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Commercializing Creative Products

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Commercializing Creative Products
by

Alicia K. Arnold

An Abstract of a Project
in
Creative Studies

Submitted in Partial Fulfillment
of the Requirements
for the Degree of

Master of Science

May 2010

Buffalo State College
State University of New York
Department of Creative Studies

ABSTRACT

Commercializing Creative Products

As someone with preferences for ideation and implementation, I enjoy thinking up ideas and working to bring them to life. Over the years, I captured many of these ideas in notebooks and scraps of paper. Although I investigated the creative product ideas, I have yet to commercialize any of them. When I look at new products on store shelves, I am sometimes haunted by ideas I dreamed up that were brought to life by others. After examining past efforts, I realized focusing on clarifying and developing skills could help improve my chances of commercializing my creative product ideas. For this project, I worked with a new product consultant who guided me through the steps involved in testing the viability of my idea for an innovative food storage container. The result of this work included a documented process for determining the viability of future creative product ideas.

Alicia Arnold

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April 27, 2010

Date

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ACKNOWLEDGEMENTS

I began my journey in creativity in 2007. At the time, I knew I would learn a great deal, but could not fathom the impact the International Center for Studies in Creativity would have on my life. In some ways this Master's Project is an end – the end of a course and the end of the Master of Science program. Yet in many ways this project is also a beginning – the beginning of an invention and the beginning of many expeditions in creativity, innovation and change leadership.

As I think about those who supported me in my studies, I am grateful to Blair Miller, Russell Schoen and Jonathan Vehar for enthusiastically and meticulously guiding me through the first semester. You will always be my mentors. To my Lucky 7's, I am grateful for your creative brainpower, friendship and wisdom. You captured my heart and mind the first time I met you. Without you I would not have made it as far. To the Gr8's, I thank you for welcoming me into your cohort and for your generous support. To Dr. Gerard Puccio, Dr. Susan Keller-Mathers, Cynthia Burnett and the late Dr. Mary Murdock, your passion and expertise helped ignite a lifelong love of creativity. Thank you for your guidance and sustenance. To Elizabeth Pierotti, I appreciate your helpfulness in sharing your experience and skills. You are truly the embodiment of 'The Inventive Life.' And, to my husband, John, and my sons, Garrett and Bradley, thank you so much for your love, your patience, your flexibility and for "giving mommy up" each summer. You have been brilliant sources of support, curiosity, wonder, and much needed entertainment.

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SECTION 1: BACKGROUND TO THE PROJECT

Purpose and Description

The purpose of this project was to develop a process for determining the viability of creative product ideas. For as long as I can remember, I have enjoyed thinking up ideas. Over the years, I captured many of these ideas in notebooks and scraps of paper. Although I explored these creative product ideas extensively, I have yet to commercialize any of them. When I look at new products on the store shelves, I am sometimes haunted by ideas I had dreamed up that were brought to life by others.

Evidence

In 2007, my oldest son was a year old and learning how to speak. In thinking about all the ways to build his literacy skills, and those of other budding toddlers, I recalled Sesame Street (www.sesamestreet.org) and Schoolhouse Rock! (http://en.wikipedia.org/wiki/Schoolhouse_Rock!). These highly regarded programs blended education and entertainment to make learning fun.

In assessing the landscape of current television shows, I saw an opportunity to create an animated television series to teach literacy in an engaging manner. To begin, I set out to learn all I could about television production and to create a pitch document (written description of the concept with sample illustrations) to bring to production studios. The purpose of the pitch document was to get a production studio interested in taking on my project.

As a person with strong preferences for ideation and implementation, I was consumed by the world of future possibilities and driven to learn more. I

scoured the Internet and was able to locate a 164-page interview documenting how Joan Ganz Cooney conceived and founded the Children's Television Workshop, which later became Sesame Street (Polsky, 1972). Inspired by Ms. Ganz's success, I completed the written portion of the pitch materials, searched for an illustrator, and began to network with television personnel.

As 2007 came to a close, I developed a wonderful network of people who were knowledgeable about television and production. My network included former producers of Nickelodeon, employees of the Public Broadcasting System (PBS), and an animator who worked on the award-winning Curious George cartoon. I was even able to find someone in my network who knew Carroll Spinney, the voice of Sesame Street's Big Bird and Oscar the Grouch since 1969. However, even with these contacts, I was unable to bring the television concept to life.

In sitting down with one last producer, reality set in. The producer told me he loved the idea and would be happy to take my written concept and create a 3-minute animated short that could be used to start a dialogue with television studio executives. The catch was this animated short would cost \$300,000. I felt dismayed. If a 3-minute short cost \$300,000, there was no way I could fund a series of 20-minute shows.

Seeing the look on my face, the producer explained costs. As an example, he pulled up the credits to an episode of an animated television series and asked me to count the number of people involved in producing the cartoon. As the

credits rolled, I lost count. In my excitement to create a television show, I naively neglected to think about a very important consideration – the cost.

Through this Master's Project, I developed a process for determining the viability of creative product ideas. Working with Elizabeth Pierotti, a new product consultant, I tested the viability of my new product idea for a food storage container. Leveraging this new idea provided a fresh start and the ability to document the process for testing viability in a less constrained manner.

Rationale

As I thought about how this Master's Project could help me in the future, I recalled my quest to create the animated series and saw a pattern. I decided there must be a better way to go about determining the viability of a product idea before investing time and money into producing the product. By quickly assessing the viability of an idea, I could either get it out of my head to make room for other ideas, or follow it through with greater confidence of success.

In reflecting on why I have not been able to create tangible products from my numerous ideas, I considered my FourSight preferences (Puccio, 2002). As a person with strong preferences for ideating and implementing, the allure of newness and getting into action outweighed my desire to think through the details of the product ideas. As such, I had difficulty conveying my ideas to others. When people questioned my ideas, I began to doubt the ideas and lost energy. At that point, I replenished my energy by thinking up new ideas. Other times, my preference for getting into action caused me to gloss over important details, like how much it might cost to bring the product to market. In

documenting the process for determining the viability of the food storage container, I concentrated on building clarifying and developing skills.

Why A Food Storage Container?

I enjoy cooking and entertaining. Each year, my in-laws and I take turns hosting holiday dinners. For Thanksgiving, I make the main course and my in-laws make the side dishes. In December, we switch roles and they make the main course while I make the side dishes. Over a span of 10 years we have nearly perfected the system. However, a few challenges remain:

- Each holiday my family pulls apart the cabinets in search of large food storage containers that can endure a car ride without tipping or spilling.
- When we arrive at the designated home, we greet one another, then quickly compete for microwave and stove time to reheat our dishes.
- The creator of each dish watches over his or her contribution to the meal with pride, but soon becomes dismayed when his or her dish takes a backseat in the reheating queue or is rushed so that other dishes can be reheated.
- When guests are stuck in traffic or miscalculate their time of arrival, we end up reheating dishes multiple times – drying out the food and altering the taste and texture.
- With the meal as the centerpiece of the holiday tradition, typical clear plastic food storage containers detract from the holiday ambience.

- To overcome the challenge of ubiquitous, see through plastic containers, we sometimes transfer the food into serving bowls and platters. However, we then have even more dishes to clean after the meal.
- For my family, food has an emotional point of relevance – it is extremely rewarding to both cook and to eat. Spending time preparing a scrumptious dish only to have it spill in the car, reheated tirelessly, or served from a common plastic container is heartbreaking.

I saw a way to solve these problems – and a way to change how we think about food storage containers. My vision entailed an innovation in food storage containers. With this Master's Project I documented the process involved with testing the viability of this new product idea.

Working through the initial stages of documenting a process for determining the viability of creative product ideas has improved my chances of launching a new product in the future. During this semester, I harnessed and engaged clarification and developing skills to further my understanding of the idea and to test viability. Given my penchant for ideating and implementing, the ability to create tangible products opens up a lifetime of opportunities. Tapping into an outlet for creative products also provides a pathway for personal creative growth.

SECTION 2: PERTINENT LITERATURE

In preparing for this project, there were a number of pieces of literature that informed my thinking. Listed below are key learnings and sources that influenced my work.

Negative Emotions Spur Creativity

As I began this Master's Project, I found overcoming adversity and conquering roadblocks brought positive energy. Although it seemed counterintuitive, negative emotions, like frustration and confusion, helped to spur creativity. This is explained by Csikszentmihali (2008) who wrote, "The best moments usually occur when a person's body or mind is stretched to its limits in a voluntary effort to accomplish something difficult and worthwhile" (p. 3). In support, Helson (1999) found, "The relation between occupational creativity and negative emotionality fits the idea that negative feelings are an important source of originality and insight. They may also have a part in maintaining creative motivation" (p. 97).

Stumbling Is Expected – Just Fall Forward

There were plenty of learning opportunities along the path towards validating the food storage container idea. And, sometimes the best learning came from making mistakes. Given the way I saw this product being launched, it was crucial to obtain a patent. As I started thinking about the technologies that would be used, I identified one method that proved to be a poor fit due to financial and performance reasons. After this first "stumble" I had to figure out a new technology, all the while learning the ins and outs of the unfamiliar patent

process. To my dismay, the patent process was far more complex than I had anticipated and I soon realized why a whole industry of Patent Agents and Patent Attorneys existed to walk would-be inventors through the application process. Tables 1 and 2 from the World Intellectual Property Organization (2009) show the steep difference between the number of patent applications and number of patents granted – supporting the notion of complexity.

To try and overcome the reality of the patent statistics, I engaged my ideation skills and began networking with engineers. When it came to mistakes, Kelly, Littman & Peters (2001) found:

You could stumble as long as you fell forward. The team chalked up its share of blunders: parts that didn't fit together, computers that wouldn't pass muster at the FCC, mirror-image part drawings. But the team picked itself up, absorbed the hard lessons, and moved on.

(p. 21)

What helped me *move on* in the quest for a new technology was connecting with engineers who had the subject matter expertise to clarify the mechanics of the multiple problems I was looking to solve. These valuable folks helped me think through the details and identify micro-challenges to be overcome in order for the product to function as envisioned.

Table 1 – Patent Applications 1985 Through 2007

Total number of patent applications by resident and non-resident (1985-2007)

Source: WIPO Statistics Database, June 2009

Note: WIPO estimate. Counts are based on the patent filing date. Resident filing refers to an application filed at an Office of or acting for the State in which the first-named applicant in the application concerned does not have residence.

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total Patent Applications	926,008	950,983	997,195	1,013,500	1,017,650	1,006,044	895,680	951,860	951,586	948,316	1,052,677	1,090,926	1,156,104	1,205,571	1,274,081	1,383,557	1,460,536	1,448,420	1,491,494	1,570,970	1,701,179	1,788,788	1,854,416
Resident Applications	641,513	663,158	700,429	701,257	692,261	676,951	588,567	623,023	638,130	627,021	678,186	680,043	704,142	718,613	751,044	830,703	847,157	839,803	870,200	908,370	975,673	1,006,293	1,051,563
Non-Resident Applications	284,495	287,825	296,766	312,243	325,389	329,093	307,113	328,837	313,456	321,295	374,491	410,883	451,962	486,958	523,037	552,854	613,379	608,617	621,294	662,600	725,506	782,495	802,853

Table 2 – Patents Granted 1985 Through 2007

Total number of patent grants by resident and non-resident (1985-2007)

Source: WIPO Statistics Database, June 2009

Note: WIPO estimate. Counts are based on the grant date. Resident filing refers to an application filed at an Office of or acting for the State in which the first-named applicant in the application concerned has residence.

Non-resident filing refers to an application filed at an Office of or acting for the State in which the first-named applicant in the application concerned does not have residence.

Year	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total Patent Grants	394,645	402,752	410,921	395,835	423,627	410,075	302,711	375,863	388,855	406,437	424,621	532,285	498,767	542,053	573,445	519,978	540,792	558,353	617,874	618,666	630,315	752,426	764,700
Patents Granted to Resident	216,566	228,031	241,460	229,778	248,698	237,872	132,185	187,625	193,087	210,885	231,375	334,665	292,277	318,167	335,786	297,226	301,601	304,942	326,053	322,424	338,170	414,153	428,997
Patents Granted Non-resident	178,079	174,721	169,461	166,057	174,929	172,203	170,526	188,238	195,768	195,552	193,246	197,620	206,490	223,886	237,659	222,752	239,191	253,411	291,821	296,242	292,145	338,273	335,703

Being Customer-Centric Is Better Than Being Customer-Led

According to Kelly, et al. (2001), “Customers mean well – and they’re trying to be helpful – but it’s not their jobs to be visionaries” (p. 27). What this told me was I needed to work to understand and define the problems I could solve for my customers, but I shouldn’t take customer feedback verbatim. As I began sharing my product idea with individuals involved in the validation process, some became engrossed with my idea and started to shape the product concept into something I did not intend it to be. The chance to define a new product was very attractive, especially for those who were both subject matter experts and potential consumers of the product. On a few occasions, I found myself having to stay grounded in the product vision while being open and flexible in finding ways to bring the idea to market. What grounded me was looking at all the options and determining how well each solved the original customer problem. This was similar to Miller, Vehar and Firestien’s (2001) ground rule of “checking objectives” when it comes to the Creative Problem Solving process.

Multiple Creative Projects Can Be Productive

As a person with strong preferences for ideation, I am usually thinking about many things at once. While some believe working on multiple projects is unproductive, Erren (2009) found:

The evolutionary and somewhat intuitive commitment to several projects at the same, and often extended, periods of time can be a recipe for revolutionary results fostered by the required variation and diversity of thinking and cross-fertilization of – seemingly – unrelated themes and fields. (p. 4)

When my energy ran low or I was stuck on a particularly stubborn challenge, I switched gears to another project in my arsenal. This allowed time for incubation and allowed my preference for implementation to kick into action. By accomplishing a task that was easier to bring to fruition, I was able to replenish my energy.

While working on this Master's Project, I also published an article about creativity and education (Arnold, Spring 2010), worked on materials to co-lead a design thinking workshop at the 2010 Creative Problem Solving Institute (CPSI), and submitted a book proposal for a how-to book on Creative Problem Solving to a major publisher (Arnold, In process). I funneled the energy from these accomplishments back into the Master's Project and have been able to harness the momentum to get through the technology hurdle. And, the tactic paid off – a Patent Agent deemed my food storage container patentable.

Clarification Runs Almost Opposing To Ideation

According to Puccio & Grivas (2009):

A clear distinction emerged between the clarification and ideation steps of the creative process. For instance, it is not surprising that people who have a high degree of energy for ideation to possess such traits as impulsive, restless, impatient, eager and open to change. A qualitatively different stage of thinking, clarifying the problem, aligned with a different set of characteristics. Individuals with high Clarifier preferences can be seen as careful, cautious,

reflective, factual, calculating, matter of fact, critical, logical and thorough. (p. 253)

With this in mind, I worked to identify a network of people who could help me clarify and develop. Additionally, I hypothesized I might be able to improve my success with clarifying and developing by engaging affective thinking skills such as avoiding premature closure and having sensitivity to the environment (Puccio, Murdock & Mance, 2007).

Reframing Can Be Helpful In Shifting The Mood

When my energy is at its lowest, I tend to be in clarifier or developer mode. In order to increase my energy and push through the desire to give up, I changed my perspective on the task at hand. By reframing the task as a challenge, I re-engaged intrinsic motivation and was able to continue with clarifying and developing. This is explained by Csikszentmihalyi (2008):

A person can make himself happy, or miserable, regardless of what is actually happening 'outside,' just by changing the contents of his consciousness...this ability to persevere despite obstacles and setbacks is the quality people most admire in others; and justly so, it is probably the most important trait not only for succeeding in life, but for enjoying it as well. (p. 24)

Intrinsic Motivation Enhances Creativity

Based on research by Hennessey (2003):

There is a direct link between the motivational orientation brought by an individual to a task and their likelihood of creativity performance on that task, and it is the environment, or at least

certain aspects of the environment, that in large part determine that motivational orientation. (p. 254)

What this told me was the environment is important to creativity and that I am responsible for creating a personal climate for creativity that is rooted in intrinsic motivation.

Spending Time To Validate An Idea Is Better Than Losing Money On A Failed Product Introduction

New product failure rates are astounding. Some estimates suggested 35% - 45% of new products introduced fail, while others suggested 90% of new products introduced to the marketplace fail (Besemer, 2006). Although my preference for getting to implementation beckoned, I did my best to slow down and think through the details so that I had a better chance at beating the odds. As a person who prefers thinking about the big picture, I worked with Elizabeth to think about this project in smaller, bite sized pieces. By doing so, implementation became framed within many, smaller achievements rather than one large goal. This helped with my perception of moving too slowly. The greater number of achievements helped me feel I was moving towards a positive outcome.

Novelty, Resolution And Style Are Keys To Success

In clarifying and developing my new product idea, I focused on Besemer's (2006) dimensions of the creative product (Novelty, Resolution and Style). The product I envisioned needed to demonstrate a degree of newness, solve a problem and be presented in a pleasing manner. Interestingly, with the engineering-types I worked with, Style took a back seat to the technical aspects. In working with the Industrial Designer, he was more in tune with Style. What this

told me was being clear on my personal goal to marry Novelty, Resolution and Style was important and I needed to rally for one dimension or another depending on who I was working with. Each person involved in this project had a role and a goal. In order to get the best from all involved, I needed to be the glue which brought the pieces together in a seamless manner.

Innovation Means Teamwork

Networking and surrounding oneself with knowledgeable, like minded peers is important for nurturing new products. Robinson & Aronica (2009) stated:

Finding your tribe offers more than validation and interaction, important as both of those are. It provides inspiration and provocation to raise the bar on your own achievements. In every domain, members of a passionate community tend to drive each other to explore the real extent of their talents. (p. 118)

By working with Elizabeth and engaging our collective networks on this endeavor, I increased the chance for success many fold.

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SECTION 3: PROCESS PLAN

Process Definition

As part of this Master's Project, I worked with a new product consultant named Elizabeth Pierotti. I first met Elizabeth in 2007 when I attended her inventor's workshop. Elizabeth runs a program called Innovation Monday which is offered by the Massachusetts Small Business Development Center (<http://www.msbdc.org/>). Through the Innovation Monday program, Elizabeth works with budding inventors to help them determine if, and how, their new product ideas can be brought to market. From her biography, Elizabeth:

Began as an educator teaching in primary grades through graduate school while a nun in a Catholic religious order... From there, the business life beckoned and she opened and managed locations for an expanding retail stereo operation. That organization was eventually sold and she decided to launch her own chain of consumer electronic stores where she found a specialty niche creating advanced custom auto sound systems. She segued into designing innovative marine stereos, then water sport and sporting good products, and finally consumer goods. As an experienced inventor and strategic product developer specializing in consumer goods for the active life-style, Elizabeth has designed and developed innovations on behalf of Fortune 500 companies, distributors, retailers and inventors. Grateful to have found her true vocation, Elizabeth has come full circle and shares decades of lessons-learned in workshops for those just starting out on their own creative journeys. (www.theinventinglife.com)

From the first meeting with Elizabeth, I was intrigued by her background, experience and accomplishments. Although I was not ready to invent at the time, I kept Elizabeth's contact information and connected with her several years later.

Based on her experience, Elizabeth defined a new product framework, which I later customized to fit my needs. In working together, Elizabeth and I assessed each of the steps and determined how best to continue through the product viability phase. It is important to note, these steps were sometimes concurrent, recursive and non-linear. In the beginning, the steps were somewhat sequential, however, as I moved through the steps, the outcome of each step determined whether to continue, go back a step or jump to another part of the process. As I progressed through the process and learned new things, I went back to prior steps to capture and/or refine my thinking. The steps for determining the viability of new product ideas (see Table 3 at the end of this section) were adapted from Elizabeth's process. They include the aspects discussed next.

Defining the Product

During this phase, I described my invention, including the features and benefits in a format that was suitable for upcoming development, presentations, and intellectual-property-related uses. This outcome of product definition resulted in a product specification document that included the following sections:

- Product Objectives
- Product Definition
- Positioning Statement

- Target Market Segmentation
- Financial Summary
- Product Technology Overview
- Features and Benefits
- Product Drawing
- Prior Art Search

In order to complete the product definition document, I conducted extensive research. I also used diverging and converging techniques and 5W's and an H to fill in the details of the product idea. All of the findings from this research were collected in a Microsoft Word document. Due to the need to protect the invention as the idea is being developed into a viable product, I refer to key findings in the outcome section of this paper. The complete Microsoft Word document including the nine sections listed above are kept confidential.

Developing An Organizational Plan

I created an action list and organized the project one step at a time. In order to create the organizational plan document, I defined the process I would use to determine the viability of the food storage container idea, determined dependencies, and identified the resources required to successfully complete each activity. I began by conducting initial industry research to understand the food storage container market and worked to decipher the process companies within the industry took in manufacturing their products. Research included conversations with subject matter experts along with scouring publically available material, publications, and documentaries on product design.

Conducting A Prior Art Search

I searched for products that were on the market, may have failed, been discontinued, or were ahead of their time; and for issued patents and patents pending. In order to conduct the prior art search, I leveraged the U.S. Patent and Trademark office database to “dig deep” and uncover similar or related products to determine how I might diverge and generate new claims for my product idea. In addition, I worked with a Patent Agent to determine the patentability of my new product idea.

Conducting Market Research

I conducted market research on several levels of the project including industry, segment, consumer/demographic, market opportunities/prospects, sourcing, materials, technology, trade associations, trade publications, shows and events. Similar to defining the product, I tapped into diverging and converging skills, as well as the ability to dig deep and surface information that helped determine the viability of my product idea.

Working with an Industrial Designer

As all of the above steps proved fruitful and my new product idea appeared viable, I worked with an Industrial Designer to develop a design solution that took into consideration form, usability, ergonomics, engineering, marketing, branding and sales. In engaging with the Industrial Designer, I worked to ensure the product included dimensions of Novelty, Resolution and Style.

New Product Viability Process

Based on the steps Elizabeth outlined in her process, my learning from the food storage container idea, and individual style and preferences, I customized a process for determining the viability of new product ideas. This process contains tips and lessons learned to help me more effectively and efficiently work through the assessment of new product ideas in the future.

Communication Log

As a requirement for this Master's Project, each student was required to keep a communication log. My communication log quickly became the one document that captured all correspondence throughout this project. In the communication log I recorded my thoughts, feelings, actions and reactions when it came to interacting with Elizabeth, Luciano (my sounding board partner), Manufacturers, Engineers, Fabricators, Patent Agents, potential end consumers of the food storage container, industry contacts, and the Industrial Designer. The communication log was crucial to documenting the new product viability process, key learning and conclusions.

Table 3 – Project Timeline and Process Plan

Description	Completion Date	Resulting Products
Defining the Product – Describing the invention, features/benefits in a format suitable for upcoming development, presentations, and intellectual-property-related uses.	January 31, 2010	A 44-page product specification document.
Organizational plan – Creating a to-do list and organizing the project one step at a time. Keeping the goal in mind by starting at the beginning and tracking progress.	February 5, 2010	A detailed project plan.
Market Research – Conducting market research on several levels of the project including industry, segment, consumer/demographic, market opportunities/prospects, sourcing, materials, technology, trade associations, trade publications, shows and events.	February 15, 2010	Research on target market and industry.
Prior Art Search – Searching for products that are currently on the market, may have failed, been discontinued, or were ahead of their time; and for issued patents and patents pending.	February 28, 2010	Listing of patents that are relevant to my product.
Intellectual Property Protection – Reviewing examples of NDA's and preparing one for future use. Considering a professional search and pending results, filing a provisional patent application.	January 30, 2010	Non-disclosure agreement.
Industrial Design – Working with an Industrial Designer to define and design the product.	April 16, 2010	Concept drawings and product renderings.
New Product Viability Process – Document the process followed for determining the viability of new products.	April 7, 2010	New Product Viability Process.
Communication Log – Capture correspondence, thoughts, feelings and actions related to this project.	April 19, 2010	Communication Log.

SECTION 4: OUTCOMES

Introduction

As I began this project, I was excited by the prospect of launching a new product. On the other hand, I also felt confused and overwhelmed with making the idea concrete enough to describe to a patent agent, industrial designer or manufacturer. I suppose if I had started with a product that was within my subject matter expertise, it would have been easier to understand how to take the idea through to a tangible product. However, with a background in marketing and digital strategy, I was not immediately equipped to figure out how to fill in the gaps when it came to technology, materials, manufacturing or engineering. Although I took courses in new product development as part of my MBA degree, the actual steps of conceiving and developing a new product were foreign.

When I thought about all the holes that needed to be filled, a running list of questions sprang to mind. Questions like, How are food storage containers made? Who are the key manufacturers? What might be all the ways to bring a food storage container market? How might I partner with name brands like Tupperware, Rubbermaid or others? What about Target? What might be all materials I could use? After just a short while, these questions began to overtake my thoughts. Soon, I became incapacitated.

After taking a moment to step back and look at how all of these questions were related, I decided to work on understanding the big picture, then filling in the holes. Even with Elizabeth's help in this early stage, I only had a vague outline of what I needed do – ambiguity was everywhere.

In searching my memory for similar experiences, I recalled comparable emotional ups and downs when working on the animated television series. In the case of the animated television series, I focused on what initially drew me to create the product in the first place and was re-energized. This time I was not as lucky. In trying the focusing technique with the food storage container idea, I struggled to relight the spark. I found myself relying on Elizabeth's correspondence to get me through the negative feelings.

Between the gaps in my correspondence with Elizabeth, I knew I had to make progress in defining my product. My hunch was I needed to "describe the dickens" out of the food storage container (Wenger, 1992 as cited in Parnes, 1992). It was definitely time for clarification – and I was not looking forward to this. I slowly captured all of the questions I had in one place. Then, I clustered to identify the key areas to be addressed. From there, I engaged my implementation preference to conduct an online search for templates and samples of product specification documents.

I believed having a concrete starting point and outline would help create momentum. Additionally, I knew there must be existing documents I could use as a starting point. The web search proved helpful and I felt my energy levels rising. I was able to find a number of product specification samples to leverage. In the end, I combined the best and most appropriate elements from a number of templates to fit my needs. Table 4 provides a listing of resulting products from this Master's Project. To preserve confidentiality, I will refer to some of the

resulting products in whole, while providing portions of other products as part of this document.

Table 4 – Resulting Products

Resulting Products
A 44-page product specification document.
A detailed project plan.
Research on target market and industry.
Listing of patents that are relevant to my product.
Non-disclosure agreement.
Concept drawings and product renderings.
New Product Viability Process.
Communication Log.

Product Specification Document

With a product specification template in hand, I set out to fill in the details of the food storage container idea. Over the weeks I accumulated many pieces of information and realized it was time to organize. An early entry in my communication log shed light to the importance of organization:

Yesterday morning I realized I needed to print out all of Elizabeth's correspondence and look at it all in one place. Part of my overwhelmed feeling stemmed from having bits of electronic information scattered in different places. I need to start a folder, a binder system, or some other way tracking all of the information I am finding during the research phase. (Arnold, 2010)

By bringing all of the information together in one place, I was able to appreciate the amount of work I had actually completed and the vast new knowledge I had gained amidst the feeling of running in circles. The end result of this stage was a 44-page product specification document (see Figure 1 below).

Figure 1 – Table of Contents from Product Specification Document

Table of Contents	
1	BASELINE REQUIREMENTS SUMMARY 4
1.1	Product Objectives/Release Themes..... 4
1.2	Definition and Description..... 4
1.3	Product Release Positioning Statement..... 4
1.4	Expected Release Date..... 5
2	MARKET RESEARCH 6
2.1	Industry Information..... 6
2.2	List of Thermalware Manufacturers..... 6
2.3	Plastics Fabricators 13
2.4	Hardglass Vacuum Liner / Dewar Fabricators..... 14
2.5	Target Market Segmentation, Regional Limitation, and Special Conditions..... 14
3	FINANCIAL SUMMARY 24
3.1.1	Sales & Revenue Forecast..... 24
3.1.2	Costs and Budget Estimates 25
3.1.3	Product Development Costs..... 25
3.1.4	Manufacturing and Distribution Costs..... 26
3.1.5	Sales and Marketing Costs..... 26
3.1.6	Support and Training Costs..... 26
3.1.7	General and Administrative Costs 26
3.1.8	OTHER COSTS 26
3.2	Non-financial Impact..... 26
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4	PRODUCT OVERVIEW 26
4.1	Product Requirements..... 27
4.1.1	Specific Functional Requirements..... 27
4.1.2	Performance Product Requirements..... 29
4.1.3	Development Requirements..... 29
4.1.4	Compatibility Requirements..... 29
4.1.5	Physical Requirements..... 29
4.1.6	Support and Training Requirements..... 30
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5	PRODUCT FEATURES AND BENEFITS MAP 30
6	PRODUCT SCHEDULE 31
6.1	Product Schedule and Critical Milestones..... 31
7	SUPPORTING DATA..... 33
7.1	Product Drawing..... 33
8	PRIOR ART SEARCH..... 33
8.1	Description of Invention..... 33
8.2	Synonyms (or Antonyms) for Key Words..... 33
8.3	Boolean Search..... 34
8.4	Relevant Patents 35
8.5	Patent Classifications 42
8.6	Patent Comparison..... 43

Although Elizabeth did not specifically recommend the creation of a product specification document as part of her process, I found it necessary to capture all of my research in one place. In struggling to initiate this project, the product specification document was part of my early exploration and helped with the organization of my overall thinking. If there was a magic bullet in this project, it was the creation of the product specification document. By taking the time to write down and synthesize each of the findings, I was able to periodically look back and clarify points I was stuck on. The product specification document helped identify some of the more challenging aspects of the food storage container idea early on so that I could take the time to think through obstacles and develop solutions. In that way, the document acted as a reminder to clarify and develop. It also provided the necessary raw materials to do so.

Food Container Sketches

From the start of this project, Elizabeth stressed the importance of obtaining a patent. As an independent inventor, a patent is a crucial legal instrument for protecting the product idea. Since most independent inventors do not have the financial means or technical capabilities of manufacturing their inventions, a patent allows an inventor to engage in dialogue with a manufacturer knowing he or she is legally covered.

In the early stages of investigating the patentability of the food storage container, I was stumped by what is and what isn't patentable. As I learned, design patents, or patents issued based on the form or style of a product, are less valuable than utility patents which are issued based upon the newness, usefulness and non-obvious use of a process, machine, article of manufacture,

composition of matter, or a new and useful improvement thereof

(<http://www.uspto.gov/web/offices/pac/doc/general/index.html#patent>)

While I started this project believing I could begin the food storage container sketches independent of the patent process, I soon found the sketches were crucial to the overall patent. My initial sketches for the food storage container utilized a round bowl-like shape. However, upon investigating the materials that would be used to form the food storage container, I found one of the key materials was rigid in nature and could not be easily formed into a rounded shape. This required me to rethink the overall look of the bowl and I have since settled on a more rectangular form.

Although my sketching abilities were nascent, I found it was important for me to take an initial stab at sketching so that I could convey my idea to those involved in the very early stages of this project. These initial sketches helped keep the dialogue with the Patent Agent going while I began looking into Industrial Designers. By sketching the early ideas of the food storage container myself, I was able to save money by not paying an hourly rate for initial sketches that would need to be changed numerous times.

Exploring Collapsibility

My idea for the food storage container had a number of features. Some were more straightforward while others could be implemented in a number of different ways. In defining product features, I asked friends and family to help come up with a wish list of features that would make the product more appealing. Out of this exercise, the notion of collapsibility became a key. It seemed my target group was looking for ways to store containers in order to save space.

Stories of opening cabinets and having plastic containers tumble were plentiful. With the other product features worked out, I set forth to think about what “collapsible” really meant. As I thought about collapsibility, I rearticulated the problem statement as, “How to make the food storage containers easy to store?”

In working through lists of ideas for easy storage I clustered the ideas into seven categories including: hinged (foldable ladder), collapsible (umbrella), telescoping (ramp on a moving truck), foldable (convertible car), retractable (tube of lipstick), stretchable (inch worm) and separate-able (like Lego[®]). Many of the inspirations for easy storage came from nature. Biomimicry provided examples like the Morning Glory flower and tortoise (Figure 2).

As I explored the feature of easy storage, I realized how prioritizing for a particular feature made other features unworkable. For example a product that folded requires a flexible body material that might not be strong enough for transporting food. While a mechanical means of easy storage, such as a hinge, made it unfeasible for storing liquids for fear of leaking. From this experience, I learned the lesson of the holistic nature of product design. The materials, technology and design all needed to come together harmoniously. And, to do so meant tradeoffs.

Figure 2– Tortoise (Example of Retractable)



{{Information |Description={{en}|=The head of a wild tortoise in Cape Province, South Africa}} |Source={{own}} |Author=[Charlesjsham](#) |Date=2009-12-12 |Permission={{cc-by-3.0}} |other_versions= }} Canon EOS 300D with 300m lens)

Organizational Plan

An important element was the organizational plan. Project planning is the bane of my existence. In my professional life, I work with project managers who are adept at defining key activities, timeframes, responsible parties, and dependencies. In my personal life, rather than starting with a written organizational plan, I prefer to keep the end goal in mind and test different pathways for getting there. Although formal project planning is not a natural preference, I understood why Elizabeth felt an organizational plan was crucial. And, I also saw the flaw of not having a one in developing the animated television series. I knew I needed to create a document to keep my ideation and

implementation preferences in check. Otherwise, I foresaw a situation where I ideated and implemented while losing track of critical steps in the process.

The challenge in defining the organizational plan was to figure out the full range of activities and how they fit together. I procrastinated in starting the project planning exercise – partly due to confusion and partly due to my dislike of structure. To get the organizational plan started, I thought about how project managers began planning complex projects. What I remembered was at the start of the project, they went to each party involved and gathered a list of activities that needed to be completed. They would then lay out each of the activities based on priority and identify dependencies. Using an example of an organizational plan document Elizabeth provided, I studied the food storage container market to understand what a start to finish process might look like. In addition to correspondence with Elizabeth, a couple of important resources helped me outline the overall project including Kelly et al.'s (2001), *The Art of Innovation* and Hustwit's (2009) documentary *Objectified*.

The creation of the organizational plan helped to ground the overall framework, however, given the recursive and non-linear nature of the process, keeping the plan up to date proved daunting. Rather than spending time continually updating the organizational plan, I opted to document the organizational plan once and check periodically to make sure I covered each of the steps. Table 5 provides an example of the organizational plan.

Table 5 – Organizational Plan

Task	Start Date	Complete Date	Responsible Party	Deliverable	Type	Dependency	Cost
Preliminary Investigation							
1. Define Product Features and Benefits	1/12/10	2/5/10	Alicia	Product Requirement Document (PRD)	Parallel		N/A
2. Define technology	1/2/10	2/12/10	Alicia	Updated PRD	Parallel		
Project Plan / Organizational Chart							
3. Draft initial plan and update	2/1/10	Ongoing	Alicia	Project Plan	Parallel		N/A
Technical Feasibility Analysis							
4. Define raw materials	2/14/10	2/18/10	Materials Engineer	Updated PRD	Serial	2	
5. Define sourcing (which types of manufacturers)	2/18/10	2/23/10	Mechanical Engineer	Updated PRD	Serial	4	
6. Identify production process steps required for manufacturing	2/23/10	2/27/10	Mechanical Engineer	Updated PRD	Serial	5	
Product Drawings							
7. Create CAD drawings	3/1/10	3/15/10	Industrial Designer	Drawing	Parallel	6	
Prior Art Search							
8. Conduct Prior Art Search	2/5/10	2/26/10	Alicia	Research Findings	Parallel		
Market Research							
9. Conduct market research industry, segment, consumer/demographic, market opportunities/prospects, trade shows, events	1/12/10	3/15/10	Alicia	Updated PRD	Parallel		
10. Conduct initial paper prototype (take drawings and other visuals to a test panel to get feedback on the direction)	3/18/10	3/26/10	Alicia	Concept test findings	Parallel	4	
Intellectual Property Protection							
11. Review examples of non-disclosure agreements (NDA)	3/15/10	3/16/10	Alicia	N/A	Serial		
12. Prepare NDA for personal use	3/16/10	3/20/10	Alicia	NDA	Parallel	10	
13. Consider professional search pending results	3/16/10	3/20/10	Alicia	N/A	Parallel	8	
14. File provisional patent	3/20/10	Ongoing	Alicia	Provisional Patent	Parallel	12	
Financial Analysis							
15. Contact manufacturers and get estimated costs	3/15/10	3/30/10	Alicia	Updated PRD	Parallel	6, 7, 9	
16. Conduct financial analysis	4/1/10	4/8/10					
Proof of Concept							
17. Contact resources to develop prototype	4/8/10						
18. Develop prototype							

While my name is listed as the responsible party for most of the action steps, I soon realized my role switched between being the person who completed the deliverable to being the person orchestrating the deliverable. The difference depended on my level of subject matter expertise.

Market Research

Out of all the activities, market research was the most closely aligned with my background and therefore the most comfortable. I enjoy learning and am proficient at finding information. Through market research I was able to document the target market, industry relationships, trade publications, and manufacturers. It was actually quite amazing how much free information exists online. In particular, I was surprised by how companies, like Claritas, provided detailed demographic and psychographic profiles free of charge (Table 6). I found these profiles quite

helpful in defining the target market and forecasting sales. Using the PRIZM data, I was able to further refine the target audience and document recruiting criteria for concept testing. Generally speaking, conducting market research helped me substantiate the audience size which convinced me it was plausible to continue testing the viability of the product.

Table 6 – Prizm Segmentation

Winner’s Circle (Prizm Segment 06): Wealthy, Middle Age with Kids

Among the wealthy suburban lifestyles, Winner’s Circle is the youngest, a collection of mostly 35 to 54 year-old couples with large families in new-money subdivisions. Surrounding their homes are the signs of upscale living: recreational parks, golf courses and upscale malls. With a median income over \$100,000, Winner’s Circle residents are big spenders who like to travel, ski, go out to eat, shop at clothing boutiques, and take in a show.

Social Group: Elite Suburbs
Lifestage Group: Accumulated Wealth

2008 Statistics:

US Households: 1,252,376 (1.09%)

Median HH Income: \$105,311

Lifestyle Traits

- Shop at Neiman Marcus
 - Go sailing
 - Read Working Mother
 - Watch Wimbledon Tennis
 - GMC Yukon Denali
-

Demographics Traits:

Urbanicity:	Suburban
Income:	Wealthy
Income Producing Assets:	High
Age Ranges:	35-54
Presence of Kids:	HH w/ Kids
Homeownership:	Mostly Owners
Employment Levels:	Management
Education Levels:	Graduate Plus
Ethnic Diversity:	White, Asian, Mix

Source: http://en-us.nielsen.com/tab/product_families/nielsen_claritas/prizm

Prior Art Search

Prior art search refers to an initial step in determining patentability. To conduct a prior art search meant using the U. S. Patent and Trademark Office web site (<http://uspto.gov>) to search for patents that were similar or related to my food storage container invention. When it came to patents, I learned early on there are two kinds – utility patents and design patents. From the perspective of an individual inventor, a utility patent offers the most comprehensive protection. As such, one of the major activities in this project included patent research. Figure 3 provides an example of a patent I felt was related to my food storage container idea. Like many of the activities in this project, my notion of the food storage container changed over time causing some of the findings of this prior art search to become irrelevant. However, this example provides a good sample of the outcome in conducting a prior art search.

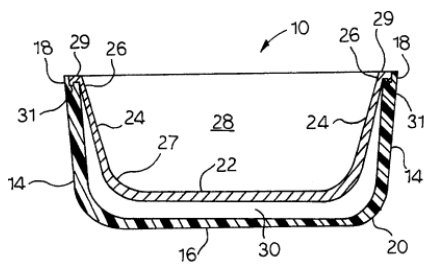
Outside of looking to see if the food storage container idea was already patented, a prior art search provided details on the types of claims that define the scope of each invention. Knowing the scope of an invention helped me define new, non-obvious and useful enhancements to what exists to help make securing a patent possible.

Figure 3 – Example from Prior Art Search

Thermal insulating containers for retaining food and beverage (Patent Number 5,579,946), Issued December 1996

A thermal insulating bowl or container which is for keeping the original temperature of the food or beverage contained therein. The thermal insulating container is to prevent heat transfer from occurring by radiation, convection and conduction. This is achieved by having the container with a double-wall structure. The gap between the walls is a vacuum or partial vacuum cavity which encompasses both the sidewalls and the bottom of the container. The cavity may be partially filled with gas such as carbon dioxide (CO₂) or dry nitrogen N₂. By having this vacuumed or partially gas filled, food and beverage kept in the container can remain warm or cold for an extended period of time.

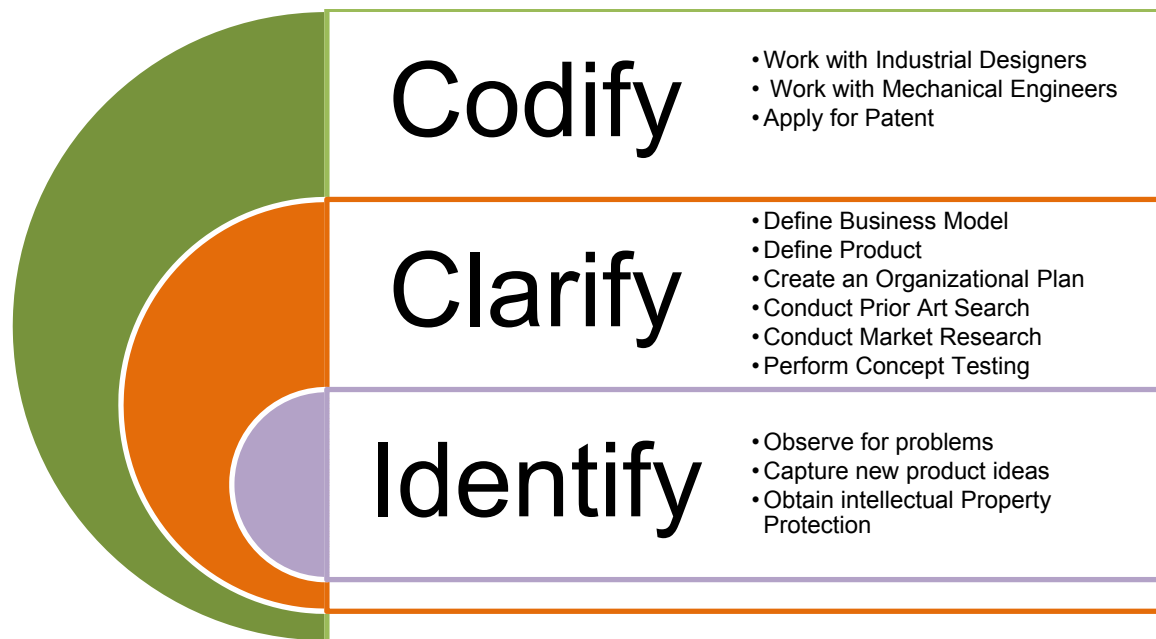
Inventor: Rowan Donald



New Product Viability Process

One of the main goals of this project was to develop a process for determining the viability of new products. Throughout this project I documented my activities and learning so that I could combine them into a process flow. As I began this project, I started with Elizabeth's suggested process and amended to suit my needs along the way. Figure 4 illustrates a general process I defined for testing the viability of new product ideas in the future. Similar to the process Elizabeth outlined, this one is also non-linear and recursive in nature.

Figure 4 – New Product Viability Process



Within this New Product Viability Process, there are a number of activities captured under the headings of *Identify*, *Clarify* and *Codify*. Each of these activities allows for learning and refining such that the process becomes organic in nature. *Identify* is about exploring opportunities – the problems to be solved, ideas for solving and protecting the innovation. While, *Clarify* is about framing and detailing the approach. Lastly, *Codify* is about documenting the solution in such a way it is reproducible by others and meets the level of a patent. Details are outlined below.

Identify

Observe for Problems – Become more aware of your surroundings. Use all of your senses. What are all the problems you might solve? Capture as many problem statements as possible.

Capture New Product Ideas – Keep a running list of new product ideas that solve the problems identified. Return to the ideas periodically. Choose ideas with promise and those that give you energy.

Obtain Intellectual Property Protection - Review non-disclosure agreements and create one for personal use. There are plenty of publically available examples to leverage.

Things to Remember: Some companies will not sign non-disclosure agreements. Depending on the type of company and what business they are in, a non-disclosure agreement may not be as important. For example, many times manufacturers of raw materials are not in the business of developing products. They are interested in selling their raw materials and do not get involved with product development. Speaking to these manufacturers may be alright without a non-disclosure agreement. Trust your instincts. If things do not seem right, chances are they are not. There are many paths that can lead to the same end. Do what feels most comfortable.

Clarify

Define Business Model – Define how the product will be brought to market. The product can be brought to market in a number of ways including licensing, contract manufacturing and by bringing the product to market by the person who owns the idea (entrepreneurship).

Things to Remember: One of the key factors in determining the business model is the upfront cost – the upfront cost of licensing is considerably less than taking a product to market by yourself. On the flip side, the payout for licensing can be less than what you could make as an entrepreneur. Other things to keep in mind include subject matter expertise and control of the final product. If you have the know-how to bring the product to market, entrepreneurship can be attractive. This option also provides the most control over the final product.

Define Product – Per Elizabeth’s model, this phase includes defining the invention, its features and benefits in a format suitable for upcoming development, presentations, and intellectual property uses.

Things to Remember: When it comes to defining the product, it is less about how a marketer defines a product and more about how a Patent Agent or Patent Attorney define a product. While it is important to convey the product in such a way an untrained individual might understand the idea, what really matters is the new material, technology and/or method that will be used to create something that is novel, useful and unobvious. A number of patents are born from existing technologies that are used in new ways. Be sure to check out NASA’s technology database and other resources showcasing new and novel materials. In addition, ThomasNet is a good resource for finding materials, manufacturers and fabricators. As

you go through the process, you may need to redefine the product to ensure the product can be manufactured efficiently, effectively and profitably.

Create an Organizational Plan – The organizational plan lists the activities, dependencies and timeframes involved with the project.

Things to Remember: An organizational plan is not as daunting as it seems. Look on the web for videos, documentaries, books and other reference material to provide a framework, or hints and clues as to the major activities involved with the type of project you are working on. And, remember an organizational plan is flexible. Be sure to capture as much as possible knowing it can always change.

Conduct Prior Art Search – Scour stores, the web and the U.S. Patent and Trademark office to look for products that are similar to what you are considering. Keep a detailed log of what you find.

Things to Remember: When it comes to patent protection a product does not need to be exact to make patentability a non-starter. Look for related products and industries. Be sure to reference Elizabeth's suggestions for how to conduct a prior art search. Although following the steps can be cumbersome, the thoroughness of this step-by-step prior art search can save time and money when working with a Patent Agent or Patent

Attorney. Once the prior art search is complete, take the findings to a Patent Agent or Patent Attorney to get an initial read on whether the new product idea is patentable. You may need to rework your definition based on feedback.

Conduct Market Research – Review the industry, target audience, market size, materials, technology, trade shows, and publications to learn all you can about the business you are considering entering.

Things to Remember: While some market research is necessary in order to determine the business model and project plan, you can leave in-depth market research until after patentability has been determined. In the early days of testing for new product viability, it is good to know enough about the market to understand there will be demand for your product and that you can make money, but doing detailed market research can be left until later. Good sources for cursory research include Hoovers (www.hoovers.com), annual reports from companies selling products like yours, Claritas Prizm (www.claritas.com) and industry associations.

Perform Concept Testing – Take the concepts from working with the Industrial Designer out to the target audience for testing. Look to understand how the product performs against Besemer's (2006) facets of Novelty, Resolution and Style. In addition, probe the target audience for

purchase intent and price point. Be sure to solicit feedback to help improve the product as well.

Codify

Work with Industrial Designers – develop initial concepts and renderings (computer generated views of your product).

Things to Remember: While an Industrial Designer can help with materials, processes, human factors, ergonomics, engineering, product development and packaging, the Designer will rely on you to provide accurate specifications. Because of this, a clear understanding of the product features, benefits and requirements are needed. In addition, locking in the technology and materials that will be used for the product are important as the Industrial Designer will use these assumptions to prepare the concepts. Multiple rounds with the Industrial Designer will be required. Get as close as you can to your product vision in the first iteration, then allow flexibility for feedback that will come from conducting consumer testing and working with others in the process such as, a Mechanical Engineer or a Patent Agent.

Work with Mechanical Engineers – If concept testing proves successful, work with a Mechanical Engineer to further refine the product. A Mechanical Engineer can help with materials, the manufacturing process, costs and product performance expectations. A prototype may be required to determine proof of theory (i.e. will the product really work as

expected?). When it comes to the patent process, prototypes can be expensive. Depending on how you see the product getting to market, a prototype may not be necessary. As is the case with many of these steps, do what is minimally required while being as thorough as possible.

Apply for Patent – Work with a Patent Agent or Patent Attorney to apply for a provisional patent.

Things to Remember: A provisional patent provides one year of protection to prove out the concept. The information provided in the provisional patent application needs to be aligned with the actual patent application. If things like the material or technology change between the filing of the provisional patent and the filing of the actual patent, then the provisional patent becomes void as you are then changing the invention. Because of this, it is important to clarify as much of the invention as possible before applying for the provisional patent.

Communication Log

Throughout this process I kept a communication log of all of my correspondence, thoughts, feelings and actions. While much of the information contained in the communication log specifies confidential aspects of the food storage container idea, the log also documents a great deal of learning and personal growth. These lessons learned are shared next in the Key Learnings Section.

SECTION 5: KEY LEARNINGS

In thinking about the best way to document my key learnings from this Master's Project, I realized the communication log provided great insight into the journey, challenges, and my personal growth as a result of overcoming obstacles and learning new skills. The following provides excerpts from my communication log.

Remember Others Have Been There Before You

Today I wrote a thank you note to Elizabeth. It really was good meeting with her. In thinking about my next steps, I continued to look forward to Elizabeth's email while thinking about our conversation. I knew one of my next steps would be to define my product. As Win Wenger said, I needed to "describe the dickens" out of my product. I am not looking forward to this. I don't know what questions I need to answer in order to create a description that is vivid enough to bring to a manufacturer AND I don't know where to start. I decided to find templates and samples of product specification documents and product requirement documents. The web search proved to be helpful and I felt my energy levels rising. I was able to find a couple of samples plus info on manufacturing. (Arnold, 2010)

Organization Is Key To The Process

Yesterday morning I realized I needed to print out all of Elizabeth's correspondence and look at it all in one place. Part of my overwhelmed feeling stemmed from having bits of electronic

information scattered in different places. I need to start a folder (or binder system) or some way of tracking everything I am finding in research. (Arnold, 2010)

Affective Thinking Is Important In Developing New Products – Go With Your Natural Preferences

Stopping to think about the technology was helpful (albeit painful). It was difficult figuring out where to turn. Not knowing the industry is making this process feel like finding a needle in a haystack. I am turning to my ideation and implementation skills for help. When I am feeling stuck, I press on...go for implementation to help get me moving. Sometimes, a small glimmer of hope is all I need to regain energy and implementation helps to provide that. As for ideation skills, when I am stuck, I am figuring out ways to use ideation to help find alternative solutions to the problem. By having a template to work from (product specification document) I can ideate and move on to different pieces. Not going through each step of the template linearly is helpful. (Arnold, 2010)

Variety Is The Spice of Life

Remember, variety is the spice of life. When I was feeling overwhelmed by this project, I switched gears and worked on *Jack and Jill Unscripted* (a nonfiction book teaching CPS). It did the trick! Having an arsenal of creative products can be a good thing. It helps to keep my energy up...when I'm stuck on one project I can turn my attention to another. Tapping into my implementer preference can

help me unfreeze so that I can return to clarifying and, or developing. (Arnold, 2010)

Tenacity Pays Off

In looking back, it is amazing how far I have come. Where I used to be concerned about the technology, I now know it is feasible to do what I am looking to do. A question still remains regarding performance. Will the technology stand up to performance standards? Over time I have learned to work through road blocks by engaging curiosity, ideational fluency and my preference for implementation. When I am stuck, I ask myself what other questions exist, or how might I find this same information in a different way. Usually, these types of questions help free my mind to look at things in a new way. When all else fails and my energy starts to dip, I have learned to switch tasks. Also, taking a break is good therapy for getting back on track. Usually I will come up with an answer for the challenge I am stuck on while taking a break or doing another task. This multitasking may explain why I enjoy diversity. I have never been one to focus on just one thing. Guess I've found a way to make it work. The prior art search was a good example of working through a problem. In starting the search, I became concerned by the sheer number of patents that matched what I was looking to do. The patents numbered in the hundreds of thousands. However, by sticking to it, I was able to narrow the patents to a set of about 380 that are applicable. In that time, I went

from 'wow, this product will never see the light of day...look at the hundreds of thousands of competing patents' to 'hmm, given the 380 or so patents that are relevant, none are an exact match...maybe this idea has legs.' In a short period I went from hopeless to hopeful and have done enough research to know the technology is feasible. Just need a solid proof of theory to see if the features meet the requirements. And, if not, all is not lost. I know I can ideate a bit and switch the requirements, technology or design to achieve the same end goal. (Arnold, 2010)

Clarify To Avoid Focusing On The Wrong Thing

The biggest learning from this early conversation is that I was focused on the wrong thing. I misunderstood the word features to mean design features and not technology features. In order to patent, I need a technology feature.

How do I feel? In some ways like I've taken a great leap forward and in some ways like I've taken a step back. In reviewing all the work since the beginning of this project, I have learned a great deal. I know much, much more than I did even a few weeks ago. In terms of the step back, I have seen how a low clarification preference and a high implementation preference can get me into trouble. I veered left when I should have veered right. The good news is the information I learned is still helpful and even if I had focused on how to improve the existing technology, I would have hit a dead

end because this is not my area of expertise. In some ways I needed to get a base level of learning in order to have the next conversation. The not so good news...I am not sure where I got off track and could step into the trap again. I think it comes down to vocabulary. Just the simple word feature means something different to an inventor than a person who comes from an advertising background. In the future, I will work with Elizabeth to get more concrete and explicit directions so that I can lower the chances of misinterpretation. (Arnold, 2010)

Take It To A Logical Conclusion, Then Move On

After yesterday's discussion I decided to take a little bit of time to regroup. I ended the day feeling a bit frustrated and like I am starting over again. However, my time to regroup was short lived. Elizabeth ended up emailing with a suggestion from Joe to contact the technology transfer people at NASA to see if they might have a technology that would work. In addition to Elizabeth's correspondence, Joe also checked into a specialty manufacturer and suggested they could be interesting to investigate. I decided to bite the bullet and start with closing out the conversation about the first technology. I emailed Seth with some specific questions and a picture of what I am looking to produce. I say bite the bullet, because I fear the news will be the product is too expensive to produce and it will have physical frailties. If this leads to a dead end, I will investigate another technology. I have adopted

Joe's motto... "It is easy to come up with an idea – it is not easy to come up with an invention. Invention takes lots of sweat equity. Take it to a logical conclusion, then move on." Continue to make sure there is a problem to be solved and that you are able to solve it. (Arnold, 2010)

Using Existing Technology In A New Way Rises To The Level Of A Patent

After speaking with Elizabeth, I decided to contact another Patent Attorney to see if existing technologies and a number of other features will rise to the level of a patent. I seem to still be getting stuck on wording. I hit a wall with finding a new technical solution to the problem, but have found an existing technology. Hopefully the Patent Agent can tell me definitively whether the product is patentable. (Arnold, 2010)

The Devil Is In The Details When It Comes To Patents

Spoke with Seth about filing a provisional patent. At this time, I need more information about how the bowl will be made in order to file. How will the product be manufactured? What will hold the technology in place? I need to specify how all this will be done. If I file a provisional using the information I have now, then the details come later, I will not be covered under the provisional because I will most likely have a totally different product than what is covered under the provisional. (Arnold, 2010)

SECTION 6: CONCLUSION

As I sat back and took an objective look at this Master's Project, some of the things I have learned about creativity and change leadership include: the importance of collaborating with others, the importance of following a process, and the importance of staying grounded while being flexible when it comes to defining a creative product. Now that I have gone through the process of determining the viability of a creative product idea once, I plan to keep a running list of ideas and use the new product viability process as a first step towards commercializing creative product ideas in the future.

The Importance Of Collaborating With Others

Creating products is not a solo endeavor. Throughout this project I have collaborated with a new product consultant, two Patent Agents, an Industrial Designer, numerous manufacturers and a host of others who were willing to serve as a test group for the food storage container idea. What I realized in working with these individuals is each was eager and willing to help, as long as I was specific about the request. At various points in time, I found myself unable to clearly articulate what I was asking or what I was stuck on. In these moments, reaching out was less helpful than taking the time to clarify the situation. Questions like, "Why? What's stopping you?" became second nature. Once I was able to pinpoint and articulate the issue, everyone I reached out to was more than happy to help. The generosity of each of these folks was surprising. Each shared his or her knowledge openly and freely. Without this collaboration I would not have been able to get as far.

The Importance Of Following A Process

One of the most helpful parts of this project was working with Elizabeth and using the process she suggested as the framework for determining the viability of creative product ideas. Having a place to start and knowing there were existing resources I could tap into kept the momentum going – even during those times when I felt helpless. Being able to search the web for ideas to augment the process, or for documents I could use as templates were useful ways to learn from the experience of others. I quickly found creating a process from scratch wasn't always the most effective or efficient way. By leveraging Elizabeth's process as the foundation, I was able to ensure I didn't miss any major steps while customizing the activities to suit my needs and preferences.

The Importance Of Staying Grounded While Remaining Flexible

Inventing products requires comfort with ambiguity. To be successful, a person must keep the outcome in mind while allowing the lessons learned along the way to help shape the end product. Interestingly, a strong and clear definition of the product is required early on. Otherwise, you take the risk of developing a product that does not solve the problem you set forth to solve.

In The Future

In the future I will continue testing the viability of my creative product ideas using the process outlined in this Master's Project. I suspect I will continue to refine the process – adding and modifying as I gain more experience. As an addendum to this project, I see myself working with the creative product ideas that pass the viability test to document the process for bringing them to life. This

process might include contacting and working with manufacturers nationally, as well as, internationally.

With this Master's Project I have begun a journey that opens up a lifetime of inventing. By doing so, I hope to provide a pathway for continued creativity and change leadership. While working on this project I have reached the point where I have a new product idea for a food storage container that rises to the level of a patent. Moving forward, I will work to commercialize the food storage container idea while testing the viability of additional creative product ideas. My creative product idea queue is 30 ideas long and waiting. In the future, I hope to create a pastime of inventing and perhaps someday to even earn a living doing so.

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SECTION 7: APPENDICES

APPENDIX A: CONCEPT PAPER

Concept Paper Title: Commercializing Creative Products**Name:** Alicia Arnold**Submitted:** February 16, 2010**Project Type:** Work on a new skill or talent (I want to create something in my life that was not there before)**Section One****Purpose and Description of Project:**

The purpose of this project is to document a product development process to determine the viability of a creative product idea.

Over the years I have filled the pages of many notebooks with descriptions of new product ideas. Although I have spent a great deal of time exploring these ideas, I have yet to commercialize them.

In reflecting on why I have not been able to create tangible products from the ideas, I considered my FourSight preferences (Puccio, 2002). As a person with a strong preference for ideating and implementing, the allure of newness and getting into action outweighs my desire to think through the details of the product ideas. As such, I sometimes have difficulty conveying my ideas to others. When others question my ideas, I begin to doubt the ideas and lose energy. At that point, I replenish my energy by thinking up new ideas.

In examining this pattern, I realize it may be a lack of details that makes it difficult to bring my ideas to life. To address, I will work on the constructs identified in the FourSight preferences of Clarification and Developing, developing my skill in these areas in order to define my ideas in a more concrete manner.

With this Masters Project, I plan to determine the viability of a new product idea for an innovative food storage container.

Rationale for Selection:

I have chosen to work on clarifying and developing skills in order to help determine the viability of my product ideas. Given my penchant for ideating, the ability to create tangible products can open up a lifetime of opportunities, as well as, a pathway for tapping into my personal creativity. The ability to quickly understand the viability of product ideas will help me become more effective and efficient in the new product development process.

Section Two

Pertinent Resources:

For this project, I have defined two pertinent resources:

- Elizabeth Pierotti – An ex-nun with a Catholic religious order who mentors and coaches new inventors on the product development process. Elizabeth leads a program through the Massachusetts Small Business Development Center called Innovation Monday. I have contracted with Elizabeth to serve as my Innovation Coach via the Innovation Monday program through April, 2010.
- Dr. Susan P. Besemer – One of the first graduates of the Creative Studies program at Buffalo State College, Dr. Besemer is passionate about products. She recently founded *ideafusion*, a consulting company which works with organizations to evaluate and improve their products using her online assessment measure, the Creative Product Semantic Scale (CPSS).

Pertinent Literature:

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Section Three

How Do You Plan to Achieve Your Goals and Outcomes?

I plan to achieve my goals by working through each step of the Innovation Monday program. These steps as defined in the Innovation Monday program include:

- Defining the Product – Describing the invention, features/benefits in a format suitable for upcoming development, presentations, and intellectual-property-related uses. The problem solving strategies I will use include diverging and converging to identify the product requirements, gathering data to help clarify and develop the product idea, generating ideas on the technology used to create the product and leveraging 5W's and an H to fill in the details of the product idea. All of this information will be collected in a Product Requirements Document that will identify the target market, product financials, manufacturing specifics, sales projections, market positioning, product requirements, as well as, product features and benefits.
- Organizational Chart – Creating a to-do list and organizing the project one step at a time. Keeping the goal in mind by starting at the beginning and tracking progress. This to-do list will act as the project plan and will be updated regularly as the project progresses. In order to create this organizational chart, I will need to define the process I will use to determine the viability of this product idea, determine dependencies and identify the resources that will be required to successfully complete each activity.
- Prior Art Search – Searching for products that are currently on the market, may have failed, been discontinued, or were ahead of their time; and for issued patents and patents pending. In order to conduct the prior art search, I will leverage the US Patent database to “dig deep” so that I uncover similar or related products to determine how I might diverge and generate new claims for my product idea.
- Intellectual Property Protection – Reviewing examples of NDA's (non-disclosure agreements) and preparing one for future use. Considering a professional search and pending results, filing a provisional patent application. Once I have reviewed sample NDA's, I will tap into Developing skills to create one that suits my needs.
- Market Research – Conducting market research on several levels of the project including industry, segment, consumer/demographic, market opportunities/prospects, sourcing, materials, technology, trade associations, trade publications, shows and events. Similar to defining the product, I will tap into diverging and converging skills, as well as the ability to dig deep and surface information that will help determine the viability of my product idea and set up the proof of concept.
- Proof of Concept – Contacting prototyping resources who can expedite a proof of theory, create a good working model, or assist with engineering/material or manufacturing related questions.

Project Timeline:

Description	Estimated Completion Date
Defining the Product – Describing the invention, features/benefits in a format suitable for upcoming development, presentations, and intellectual-property-related uses.	February 5, 2010
Organizational Chart – Creating a to-do list and organizing the project one step at a time. Keeping the goal in mind by starting at the beginning and tracking progress.	February 15, 2010
Prior Art Search – Searching for products that are currently on the market, may have failed, been discontinued, or were ahead of their time; and for issued patents and patents pending.	February 26, 2010
Intellectual Property Protection – Reviewing examples of NDA's and preparing one for future use. Considering a professional search and pending results, filing a provisional patent application.	March 12, 2010
Market Research – Conducting market research on several levels of the project including industry, segment, consumer/demographic, market opportunities/prospects, sourcing, materials, technology, trade associations, trade publications, shows and events.	March 31, 2010
Proof of Concept – Contacting prototyping resources who can expedite a proof of theory, create a good working model, or assist with engineering/material or manufacturing related questions.	April 23, 2010

Section Four

What Will be the Tangible Product(s) or Outcomes?

As a result of this effort, I will create an individualized new product development process outlining the steps I can take to determine the viability of my new product ideas in the future. The new product development process will be annotated with key learning from this Master's Project to serve as a reminder and encouragement to continue clarifying and developing even when faced with uncertainty. Annotations may include suggestions for when and with whom to network, a list of resources collecting data, and quotations from the Master's Project to help reinforce affective thinking strategies.

Section Five

Personal Learning Goals:

My personal learning goals for this project include:

- To develop ways and means to determine the viability of my product ideas.
- To identify tools and techniques to further clarify and develop my ideas.

- To gain an understanding of the optimal process for realizing creative products.
- To figure out how to tap into the knowledge and experience of others, like Elizabeth Pierotti and Susan Besemer, to help develop creative products

What Criteria Will You Use To Measure The Effectiveness Of Your Achievement?

I will know I am successful if...

- Elizabeth Pierotti is able to read my product definition and fully understand the product idea
- I am able to begin the Proof of Concept phase by the end of April
- I am able to identify ways and means to clarify and develop my ideas
- I develop a larger network of product development contacts

Evaluation:

To evaluate my learning, I will complete an evaluation form rating my success on the following dimensions:

- To what degree have I developed ways and means to determine the viability of my product ideas?
- To what degree do I have tools and techniques to further clarify and develop my ideas?
- To what degree have I defined an optimal process for realizing creative products?
- To what degree have I successfully tapped into the knowledge and experience of others, like Elizabeth Pierotti and Susan Besemer, to help develop creative products?
- To what degree are others able to read and fully understand my product definition?
- To what degree have I adhered to or adjusted the project timeline accordingly?
- To what degree have I built a larger network of product development contacts?

APPENDIX B: PERMISSION

Permission to place this Project online as part of the International Center for Studies in Creativity resources.

I hereby grant permission to the International Center for Studies in Creativity at Buffalo State College permission to place a digital copy of this Master's Project (Commercializing Creative Products) in an online resource.

Alicia Arnold

Alicia Arnold

April 27, 2010

Date

