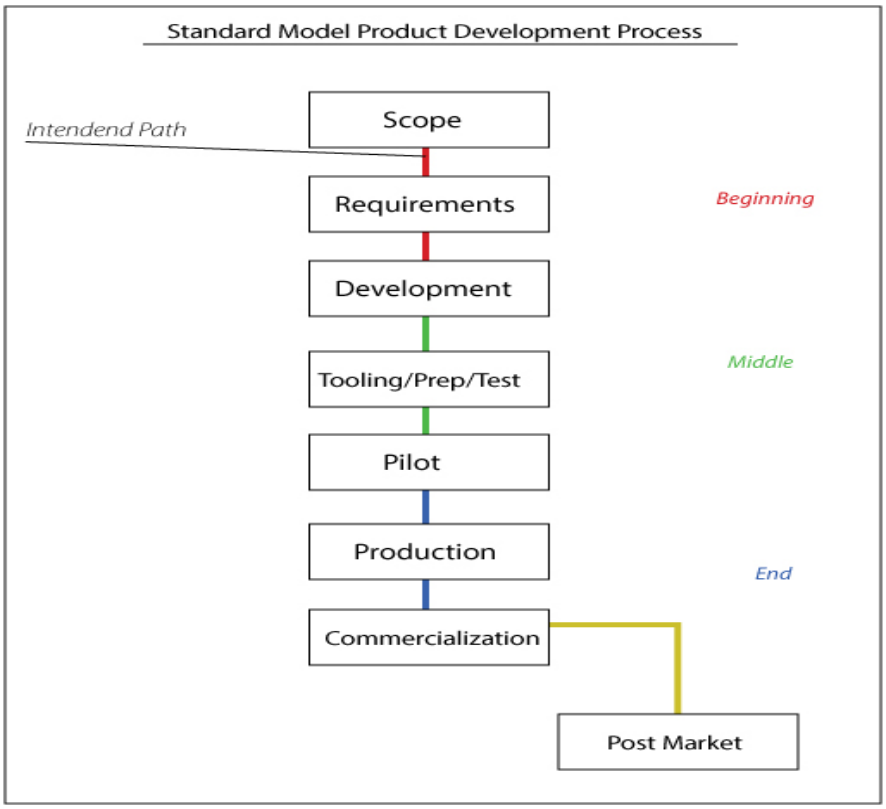
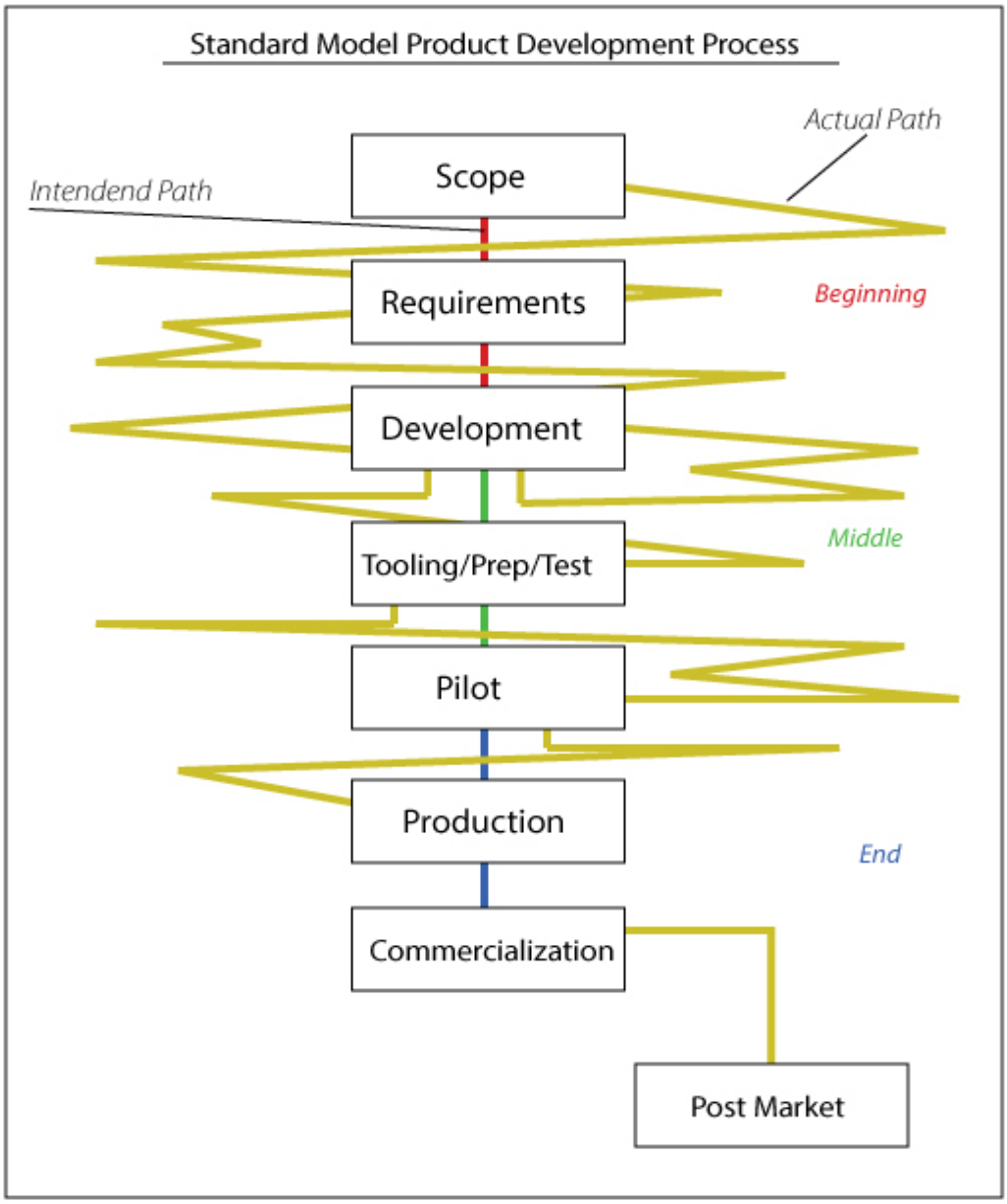


FIGURE 3
ACTUAL MODEL PRODUCT DEVELOPMENT PROCESS



IMAGINING THE INNOVATION PROCESS AS A SPIRAL

At Disney, during the 1990s, to examine creativity was to empower the heart, mind and hands of the artist. To assure that all artists were rising together, revelations on excellence and artistry were shared, discussed, refined and retold in ongoing presentations of the Spiral Lecture (Zaboski, 2014). At its core, the Spiral Lecture was a conversation about context. In other words, it was about how the innovator should think, feel and act about the pursuit of turning a thought into a thing -- rejecting the unwieldy and

unworkable linear path and seeing the process in a more holistic and creatively healthy manner. (See Figure 4).

When the creative process is visualized as a spiral instead of a linear path, it better depicts the true nature of human experience towards creation. The intrinsic development of an idea starts with a feeling or thought followed by intentional cycles of refinement that drive the nascent idea into physical state of being (Wynn, 2007). Within this context the basis is laid for a development process that both fosters innovation and provides the structure necessary for relevant collaboration.

The illustration of progression as a spiral helps creators visualize a final destination as a series of increasingly focused passes. Each pass requires a particular set of solutions before moving on to the next pass. Determining solutions at the head of each pass establishes the work flow for that pass and manages the expectations of all participants in the development process. Iterations allow for freedom to experiment, question, and prototype and discover within a pass while maintaining a consensus trajectory towards completion. Communication is improved because the spiral provides context for each participant to locate themselves and their team members between the start and the finish.

According to James Baxter, a Walt Disney Feature Films Supervising Animator, "Creation is a universal energy" (Baxter, 2012). He taught that every creative impulse in the world conforms to the same basic structure. "If you can look at your own creative process in this way, you can tap into unlimited creativity. We see our creativity in the same way the Universe does: in a spiral."

In Daniel Pink's seminal work, A Whole New Mind, he argues that an empowered future must reinforce skills, abilities and talents that cannot be easily coded, commoditized, machined or productized (Pink, 2006). Businesses will need these non-linear or right-brain dominant skills to stay competitive in an increasingly innovation- driven market. The creator will need to be cultivated and the environment managed to encourage collaborative innovation for future businesses to thrive in the era of big data and technological convergence (Figure 5)

While re-emergence of right-brained thinking must be institutionally nurtured to ensure innovation, this in no way implies a retreat of left-brained systems. Powerful creating takes both sides of the brain and flourishes in organized environments in alignment with the inherent human drive to discover and examine. The Spiral embodies an effective map for creation. It provides the over-arching structure for an enhanced kind of stage-gating whereby participants track and process their progress with fuller purpose. A spiral-based development system harmonizes the product realization process with the natural order of human creation.

The Spiral also cultivates the Creative Keys, critical attributes that facilitate prosperous innovation. These fundamental elements of creativity bring together and empower those who follow the spiral path in service of a common idea. Once fully understood, the Creative Keys enhance the culture of innovation and allow participants to work as a fluid team, focused on a collective purpose, minimizing the distraction of individual ego (Figure 6).

FIGURE 4
INITIAL CONCEPTUALIZATION OF THE CREATIVE SPIRAL

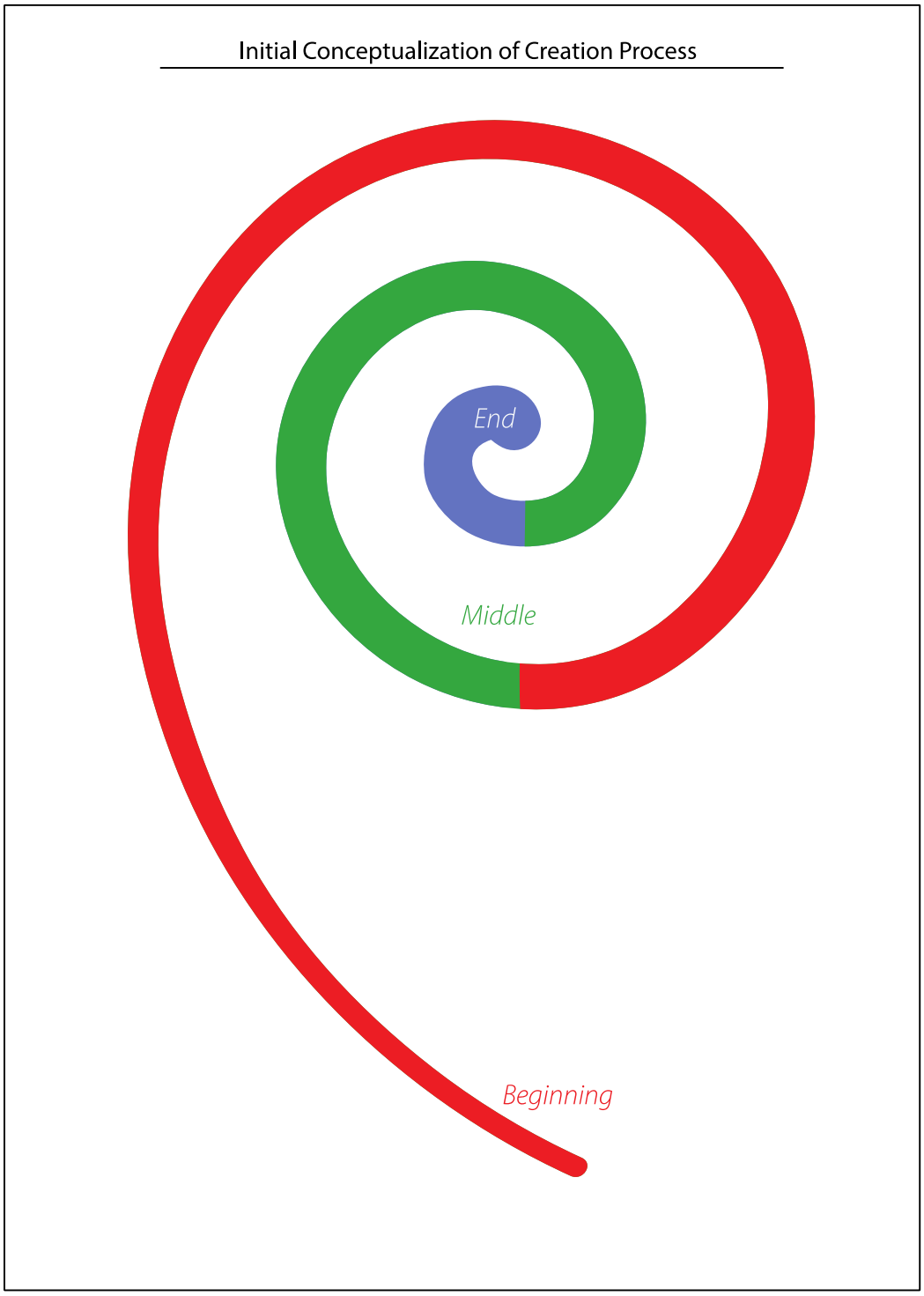
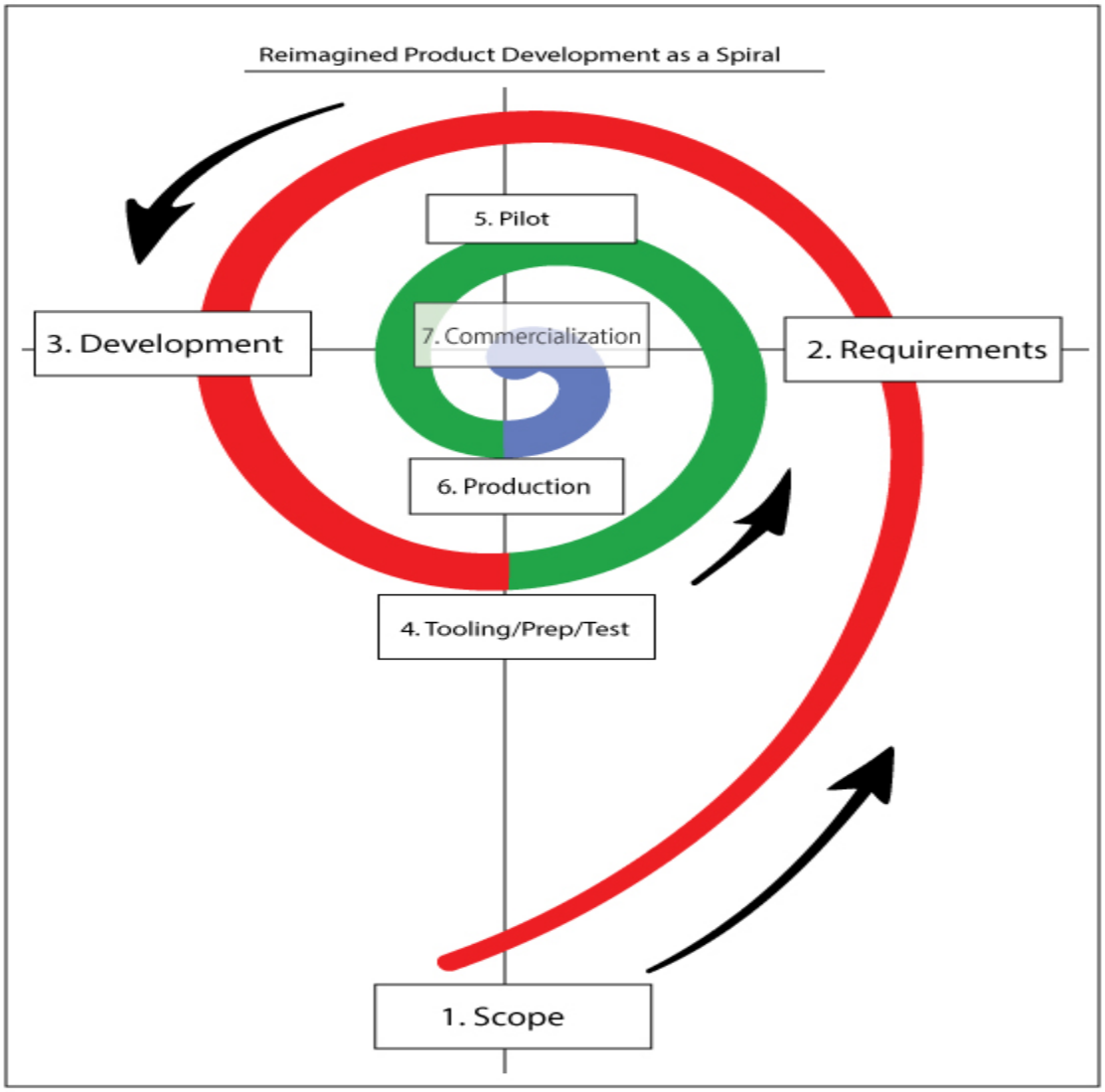


FIGURE 5
PRODUCT DEVELOPMENT CREATIVE SPIRAL



INTRODUCTION TO THE CREATIVE KEYS

"Resolute imagination is the beginning of all magical operations." Paracelsus

Very few organizations have lasted over the past 100 years and fewer have been as creative and successful as Disney (Grant R. M., 1991). Through generations of work with a vast array of individuals and an astute examination of the creative process, Walt Disney came to understand that a culture of creativity must align with the experimental process of discovery. Disney and other competitive studios nurtured clarity of vision and supported iteration. He encouraged collaboration, risk taking and masterful completion in pursuit of excellence. This culture encouraged engagement to support participation and mentorship in pursuit of an idea that belonged to the team. That idea was held in reverence and honed to such clarity that it gained a life of its own. Guided by the concept of a spiraling journey of creation and

examination while working in service of ideas over ego, generations of artists created powerfully, reaching audiences and acclaim previously unseen in the world.

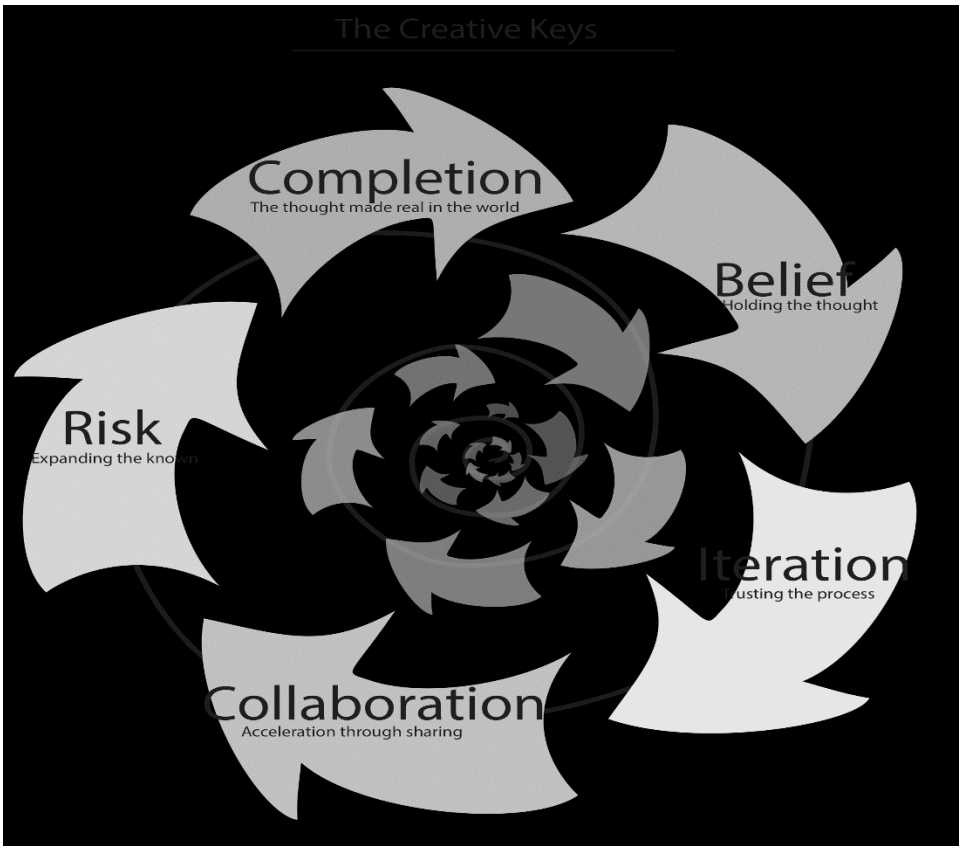
Like any causal relationship, proof of the mechanism of action is to eliminate a key component and observe change. In the late 1990s, pivotal elements of the Disney culture were removed. The result, predictably, was the degradation of the organization's ability to create resonant projects. During this time, a very few team members came to see themselves as the drivers of the team's success. It would take years to break the hierarchy of dominant ego-centered contributors and reestablish a renewed culture of collaboration. In the meantime, Disney Feature Animation went a decade without producing a notable hit film.

Disney's ideas encouraged universal constructs that have been the basis of organic creation throughout human history (Paulus, 2000). These concepts empowered great acts of creativity from the transcendent artistry of the Renaissance painters to the seemingly miraculous constructs of engineers and makers of today. At the core, five keys to creativity propel the trajectory of a novel idea into its purposeful realization in the world (See Figure 6).

The committed cultivation of the following key attributes along with the spiral structure of innovation prepare the contextual ground and provide the framework for an organization or individual to take their ideas powerfully from mind to market. These keys are:

- Creators Believe – They know how to hold a thought - through to completion
- Creators Iterate – They unfold their creation in stages, trusting the process
- Creators Collaborate – They realize the fastest accelerant is generous co-operation
- Creators Risk – They learn healthy risk-taking is integral to enlightened solutions
- Creators Complete – Completing enhances belief in a culture of growth and success

FIGURE 6
THE CREATIVE KEYS



CREATORS BELIEVE

I know who I am, and who I may be, if I choose." Don Quixote, Cervantes.

To believe is to hold a thought. Belief filters the way the world appears and how we act in it (Kahneman D. &., 1986). It is the underlying construct of what we feel is true. The creative leader cultivates clarity of intent capable of inspiration and dedication. What we believe about ourselves, our projects and our team filters our worldview and affects our daily choices. Powerful choices come from clear vision. The importance of mindset when facing challenges and obstacles in work or in organizational environments cannot be underestimated (Dweck, 2007). What we believe makes a difference.

Powerful creation is telling a compelling story. One of Walt Disney's greatest gifts was that he was an amazing storyteller. He told stories with such conviction that he built an army of artists to spread those stories worldwide. Creators tell not just a story about what the person or company is doing, but the cultural story of the organization -- a story about the creator, team, company culture and its members (Jackson, 1998).

Companies like Disney or Apple foster a particular institutional belief. For example, Apple is not an electronics device company as many would think from an a priori glance. It actually considers itself more of a lifestyle company (Austin, 2013). This designation makes much more sense when examining Apple's offerings and how they approach innovation. Their story infuses a particular belief system both internally for its employees as well as what it projects out into the world.

In complex systems and corporate environments staying focused and engaged in creation is a function of establishing clarity of intent or cultivating a practice of believing (Dweck, 2007). Given the current entrepreneurial boom, it is more important than ever to tell a good story. Story carries meaning. Meaning engenders feeling, and feelings are contagious. Companies often forget the "why" behind the technology, industrial design, big data parsing and other aspects of growing a start-up or small cap company. Meaning is the beacon that guides businesses through the fog of regulatory constructs and organizational logistics toward a purposeful contribution to the world.

For creatives, belief is the signal, and everything else is the noise. One practice creatives have is the use of the term signal to noise ratio to describe the mechanism for focus. The signal is an intention tuned to its highest degree. The noise is defined as the everyday distractions, unrealistic deadlines, competing projects, shifting priorities and life. Simply put: the greater the signal, the less noise, the goal becomes clearer. Practices that turn up the signal and turn down the noise enhance the creative process and ensure a defined path toward the manifestation of the idea. This focus helps an organization, team or individual become more productive and increases quality of life.

Belief is a practice cultivated to balance a passion for the project with its reason for being and is best distributed to the world as a story of commitment and purpose (Grant A. , 2008).

CREATORS ITERATE

"Writing is re-writing." Anonymous. To iterate is to engage in the process of continual refinement. Experienced creatives understand the value in phasing their ideas through a series of ongoing passes from start to finish (Howard, 2008). Each pass naturally builds on the learning of the last and moves the project ever closer to its conclusion. Cultivating the ability to understand and implement systems for progressive refinement is a key attribute of powerful creators and a driver of a creative culture.

Iterating towards a predetermined end goal allows the innovator to continually refine large scale, complex requirements while focusing on the details in manageable steps. Each pass addresses certain attributes of the design, improving upon lessons learned and drawing the best of the creator and the creation out of the work. Mistakenly seen as the slower of less direct path to completion of a project, iteration is often the fastest path to discovery. Much of what is learned in a pass can allow for unforeseen

advancements; accelerating a product to market and adding features that position the product as a market leader (Pich, 2002).

In an anecdote told in the book, Art and Fear (Bayles, 1993), a group of students in a ceramics class were divided into two groups. The students in Group One were told their entire grade for the semester would be based on the quality of a single vase. The students were to put all their effort into one perfect creation. In Group Two, the students would be judged entirely on the combined weight of their semester's work. Those who turned in over 50 pounds of ceramic work would receive an A, over 30 pounds a B and so on. Overwhelmingly, the best vases came from the students in Group Two who had the freedom to make mistakes, challenge conventions, fail and practice creating. By "banking creative capital", the students got the best results from the cycle of creative action and analysis than from the attempt to get it right the first time.

In an organizational environment, one significant benefit of evaluating a project in terms of passes is improved communication. As an innovator becomes more familiar with their own process, they can better determine the number of passes necessary to complete a project. As this knowledge accrues, performance predictability increases. This information, shared with cohorts, clients and others, contributes to developing an abiding culture of collaboration and inclusivity, translating into a positive and productive work environment.

Iteration is the fuel for creativity and the path to innovation. Mindful, additive efforts in pursuit of lofty goals often give rise to exponential discovery.

CREATORS COLLABORATE

"Never underestimate the power of a small group of people to change the world. In fact, it is the only thing that ever has." Margaret Mead

To collaborate is to operate collectively in pursuit of a common goal. Any grand pursuit will need a team to bring it to fruition (Bryson, 2006), and how that team operates in concert is critical for its success. In an ideal innovative environment, the fastest accelerant to personal excellence will be generous collaboration (Lunsford, 1991).

At studios like Disney, artists who created Snow White, Sleeping Beauty, Dumbo, Jungle Book and other classics passed their institutional knowledge to the younger artists regarding the subtleties of art and storytelling that made a great film. Their willingness to share their knowledge led to better animated films (Jackson, 1998).

The core concept of collaboration at Walt Disney Animation Studios was that every contribution was meant to be constructive. The monumental task of creating a feature length film by drawing every single frame by hand made it vital to the health of the project that all contributions be additive. In other words, each collaborator would act as a plus sign in the total equation of making a masterpiece. This concept became known at the studio as "plussing," a term coined by Walt Disney himself. Plussing was a key word used by artists at every level of the studio to describe how they would work together. "Can you plus this?" was an oft heard question around the halls and cubicles of Disney artists. Plussing became defined as creative choices being made in service to the trajectory of an idea.

For many years a rich collaborative culture of plussing thrived at Disney and traveled with many of the animators as they migrated to Pixar, Dreamworks and other studios during the expansion into digital films in the late 1990s. Teams well-versed in plussing were responsible for Disney's successes like The Little Mermaid, Beauty and the Beast and The Lion King. Some moved to Dreamworks and brought a culture of plussing to create Shrek, Kung Fu Panda and How to Train Your Dragon (Zaboski, 2014). Plussing could be found at Pixar with Finding Nemo, Toy Story, Monsters Inc., Up and other classic productions. The concept of plussing contributed to one of the most creative and lucrative stretches in cinematic history (Zaboski, 2014).

When innovators operate from a concern for an idea's trajectory, rather than the egos involved, they communicate from a productive, forward moving place. The conversation around trajectory is simple and involves three questions:

1. What choices have already been made? (The Past)
2. What is the plan to implement the idea? (The Future)
3. Are you open to suggestions? (Permission for productivity in the Present.)

A note on permissions: Where a culture of collaboration exists, requests for permission are implied, and do not need to be established. When the culture of collaboration is new or trust is fragile, establishing permissions is essential. Actions without acknowledgement or uninvited advice often cause disruptions in the culture of collaboration.

An organization can encourage plussing by celebrating team members who reach out for collaboration. All too often in a myopic corporate environment, only those who directly lead or build on a project are seen as contributors. This view undervalues team members who seek the best results over their own advancement. Failing to elevate the originator of the collaboration risks perpetuating a closed culture, where information is used as power and placed in a silo to benefit the individual instead of the organization.

With plussing, all contributions are part of the process as the project spirals toward completion. Suggestions are viewed in a positive light and are not seen as criticism of the individual because each critique is in support of the idea's on-going iteration toward completion. The innovator remains committed to a great final product and its shared success. Collaboration enhances products and the teams who work in service of an idea to create them. As skills and knowledge are shared, the team members are individually valued for what they know, what they can teach and what they can contribute.

Rising complexity requires a greater commitment to collaboration. Solutions will come from convergence of knowledge and technologies, making solo operations nearly extinct in innovative environments. The ability to bring people and technologies together in pursuit of a common goal will be the core competency necessary to produce meaningful solutions to difficult problems.

The end result of collaboration is a culture of trust and respect as well as growth of a team of innovators driven by the success of their mutual accomplishments.

CREATORS RISK

"Fortune favors the prepared mind." Louis Pasteur

To risk is to take a calculated action without the guarantee of a predictable result. In creative endeavors risk is inevitable (Sternberg, 1988). Yet when risk is accepted and met as a normal part of making a thought into a thing, the outcomes are evaluated differently; an unexpected result becomes a learning experience. Risk is approached as an opportunity for non-linear advancement and a testing ground for theories and abilities. Seasoned creators learn to cultivate a healthy relationship with risk, developing an ability to make a sober analysis in the unavoidable face of an obstacle. Creativity and risk-taking go hand in hand. Leaders need to foster risk-taking at the grass roots level knowing it just comes with the territory of creating (BlessingWhite, 2008).

Healthy risk incrementally builds trust in process, team, experience and the ability to assess opportunity. With success, an innovator gains insight and experience extending boundaries and enhancing belief. With a miss, experience still accrues and knowledge is banked for the next leap. Honest assessment of risks ensure the organization has the resources and knowledge necessary to navigate the unknowns of the development process to completion (Boehm, 1991).

The creative leap of faith should not be a blind jump into the abyss but an educated exploration of possibilities within a defined space. Innovators are most willing to take risks when the stakes are reasonable and institutionally supported (Kahneman D. L., 1993). Maintaining a steady, educated risk taking approach to development protects an organization from needing to gamble everything to protect or

regain a financially critical market (Memili, 2010). Too often, organizations that have developed a profit center with predictable operations settle into a conservative risk-averse approach to business that leaves them open to competition and ultimately loss (Davila, 2013).

To bring something new to the world almost always engenders risk. Innovators are aware of the risks and despite the accompanying trepidation, worry or doubt, innovators understand that eventually a leap will be necessary to proceed further around the spiral. With each faithful act, the company's evolution becomes part of the story. When risk is approached in concert with the other Creative Keys, it is an act of building trust.

Business savvy leaders of development teams take the time to gather information in the lower cost scoping phase of development to assess risk versus reward when determining if a project Is worthy of the organization's resources.

Creating is inherently a process of constant growth. Powerful creators know risk is an integral part of the process and they develop an expectation that in due time, a great risk will be necessary to cause a quantum leap in the project or business (Davila, 2013). Healthy risk incrementally builds trust in process, team, experience and the organization's ability to assess opportunity. Nothing is ever a failure if some creative capital can be salvaged from the wreckage. Understanding this process gives creatives comfort as they proceed further from the spiral. With each faithful act, the company's evolution becomes part of the story. In concert with the other creative keys, it is an act of building trust.

When the Creative Keys are in balance, risk becomes another opportunity to know oneself, evaluate limitations and proceed with a response worthy of greatness (Zaboski, 2014).

CREATORS COMPLETE

"It takes two people to finish a painting. The painter and someone to tell him when to stop."
(Cezanne, 2012)

To complete is to finish what was started. It is the thought finally turned into a thing. Completion writes the next chapter in an organization's story. The team gains understanding of their competencies and areas for improvement, bringing confidence and ultimately a deeper belief in their abilities. This understanding also fuels a more lucid assessment of each member's contributions, driving greater levels of collaboration and mentorship. Well managed, the team hones its proven strengths and works on its collective weaknesses, growing in its ability to efficiently iterate and innovate together.

Only once development is completed and the product commercialized can an organization definitively get a true sense of its accomplishment, measure and celebrate its success and calculate the value of its creative capital. Post-market surveillance provides undeniable feedback to the team's assumptions on everything from consumer satisfaction to product safety. The lessons learned in the comprehensive study of a complete project can often be more valuable than the product itself (Schlinderm M., 2003). Once a product is in the field, an organization learns how well it assessed the market, managed risk, translated the assessment into requirements and manifested the requirements into a final tangible product. The quality of the product is essentially an artifact of the process. An increasingly successful process yields increasingly successful products. So important is the act of powerful completion it not only impacts future innovation but helps the organization determine which products in its current portfolio are most likely to succeed or have potential for failure.

Without cultivating a relationship with completion, none of these valuable lessons or growth in abilities and culture can take place. For this reason alone, the organization must have a firm commitment to finish projects and not squander its creative capital on something that it does not have the will or resources to complete.

Many institutionally ingrained factors can contribute to an organization's failure to complete and these organizational pathologies quickly degrade the culture. Consequences multiply as team members are unable to identify tangible results of their work or attach value or consequence to their contributions (Gray, 2001). The drive to complete is exponentially reduced with each major shift in priorities, causing

more internal noise and diminishing the company's "signal" to the point where the most driven and talented innovators, those who live to create, are pushed further away from the process until eventually innovation grinds to a full and sometimes irreversible halt.

To complete powerfully, the team must soberly gauge how they bridged the gap between idea and reality, assessing qualitative attributes and quantifiable parameters relative to their expectations. The organization must acknowledge the qualities and contributions of individual participants, and the team must commemorate the creative journey through celebration. We too often move on from one project to the next without evaluating lessons, thanking our colleagues or celebrating victories. Cultivating an understanding of what constitutes completion builds true collaboration as the team works to determine where to strike the balance between perfect and done (Baccarino, 1999).

Intentional completion grants the freedom to move forward with those new possibilities so the organization can tell its next story to the world.

CONCLUSIONS

"As practice makes perfect, I cannot but make progress; each drawing one makes, each study one paints, is a step forward." Vincent van Gogh

We create because we must; we create to solve the challenges posed by history. It is what makes us tick. Our present is the realization of our past imaginings and our future will depend on the stories we tell and the commitments we make today. In this time of exponential growth our mounting challenges will require enlightened solutions. What we believe and how we innovate today will endow our world for tomorrow.

During the classical era, artists developed systems for turning a beautiful thought into a perfected thing. After the Industrial Revolution manufacturing systems diffused into every facet of how things were made. Eventually these systems were applied to movie making and brought mass production back into the hands of the original manufacturers: artists. These more contemporary masters examined, dissected and rebuilt the creative process, marrying art and industry and producing extraordinary results.

We find that the contextual structure of the spiral and the five Creative Keys remain as relevant today as centuries ago. This system for collaboration and enhanced innovation provides makers a natural process of creation grounded in deep historical precedents and yet perfectly applicable to our current demanding business climate.

When the creative process is visualized as a spiral instead of a linear path, it better depicts the true nature of human thought and action towards creation. It harmonizes the product realization process with this human operating system.

The Spiral provides a structure for the Creative Keys – Belief, Iteration, Collaboration, Risk and Completion – critical attributes that facilitate prosperous innovation. These fundamental elements of creativity unite and empower those who follow the spiral path in service of a common idea. Once fully understood, the Creative Keys allow participants to work as a fluid team, focused resolutely on a collective purpose.

In design, engineering and manufacturing, this system leads to explosive innovation through plussing and greater self-expression. These environments increase engagement, raise productivity and improve retention. Ultimately, organizations leverage the benefits of a successful relationship with creation into purposeful contributions to the world.

Management of innovation has been described as unquantifiable by those who create and unmanageable by those who seek to quantify. The authors submit that neither statement is accurate. By visualizing innovation in its natural form, all parties are free to create and revise in a format that encourages open communication and accurate measurement.

The five Creative Keys guide the development process to a culture of collaborative innovation capable of efficiently addressing complex problems. Through clarified vision, lucid process, teamwork, healthy risk taking and a drive to completion, the organization provides the world with much needed

solutions and receives invaluable feedback to build the next chapter of its story. With each cycle, it becomes clear that the organization itself is on a spiral journey to excellence, fueled by the very culture it has created and poised to take on the next greater challenge of turning a thought into a thing.

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