

Design Thinking, Innovation and Business Incubators: A Literature Review

Prepared by:

Angele Beausoleil, ISGP MA Student

Abstract: *The importance of innovation in corporate competitiveness and global economic growth has made it a central topic of research over the past decade with a growing recognition that design thinking, as the new approach to innovation, plays a critical role. Despite case studies of corporate enterprise success, little is known on how business incubators, the organizations who nurture and launch small and medium-sized enterprises (SMEs), undertake design thinking and innovative activities. This paper reviews available literature and examines the relationship between design thinking, innovation and business incubation and presents varying perspectives of design-led innovation in commercial for-profit incubators. The results of this multidisciplinary survey illustrate how the integration of design thinking and innovative approaches are redefining the next generation of business incubators and providing greater socio-economic value. It concludes with a discussion of gaps and weaknesses in the literature and some requirements for future research in this field. The purpose of this research is to broaden the understanding of the effects of design thinking and innovation in the context of business incubator and next generation business models.*

Keywords: Design Thinking, Business Incubator, Design-led Innovation, Business Incubation

Introduction:

Although a relatively recent concept, there is a growing body of research that supports building design thinking capacity and understanding within corporations (Brown, 2009; Kelley, 2009) and small medium sized enterprises (SMEs) (Kahli et al, 2010; Martin, 2009). The adoption of design thinking by global organizations such as Apple, P&G, Dyson, Nintendo and Burberry proves innovation through good design is good for business. For entrepreneurs and their SMEs, design thinking can be invaluable tool to clearly define which products and services they intend to offer, where they are positioned in the marketplace, and what their unique value propositions are (van Zyl, 2008).

Entrepreneurs take an intangible business idea and make it concrete. They are involved in a synthesizing process that includes the concurrent creation of new services or products with the construction of their business (van Zyl, 2008). Business incubation is a dynamic process that affords entrepreneurs to develop their new venture and is provided by Business Incubators (BIs) who nurtures the entrepreneurs and their start-up firms by helping them get the resources, services, and assistance they need or want (Lyons, 2000). Business incubation is considered the link between innovation and entrepreneurship (Khalil et al, 2010) and is also related to design thinking, which involves the design of products and services, the management of design production and the design of the organization. The entrepreneur may have an idea, but without design thinking, it may never be synthesized (van Zyl, 2008) and without innovation, it may never be successfully commercialized (Khalil et al, 2008).

This paper explores the connection between design thinking, innovation and business incubation. It aims to broaden the understanding of the effects of design thinking and innovation in the context of

commercial business incubation models and systems. This multidisciplinary review is presented in four sections: design thinking, innovation and business incubation; a background on business incubators as evolving organizations and economic development tools; design-driven innovation as illustrated by theoretical and practical application studies; and a discussion on the role of design-thinking in the next generation of incubator models.

1. Design Thinking, Innovation and Business Incubators

In 2005, the Hasso-Plattner-Institute of Design at Stanford University in California began to teach design thinking to engineering students with a conviction that engineers and scientists could learn to become innovators. Meinel and Leifer (2010) support Plattner's vision, and believe great innovators and leaders need to be great design thinkers. Through their research they have concluded high impact teams work at the intersection of technology, business, and human values and through collaborative communities breakthrough ideas, products and companies are created. They believe design thinking is a catalyst for innovation and for bringing new things into the world (Meinel, Leifer and Plattner, 2011).

They are joined by a growing number of scholars and practitioners who support a direct correlation between design thinking and innovation. Tim Brown (2009) defines design thinking "as a methodology for innovation and enablement" and "the open-minded, no-holds-barred approach that designers bring to their work, rather than the narrow, technical view of innovation traditionally taught at many business and engineering schools. Thomas Lockwood (2010) adds "Design thinking is primarily an innovation process that involves discovering unmet needs and opportunities to create new solutions". Roger Martin (2009) through case study research provides further evidence that design thinking is the interplay between analytical mastery and intuitive originality, and that the firms that master this balancing act will be the most innovative and successful for years to come."

As it relates to business incubation, design thinking is defined as the collection of methods that are common in engineering, ethnologic and anthropologic research, industrial design and business economics. It is distinguished by the integration of methods, a focus on a human-centered innovation process and the formation of multidisciplinary teams (Açar and Rother, 2011). It is also linked to innovation, defined as the pursuit of an individual's seed idea, nurturing by a team and gradually involving an entire organization (Tang, 1996). Design thinking is related to the theory of innovation, founded on Schumpeter's (1942) "creative destruction" concept, that innovation is the process of revolutionizing the economic structure from within a firm through the deliberate destruction of an old one and explicit creation of a new one (Gero, 2011).

Studies bridging design thinking and innovation to business incubators suggest two models of operation. Some business incubators operate within a closed innovation model where they generate their own ideas, and then develop, build, market, distribute and support them on their own. Others, operate an open innovation model (Chesbrough et al. 2006). where the research paradigm assumes the new ventures can and should use external ideas as well as internal ideas, and explore internal and external paths to market, as the firms look to advance their technology, product or service (Kaivo-oja, 2011). Technology acquisition and technology exploitation are key elements of open innovation thinking (Lichtenthaler 2008). Technology exploitation refers to purposeful outflow of knowledge

versus technology exploration, which refers to the acquisition new knowledge and technologies from the outside. “Open” is considered the new paradigm (Chesbrough, 2003) in innovation, which supports the fact that valuable ideas can come even from inside as outside the company or corporation (Kaivo-oja, 2011)

Studies explicitly connecting design thinking, innovation and business incubation appear absent in both scholarly and industry databases. Green’s (2007) article implicitly suggests a correlation between design thinking, innovation and business incubation through his Innovation Diffusion Opportunity (IDO) model, which appears to as an alternative label for design thinking. Green (2007) suggests IDO as an event or interaction during which new knowledge, skills, tools, ideas, and other forms of technology are presented by the business incubation network and implemented/incorporated into the business practice to be retained for future consideration or to be converted into a start-up company (Green 2007).

Although defined for this paper, the term design thinking appears absent from the business vocabulary of most incubator managers, entrepreneurs and SMEs. Therefore, this literature review attempts to provide the first dialogue between academia and industry on design thinking, as the process of innovation, of turning new ideas into practical products, environments and services around the changing needs of users (Martin, 2009; Kelley, 2009, Meinel et al, 2010), and its relationship with business incubators.

2. Background on Business Incubators

Incubators have been around since the 1950s, but the Internet spawned a new breed of business incubators (BIs) focused on web technologies, information and communication technologies (ICT) and services. The market changes from the past 20 yrs have revived and reshaped the concept of incubation, leading to the growth of private incubators as profit-oriented institutions who provide funding, facilities, expertise and networks. Interest in private for-profit incubators continues to increase stemming from the importance attached to high-tech companies and more generally, to the new knowledge-based economy (Bollingtoft and Ulhoi, 2005).

According to National Business Incubation Association (NBIA), it is estimated that over 7,000 business incubators operate worldwide. In North America there is approx. 1,400 incubators, the majority being technology-focused with only one quarter being private and for-profit incubators. The business incubator (BI) has evolved over the years to meet a variety of needs, from fostering commercialization of university technologies to increasing employment in economically distressed communities to serving as an investment vehicle (NBIA, 2012).

Business Incubators are increasingly heralded as critical economic development tools for job creation (Hackett et al, 2004) and through successful operation, commercialize new technologies (products and services), deliver more startups with fewer business failures and generate regional economic impact (Hackett et al, 2004). In addition to offering financial markets a pool of high-growth potential investment and lending prospects at reduced risk, incubators can also offer academic institutions a vehicle to commercialize research and/or assist graduates with setting new business ventures and

provide corporations access to innovative ideas to strengthen their supply chain, delivery mechanisms or operations (Khahli and Olasfen, 2010).

The debates in the value of incubators research are numerous (Bollingtoft et al, 2005; Chesbrough, 2002:2003; Khali et al, 2010; Marshall, 2010), with some authors (Hackett et al, 2004; Khali et al, 2010; NBIA, 2012) agreeing to the need for systems and programs to help new ventures navigate the complex business climate, and others (Peters et al, 2009) suggesting they are too sheltered and are a flawed model because they take the initiative away from the start-up team. At the same time, a recent and growing body of research (Lockwood, 2010) suggests ventures of the future will be those who can innovate and create meaningful value for their shareholders and customers, and those who best use the principles and methods of design thinking.

BI research suggests the majority are technology-oriented and are built from a linear model of innovation (Dunphy, et al, 1996) where the idea for new technologies stem from scientific research at local university, which is then transferred to a commercialization firm or division, either internally as a public or corporate incubator or externally to a private incubator. The conventional innovation theory is based on the idea of a linear progression model (Dunphy, et al, 1996), from research to development, with the innovation process acting as a funnel (Gardien, 2006). The many different and disparate initial ideas are gradually whittled down – either inside or outside (Chesbrough, 2003) the company – until a small number of the most feasible concepts are left. These are then developed and matched with the profitable business case model (Gardien, 2006).

Private or for-profit incubators are commonly segmented into Corporate Business Incubators (CBIs) and Independent Business Incubators (IBIs). CBIs are owned and managed by large companies with the aim of supporting the emergence of new independent business (aka corporate spin-offs) and usually originate from in-house research project spill-overs. IBIs are set up by single individuals or by groups of individuals who help entrepreneurs create and grow their business by providing investment funding and access to resources including strategic partners networks. A subset of private IBIs are described as networked incubators (Bollingtoft et al, 2005), those based on the value of collaboration and social capital of either individual and/or collective social networks, connections and structures that help the entrepreneur access the knowledge and strategic relationships they need to realize their vision (Bollingtoft et al, 2005).

Recent evidence-based research shows a positive relationship between CBI model success and design thinking. Brown, Kelley, Martin et al have demonstrated the success of P&G's Design Thinking and Clay Street Project, GE's Chief Design Officer designation, Phillips Design Research Projects, Intuit's Design for Delight approach, and SAP's design thinking lab. CBIs are modeled to provide the "intrapreneur", a start-up environment while working within a Fortune 50 company. Design-thinking oriented incubators such as these remove people from their day jobs and out of their comfort zone and enables they end up thinking about entrepreneurial solutions that might not have ever crossed their minds before (Brown, Kelley, Martin et al). Unfortunately, private and public incubators do not share CBIs success, suggesting the lack of understanding and appreciation for design thinking. It is expected that upon completion of an incubator program, the new firm has developed the skills to grow, create jobs and survive. Industry research (Jen, 2002; Kyfinn et al, 2009; Marshall, 2010) shows a significant percentage

of incubator graduates fail to survive, attributing the failures to the incubator's lack of providing quality services and low competency level of resources (i.e. advisors, capital and valuable networks.). An article from Taiwan stated the Taiwanese government was forced to revamp their incubators, as they were negatively perceived as "landlords instead of father figures to start-ups" (Jen, 2002).

A study exploring how technology-driven startups can benefit by the adoption of design thinking and gain a strategic competitive advantage (Açar and Rother, 2011), supports design thinking methods, such as user research practice results in more a desirable product with a reduced need for marketing efforts. The study infers that design thinking introduces more objectivity to new technology design and limits the natural tendency for a firm to "over engineer" (Açar and Rother, 2011).

Meinel and Leifer (2010) reminds us of a global truth that applies to business incubators: the fact that every physical, technological or digital product delivers a service and that every service is manifested through products; and that without an insightful enterprise strategy, it matters little if the products or services is unable to find its market. Based on this truth, they provide four rules of design thinking for business incubation: the Human rule – that all design activity is ultimately social in nature and satisfies human needs; the Ambiguity rule – that design thinking must preserve ambiguity to enable chance discoveries while embracing failure; the Re-design rule – that all design is re-design in that we take from the past what we need for the future (social and technological experiences; and the Tangibility Rule – that is about always making ideas tangible to facilitate communication through prototyping activities (Meinel and Leifer, 2010).

Business incubators have a critical role in the facilitation and creation of a "new venture" ecosystem, by encouraging risk-oriented entrepreneurs to bring new ideas to the market and turn the potential of their idea and ambition into real social and economic value (Khalil and Olasfen, 2010). Scholars and practitioners (Brown, 2009; Martin, 2009; Lockwood, 2010) suggest the ventures/firms of the future will be those who can innovate and create meaningful value for their shareholders and customers, particularly those who best use the principles and methods of design thinking.

3. Design-driven innovation and business incubation

Design-driven innovation is based on the idea that each product holds a particular meaning for consumers. For example, *Swatch* transformed the meaning of watches as time instruments into fashion accessories while the *Nintendo Wii* redefined the meaning of playing with a game console as a social and active experience. Innovative companies like Swatch, Nintendo and Apple step back from users and take a broader perspective (Verganti 2010). They explore how the context in which people buy things is changing and how technologies, products, and services are shaping that context, highlighting that social-cultural observation is key. Incubators and their incubating new businesses can realize successful radical innovations of meanings by practicing the art of listening, interpreting, and addressing (Verganti 2010).

Today, most business incubators continue to provide logistical and financial support to the entrepreneur, yet lack the leadership and influence of design thinkers -- those able to look at the big picture while simultaneously see the details. Downton (2003) describes the design thinker as one who

employs knowledge from inside and outside the discipline and who explicitly reshapes the knowledge, discards parts, augments parts and juxtaposes elements on the way to proposing a new design (Downton, 2003). Martin (2009) suggests design-thinkers actively look for new data points, challenge accepted explanations and infer possible new worlds, yet design to what is technologically feasible and makes business sense. Innovative products launched without this awareness are research projects with no future or means for value creation.

Practitioners and scholars (Brown, 2009; Dell'Era et al, 2010; Martin, 2009; Marshall, 2010; Verganti, 2010) agree that design and innovation-led businesses focus on creative ideation, production, and the application of science, mathematics, engineering and technology expertise to serve more tangible and pragmatic human needs. These innovative firms actively practice imaginative, improvisational, and creative design; igniting, seeding, “hatching,” accelerating, and scaling promising prototypes and innovations into products, services, processes, and systems. The opportunity for the business incubator is to serve as a magnet, disruption amplifier, and innovation and design accelerator, and focus on developing innovation and design-based thinking (Marshall, 2010).

The design-push or design-driven approach is a new theory of innovation that results from merging the novelty of message with market-pull and technology-push approaches. The market-pull approach is focused on consumer needs as the main source of innovation. The technology-push approach relies on research and development activities to develop new technologies and create new products. The design-push or design-driven approach when of novelty of message and design is combined with market-pull and technology-push activities (Verganti, 2010).

A comprehensive design-driven innovation model suggests having characteristics of integration, multidisciplinary, and permeable (Acklin, 2010). Integration describes the intertwining of strategy building, innovation, and design management, allowing for the creation of new and meaningful products, services, and experiences. Multidisciplinary, central to design thinking, involves engaging members from a variety of management functions, from marketing, engineering, sales, communication, to design, etc. Permeable refers to being both inner and outer-oriented. For example, combining R&D activities with methods of open innovation by inviting consumers and users to co-create new offerings (Acklin, 2010).

The link between business incubation, design thinking and innovation becomes clearer when discussing entrepreneurs and design thinkers in the innovation process. As entrepreneurs take an intangible business idea and make it concrete through a synthesizing process facilitated by business incubators (van Zyl, 2008), design thinkers move between the abstract and concrete, between analysis and synthesis to execute that process. Assembling the right mix of people on the team to execute the process and providing a leader for that team with leadership skills, who understands the process and who can integrate the diverse ways of thinking (Beckman and Barry, 2007) thus falls on the business incubator.

An example of a design-driven incubator is the Design Council’s Designing Demand program. Launched in the UK in 2004, it comprises three distinct incubator programs: *Generate*, for SMEs with growth potential; *Innovate*, for hi-tech ventures to overcome their business, technology and market challenges

through multiple design projects; and *Immerse*, a service for larger companies to tackle strategic challenges through multiple design projects. Their efforts to date is that 1,500 businesses now believe design can make them more competitive, the *Generate* service has yielded over millions in new sales, and that the *Immerse* service influenced 90% of businesses to lead design projects which in turn proved critical to their success with sales outperforming by 14 per cent. It was concluded that for every £1 invested in design, it returned £50 (Ward, Runcie and Morris, 2009). Their successful formula is focused in five areas where design is proven to add value to new and existing businesses. The five areas are: vision and strategy, brand and identity, product and service, user experience and innovative culture. The Designing Demand program enables “design associates” to structure their influence across sectors and companies and with the senior managers of each business to map out opportunities for design-led improvements and innovations. The program, supported by the Design Council’s extensive body of evidence, embraces and applies design thinking to new and existing companies to redefine the business strategy, reorganize their product range, reduce costs, open up new markets, and experience innovation through peer-based learning (Ward, Runcie and Morris, 2009).

The UK example (Ward et al, 2009) provides evidence that business incubators that integrate design thinking are well positioned to nurture invention into successful innovations. As incubators evolve into innovative firms, they will step back from users and take a broader perspective. They will explore how the context in which people buy things is changing and how technologies, products, and services are shaping that context, and embrace “social-cultural observation”(Verganti, 2010). Lockwood (2010) suggests by embracing the process of design-led innovation, new management processes and styles can be explored within adaptive, dynamic systems that ultimately generate innovative strategies, products and services.

4. The next generation of incubators

In the 21st century, business incubators and their entrepreneurs face a world of unprecedented connectivity, undisputed global interdependence, and the emerging realization that our scientific, economic, sociopolitical, and environmental futures are inextricably linked -- causing us to re-evaluate and redesign business models, policies and strategies (Brown, 2009). The most current multidisciplinary research suggests a few business incubators have evolved -- redefining themselves with new models, new thinking and new innovation approaches. The examples that follow offer observations into the next generation of business incubators, those building strong links between design thinking and innovation.

The innovation and incubation hub in Finland’s Otaniemi forest is regarded as one model to follow (Himanen et al, 2011). Situated on the peninsula at the very tip of Helsinki’s metropolis, the former farmland is now a globally acclaimed creative hub that actively innovates in three different sectors: IT, energy, and biotechnology. Helsinki, awarded the 2012 World Design Capital, has produced IT success stories as Nokia, Rovio, and Linux, and is currently leading alternative energy research on wood as the new oil in biotechnology and energy sectors. Companies work in close contact with Finland’s leading universities to generate technological, economic, and design innovations needed to compete globally under the motto “where science and the arts meet technology and business.” Their recipe is based on methodological sciences (from computational modeling to the methods behind art and creativity);

media (information and communication technology and expression); materials (from nanotechnology to materials for art and design); and modeling, which includes all forms of design. The physical and philosophical elements of their model brings professionals and producer-managers (from risk investment to marketing) into a culture of creativity—inspiring people to realize their full potential. Finland's incubation model is unique as it combines innovation-based competitiveness with social inclusion. Unlike the Silicon Valley incubator-inspired model of the 90s where new millionaires were produced at a rapid pace, while a fifth of the population lives below the poverty line, Finland's model affords varying dynamic economic models for innovation through social inclusion strategies. This virtuous circle generates success in the innovation economy allowing for continued public investments in education and health care, which in turn produces new highly educated people to continue the economic success (Himanen et al, 2011).

The new incubator models are integrating creativity. Research from BarcelonActiva, a 25-year business incubating veteran that is part government- part private-funded business incubator presents evidence of high survival rate among its graduated tenants. Rooted in a design-oriented culture, it offers services to the creative industries, information technology and high tech sectors, and to both Spanish and international business communities. Their facilities comprise an entrepreneurship resource centre, technology park, business incubator lab and venture transformation space. The incubator has a "walk in" policy when it comes to their selection process, thus any person with a business idea can go through the process, but there is a waiting list. Their incubation period is three years. They have readjusted their service-offering, facilities and management styles to best fit market needs, which may be indicators of their longevity and success (Moscovis and Serup, 2012).

Entrepreneur-tenants and managers in creative industries incubators tend to network, collaborate, share, and foster communication amongst the participants and community inside and outside the incubator. They embrace entrepreneurial risk and have managers who are simultaneously open and exclusive. A successful, design-led for-profit business incubator is Denmark's MG50. Design and collaboration played an important role in the creation and construction of Danish incubator MG50 as a top performing "networked BI". MG50 does not lend initial capital nor provide professional business services to their paying tenants, instead they provide physical structure and enable social interaction through a co-operative business model. The construction design and management style of MG50 was very important in creating trusts between the tenants and in giving tenants the entrepreneurial drive they need to succeed (Bollingtoft and Ulhøi, 2005).

Creative industries incubators operate differently from most high-tech incubators, which are characterized as formal, prescriptive and exclusive access to persons of value (e.g. Venture capitalists, industry veterans) in an effort to protect their idea, but research suggests they could benefit by more collective and collaborative workspaces (Moscovis and Serup, 2012). Studies indicate that creative entrepreneurs and creative business incubators put value into the space around them, as they do with clothes and other aesthetics and clustering in cultural and creative industries as New York, Berlin and London (Moscovis et al, 2012). Supporting research suggests adopting a balance between the ad hoc nature of the creative process and industry with the rigour of design and engineering may be appropriate to adopt for the next generation of business incubators (Moscovis and Serup, 2012). Marty Neumeier observes in the Designful Company (2009) that creativity in its various forms has become the

number one engine of economic growth. Connecting interdisciplinary studies, it appears the new incubators may in fact be borrowing from the past, inspired by Andy Warhol's Factory or Tony Wilson's Hacienda and Factory Records. Warhol's Factory is a great example of a successful innovation incubator. He created an innovation climate through a physical and psychological environment where people would be inspired to think great ideas and then convert them to finished product. He understood the collective nature of creativity, where fashion, art, film, music and design could intersect, be shared and also resourced. Warhol generated real economic value to those who participated in it, experienced it from a Factory event or consumed its products (Currid, 2007).

The new incubators are learning from design-led companies. Evidence-based research from Dow and Klemmer (2010) showed that designers in the iteration condition, i.e. with multiple rounds of prototyping, outperformed those who only prototyped once. Prior experience with iteration proves to be a positive performance indicator as designers tend to discover more flaws and constraints and try new concepts. This is valuable data for design companies which always operate under tight time constraints in the race for early market entry with innovative products. (Dow and Klemmer, 2010)

Designing the next generation of business incubators will also take agility. This school of thought is well supported by practitioners of Eric Ries (2010)'s best selling book "The Lean Start-up" and reflects Sir Francis Bacon's quote "he that will not apply new remedies must expect new evils, for time is the greatest innovator". Agility is considered an emerging concept that happens when an organization has the right mindset, the right skills and the ability to multiply those skills through collaboration (Neumeier, 2008). To count agility as a core competence, it must be embedded into the culture, encourage an appetite for radical ideas and embrace a constant state of inventiveness. Neumeier (2008) suggests that to organize for agility, a company needs to develop a "designful mind", the ability to invent the widest range of solutions for the wicked problems now facing your company, your industry, your world. (Neumeier, 2008).

The literature reviewed in this paper presents evidence that a successful methodology for innovation is emerging. It integrates human, business, and technological factors in problem forming, solving and design and is referred to as "Design Thinking." Its human-centric methodology integrates expertise from design, social sciences, engineering, and business. It blends an end-user focus with multidisciplinary collaboration and iterative improvement to produce innovative products, systems, and services. Through iterative experimentation, Luebbe and Weske (2011) used design thinking factors such as physical elements (plastic building blocks as tangible prototypes), methodological guidance, and intensive end-user/participant involvement to illustrate the positive results and relevance for successful approach and application in real-world companies (Meinel, Leifer and Plattner, 2011). Evolving R&D models to integrate design thinking methods may also improve BI success. A Business Week examined if there was a way for investors to spot early innovation opportunities that had a higher chance of success. And the point made was: "There is no simple correlation between increased research and development spending and higher stock prices. In fact, stepped-up research & development often depresses near-term earnings because those costs must be expensed now while the payoff of new innovative products could be years away. Besides, much research & development spending produces nothing that customers want (Kyfinn and Gardien, 2009).

If incubators were to focus is on imaginative, improvisational, and creative design; igniting, seeding, “hatching,” accelerating, and scaling promising prototypes and innovations in products, services, processes, and systems, new ideas and useful valuable solutions will result. Marshall (2010) suggests the incubator should serve as a magnet, disruption amplifier, and innovation and design accelerator – thus, focus on developing innovation through design-based thinking.

5. Conclusion:

The purpose of this paper is to broaden the understanding of the effects of design thinking and innovation within business incubators. It suggests incubators are well positioned to provide the required habitat and innovation ecosystem that invites experimentation, celebrates failure, rewards invention and irreverence, and encourages the passionate pursuit of invention turned new venture. It argues that design thinking plays a critical role in the innovation process where new management processes and styles can be explored within a adaptive, dynamic systems to generate innovative strategies, products and services.

Although design thinking is well positioned to nurture invention into successful innovations, and has an important role within business incubators, knowledge and adoption of design thinking methods remains low for most business incubator managers, entrepreneurs and SMEs.

The literature suggests the next generation of business incubators are integrating design thinking, creativity, innovation and agility, and infers the need for new incubator leadership, a new breed of management who can lead and grow tomorrow’s entrepreneurs and their ventures. The new manager will need to be globally networked, agile, intuitive, risk and novelty seeking, creative, collaborative, failure resilient, analytical, playful, and problem focused -- aka a design thinker.

An area for future research will be to investigate both the incubator managers and entrepreneurs and their knowledge and application of design thinking as an approach to innovation and successful start-up development. A closer examination of the passionate champion -- genius and visionary -- behind the idea and new venture and their commitment to the collaborative principles of design thinking is warranted. The research question may be *“What is the role of design thinkers in the business incubation process and are design thinkers the entrepreneurs of the future?”*

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