

# Creativity in Contemporary Entrepreneurship

© 2020 Sacha Krstulović

This portfolio of essays was completed in September 2020 in the framework of the undergraduate diploma in Creativity Theory, History and Philosophy from the University of Cambridge's Institute of Continuing Education (ICE).



# Table of contents

<b>Introduction &amp; executive summary: is creativity biddable?</b>	<b>3</b>
<b>Entrepreneurship as truth creation</b>	<b>9</b>
<b>Desiring to disrupt</b>	<b>21</b>
<b>Failure, vulnerability and mindfulness</b>	<b>37</b>

# Introduction & executive summary: is creativity biddable?

© 2020 Sacha Krstulović

At Cambridge University's Institute for Continuing Education (ICE), I approached the Undergraduate Diploma in Creativity Theory, History and Philosophy as an opportunity to solve a question of concern to my professional life, that of whether creativity is biddable. Indeed, I work as director of research in an industrial environment. My role implies delivering technology innovation, but within multiple constraints: growing the value of a startup company as fast as possible and at minimal cost; inventing products which are useful, desirable for customers and likely to achieve mass-market success; innovating to deliver original and preferably disruptive products, where originality and disruption correlate with the blindness inherent to pioneering a new market. By definition, a startup relies on capital investment to bootstrap its revenue stream, meaning that innovation is initially funded by a finite pot of money whose wisdom of spend directly decides on life or death of the company. With that in mind, industrial technology innovation is required to deliver creative success at a given bid price. Failure to deliver may imply wasting significant sums of investment money, as well as entailing negative social outcomes such as layoffs, two possibilities which exacerbate the sense of responsibility towards achieving innovative success. From experience, this sense of responsibility tends to bias the management of creative risk: on the one hand, managers and investors want a new market to be created, where new implies the risk of creative failure; on the other hand, they seek reassurance that creativity will deliver for the money, thus asking for guarantees of creative success. Managing this paradox is the most salient difficulty of my job, hence the desire to find tools, references and structures to formulate effective answers to managers and investors in that context.

The ICE's course material, as well as the background readings discovered in the course of producing formative essays, immersed me in disciplines which are not usually identified as directly affiliated with entrepreneurship: history and philosophy, as labelled in the course title, but also psychology, sociology and behavioural economics. Each contributed a different type of structure to the answer. Philosophy proved useful to define topics and relations with as much precision as allowed by language. History provided contrastive structure from the perspective of cultural evolution across time, while sociology brought certain aspects back to contemporary socio-cultural mechanisms and cross-cultural contrasts. Psychology provided an analytic referential to decompose creative character, creative motivation and mental health across a typology of human idiosyncrasies, while behavioural economics contributed empirical insights closer to cognitive sciences. I will now give more detail on how these structuring elements gradually contributed to building progress across my portfolio.

In my first essay, "Entrepreneurship as truth creation", I use the question "Can truth be invented?" as an opportunity to study the contrast between entrepreneurship approaches which emphasise the merit of original vision from a designated creator, versus the ones which focus more exclusively on meeting customers needs and desires. Using two of the standard philosophy theories of truth as production models, namely the coherence and the correspondence theories [Blackburn, 2018], reveals that both are applicable in their own right to theorising technology innovation. However, they become unified when refocusing the debate on enquiry, i.e., the dynamic aspect of coming to truth through trial and error. This essay reviews modern product development culture, sets the entrepreneurship scene for the portfolio as a whole, and supports the structural validity of the iterative approaches promoted by contemporary Lean Startup and Agile/Scrum methodologies [Ries, 2011; Cagan, 2018].

In the second essay, "Desiring to disrupt", based on question "Is every invention an adaptation?", I aim to navigate upstream towards the creative source of the iterative process, referred to in entrepreneurship jargon as the fuzzy front-end of innovation [Herstatt & Verworn, 2004], and colloquially as the eureka moment. Although iterative enquiry-based approaches tend to suggest at first sight that product creation is

adaptive, coming up with disruptive products keeps proving valuable in entrepreneurship, hence questioning if and how it is possible to achieve disruptive innovation in a controlled way. My research in that direction finds structure in psychology, which reveals two insights: (a) that innovation can be located along a continuum between adaptive innovation and radical innovation and that (b) location along that axis depends on the notion of *blindness*, as expounded in Simonton's update of the Blind Variation - Selective Retention (BVSR) theory of creativity [Simonton, 2011]. Interestingly, the BVSR theory formalises divergent/convergent processes analogous to those routinely applied in contemporary Design Thinking methodology for innovative product creation [Brown, 2009]. Thus, the above insights provide two very useful tools to manage innovation risk and to communicate it to managers and investors: insight (a) provides a scale to assess and describe if the innovation bid tends towards adaptive or towards radical, while insight (b) promotes blindness as a metric to determine and communicate where along that scale a particular product or entrepreneurial endeavour is sitting. This, in turn, is useful to determine and communicate a price tag of creative risk for the product or service being developed. Such analysis and communication tools, however, do not guarantee creative success.

Thus in my third essay, "Failure, vulnerability and mindfulness", built on questions "In what ways is creativity dangerous and is it worth the risk?", I specifically seek to structure the notion of risk of creative failure, which sits at the core of the creative bidding and reassurance paradox. Drawing from history, sociology, philosophy and behavioural economics, I analyse the paradox between the "fail early, fail fast, fail often" canon of startup culture and the negative stigma which is still felt when failing. My conclusion is that creative bidding tension arises as the anxiogenic conflict between, on the one hand, the natural loss aversion empirically exposed by behavioural economics [Kahneman, 2011] and, on the other hand, the recognition that failure is an essential component of radical creativity, as proposed by psychology with the BVSR theory [Simonton, 2011]. Furthermore, loss aversion may be exacerbated by three cultural memes prone to fostering personal devaluation in case of failure: (1) judgemental interpretations of Darwin's "survival of the fittest", drawn from history, (2) memory of religious shame persisting in capitalist culture from its Protestant roots, drawn from sociology, (3) brutalist misconstructions of Nietzschean philosophy, drawn at the intersection of philosophy and history. Whether the considered cultural memes explicitly arose

as strategies to provide logical reassurance against intuitive failure aversion (i.e., possibly reinterpreting class systems, religions and Nietzschean optimism as incantations against failure averted by their proponents) remains an open question. Nevertheless, I propose to resolve the creative bidding tension by considering cultural shifts in entrepreneurship towards (a) embracing vulnerability [Brown, 2006; Brown, 2012] (sociology and psychology), (b) approaching entrepreneurship as a flow activity [Csikszentmihalyi, 1992] (psychology) and (c) applying mindfulness [Kabat-Zinn, 1990] (cultural studies and psychology), thus promoting a global paradigm shift towards more mindful approaches to entrepreneurship.

## References

Blackburn, Simon. 2018. "On truth". Oxford University Press.

Brown, Brené. 2006. "Shame resilience theory: a grounded theory study on women and shame." *Families in Society*, vol.87, no. 1, pp. 43-52.

Brown, Brené. 2012. "Daring greatly." Penguin Random House.

Brown, Tim. 2009. "Change by design". Harper Business. (2019 edition revised and edited.)

Cagan, Marty. 2018. "Inspired: how to create tech products customers love" (2nd edition). John Wiley & Sons.

Csikszentmihalyi, Mihaly. 1992. "Flow: the classic work on how to achieve happiness." Rider, Random House Group. (2002 edition.)

Herstatt C. and Verworn B. (2004) "The 'Fuzzy Front End' of Innovation - Strategy, Innovation and Competences for Business Value" In: "Bringing Technology and Innovation into the Boardroom." European Institute for Technology and Innovation Management. Palgrave Macmillan, London.

Kabat-Zinn, Jon. 1990. "Full Catastrophe Living: How to cope with stress, pain and illness using mindfulness meditation." Piatkus. (Revised edition 24 Sept. 2013.)

Kahneman, Daniel. 2011. "Thinking, fast and slow." Penguin Random House, 2012.

Ries, Eric. 2011. "The Lean Startup - How constant innovation creates radically successful businesses". Penguin Random House.

Simonton, Dean Keith. 2011. "Creativity and Discovery as Blind Variation: Campbell's (1960) BVSR Model After the Half-Century Mark". *Review of General Psychology*, Vol. 15, No. 2, pp. 158–174, 2011.





# Entrepreneurship as truth creation

© 2020 Sacha Krstulović

*Private conversation with an entrepreneur: “this is true to an extent, we want to make it even truer”, while speaking about achieving one of the mission statements of his company.*

This essay seeks a positive yet nuanced answer to the question “can truth be invented?”, by framing this question in the practical domain of the creation of digital consumer products as supported by contemporary entrepreneurship. As an example, statements such as “everyone has a powerful portable computer in their pocket, which is operated via a touch screen and able to take pictures and send them wirelessly to anyone else with a similar device” represent the sort of truth whose invention has started at a point in time, the mid nineteen-eighties in that case, but has successfully come into facts only twenty years later, in the early 21st century. I will show that the invention of products which are successful in the market instantiates a dynamic view of the creation of truth where a coherent vision acts as the motivator and makes room for originality, while product discovery, i.e., resorting to enquiry of correspondence between product vision and what customers in fact desire, validates fitness to reduce the risk of failure.

Let us start by looking at the various theories of truth expounded in [Blackburn, 2018] and [Glanzberg, 2018]. The correspondence theory of truth is usually first in line because it relates to a notion of first-hand human experience which common sense finds difficult to contradict: a belief is true if and only if it corresponds to a fact. However, on a second look, abstract notions such as “one plus one equals two” or “it

is likely that mobile phones will exist in the future” may be true while escaping first hand experience: “one plus one equals two” is true regardless of being applied to counting sheep or US dollars, and likelihood itself may be true regardless of the advent or absence of the likely outcome. Such considerations underpin the coherence theory of truth, which proposes that truth relies on human interpretation, thus suggesting that a belief is true if and only if it pertains to a coherent system of belief, or to “systematic coherence which is the character of a significant whole” [Joachim, 1906, cited in Glanzberg, 2018]. In other words, the coherence theory states that something can be true without being experienced as a fact, as long as it stands to reason and avoids contradiction. The correspondence and coherence theories are just two amongst a vast array of theories of truth including pragmatism, deflationism, Tarski’s theory of truth, references to ancient Greeks, variations from classical philosophers such as Kant, Nietzsche or Wittgenstein, and many more. Although this multiplicity of theories complicates the task of answering the initial question, their various nuances can overall summarise into asking whether truth can be created, i.e. by building a coherent idea, or merely discovered, i.e. by enquiring about correspondence with facts. It is also possible to focus the question of “can truth be invented?” on the word *can* rather than on static notions of truth or invention, i.e., questioning if the creation of truth may rather result from a dynamic process which might be successful, failed, easy or challenging, all notions pertaining to the semantics of possibility and achievement covered by verb “can”. This third approach relates to the pragmatist theory of truth [James, 1907, cited in Blackburn, 2018], which introduces dynamism and agency into the definition of truth by tying it to the act of looking for truth and to the existence of practical consequences as the result of enquiry.

Let us now introduce contemporary entrepreneurship as a context of application for these theories. Indeed, the goal of 21st century startups is to successfully invent, develop and sell new digital products, or in other terms to draw economic value from technological innovation. Two types of product development methodologies have been classically dominating this endeavour and may, at least initially, be thought of as opposites: product vision and product discovery. In the following, the contrast between the coherence and correspondence theories of truth will be used as a metaphysical model of this apparent opposition, in search of an arbitration.

On the side of product vision, a company like Apple heavily relies on the concept of a vision elaborated for its aesthetic and innovative values, whose power is expected to successfully seduce the customer into adopting new usage and embracing new experiences that he/she would not have imagined or desired before seeing them: “customers don't know what they want until we've shown them” are famous words from Steve Jobs [Isaacson, 2011]. As such, product vision relates to coherentism, because it does not forcefully seek to latch onto some pre-existing truth, and it leaves a margin for creative originality within the bounds of a coherent notion of likelihood of product adoption by customers.

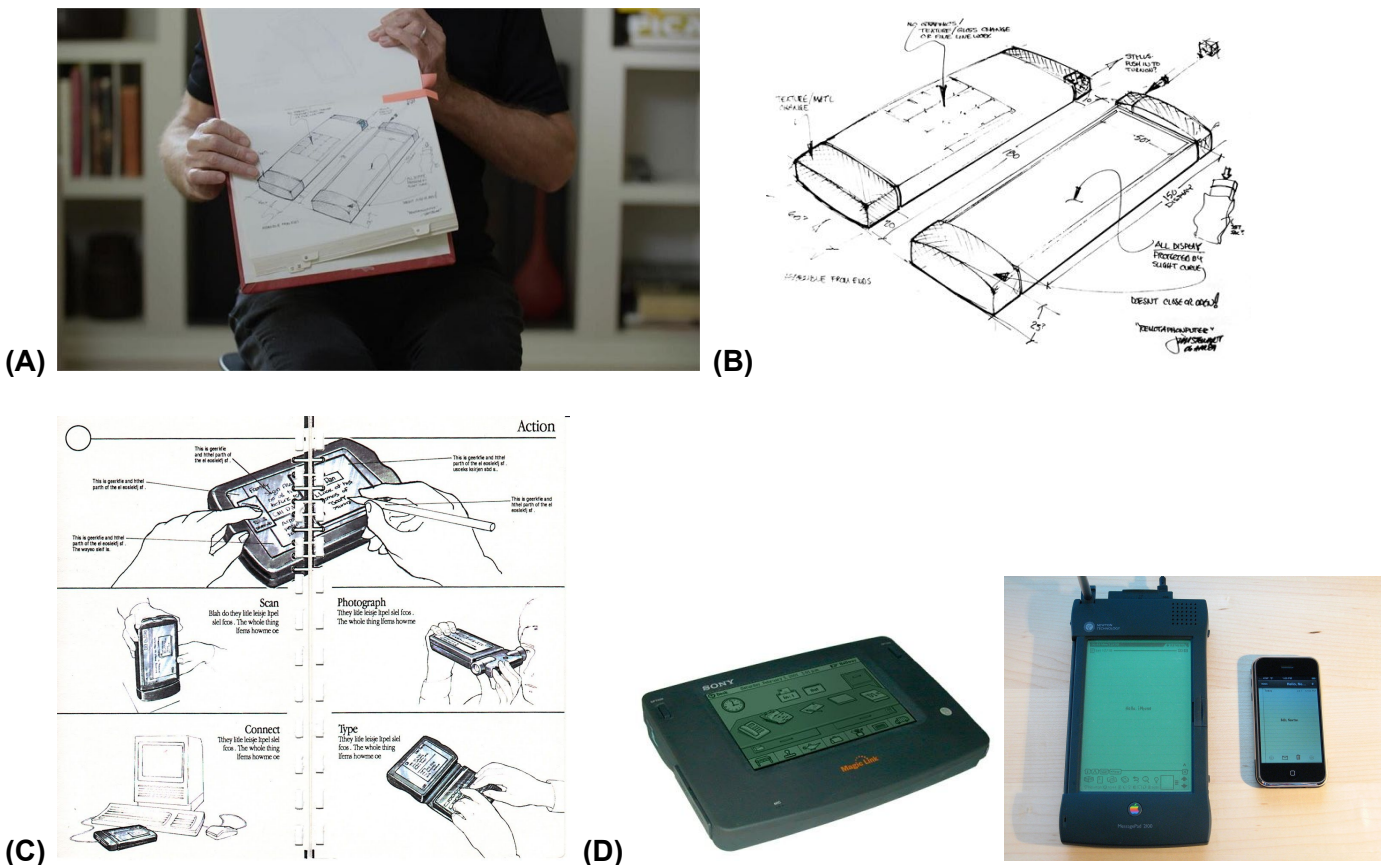
On the side of product discovery, Amazon's product development methodology is grounded into Jeff Bezos' emphasis on customer experience, voiced in many of the company's annual “Letter to Shareholders” [e.g., Bezos, 2004]. This approach has been formalised by Amazon's CTO Werner Vogels as “working backwards from the customer” in a 2006 blog post [Vogels, 2006] which has significantly influenced modern product discovery approaches [Cagan, 2018]. It consists of writing a press release before starting any engineering work, in order to gather customer reactions and iterate on the description of the virtual product, with a view on starting the engineering spend only once the vision tallies with the customer's needs and desires. This approach assumes that the truth of a product's commercial success is predefined by correspondence with customers' needs and desires. It is motivated by a focus on efficiency, in both time and cost, of executing successfully on serving the customer, with the effect of subjecting vision and creation to execution because the former may be perceived as less tangible and thus riskier. Product discovery therefore appears more related to the correspondence theory.

The first approach, based on abstract vision and paralleled with coherence, appears to leave a larger margin around the notion of creative virtue. However, in a business context, uncontrolled abstraction incurs risk, for example if the developed product ends up rejected by customers. The second approach of “working backwards” seeks correspondence, felt *prima facie* as a better grounded and safer approach: homing in on the desires and needs expressed by customers appears to minimise existential risk by subjecting creation to execution, i.e., “giving the people what they want” understood as Aristotle's straightforward “say of what is that it is” [Bishop Jones, 2012]. However, this approach transfers the risk to engineering: if the customer

wants a flying moped, or some object which in some way contradicts the basic principles of physics (e.g., achievable power versus form factor), then there is a risk that the press release will remain falsehood. Thus, correspondence finds itself hampered by the realisation that customer needs and desires, like truth, may be of an abstract nature, and that coherence is required to support the very possibility of creating a successful product. Both theories keep coexisting in philosophical debate as much as in product development, and their balance of pros and cons makes it difficult to declare a winner. This is where a more dynamic notion may help: “can truth be invented” understood as “can the invention of truth succeed”.

To explore this notion, let us look at the particular case of the rise and fall of General Magic (GM), a Silicon Valley company founded in the mid-1990es by Marc Porat and nicknamed by Apple’s former CEO John Sculley “the most important company in Silicon Valley history that you’ve never heard of” [Kerruish & Maude, 2019]. Facts about General Magic are gathered in an eponymous documentary directed by Kerruish & Maude [2019]. The company was spun off from Apple in May 1990 with a mission to realise the vision of creating the first ever hand-held personal communicator. That vision foresaw features which are now common in smartphones, e.g., touchscreens or the ability to send multimedia messages including sounds, pictures and videos.

Marc Porat’s early vision and how true it was to today’s smartphone reality are illustrated in Figure 1 below.



**Figure 1: Marc Porat's vision of a personal communicator.**

- (A) "Pocket crystal", a book of blueprints for General Magic's personal communicator, written in 1989 by Marc Porat [Kerruish & Maude, 2019].
- (B) Porat's 1989 vision presents striking resemblances with the iPhone, which became a reality only 28 years later, in 2007.
- (C) Porat developed elements of the General Magic vision while working on confidential project "Paradigm" at Apple during the years preceding the spin-off into GM, which happened in May 1991 [Carter, 2018].
- (D) Paradigm was internally respawn by Apple after the GM spin-off, and Apple released the Newton in 1993, thus directly competing against the startup whose creation it had originally supported. The Sony Magic Link (left), released in 1994, was the first instance of a General Magic product: the hardware was designed and produced by Sony but the device was running GM's Magic Cap operating system. It is presented alongside Apple's Newton, here a 1998 model, and the first iPhone released in 2007 (center and right respectively).

Porat's vision was coherent in the sense that it was a constructed prediction of today's smartphone reality, which has since proven valid. Early on, belief in this vision was concretely endorsed by the public: in February 1995, General Magic succeeded a spectacular Initial Public Offering<sup>1</sup>, worth \$96 million, on the basis of its vision alone and without having realised any product. The company also succeeded in forming a business alliance with prominent companies such as Sony, Motorola, Philips, AT&T and more. However General Magic's first product series starkly failed into the marketplace, as the public deemed these too expensive, clunky and lacking usefulness. As a result, the company crashed in 2002. However, the company's former employees carried out the vision and realised it later, either while working at other Silicon Valley companies or by founding their own businesses. Tony Fadell went on to work at Apple and was a key player in building the iPhone, itself released in 2007 and successful at implementing many of GM's earlier visionary concepts. As another example, Andy Rubin founded his own company to develop the Android operating system, whose first version was also released in 2007, after the acquisition of Rubin's company by Google. As of February 2020, Android OS is running 73.3% of all mobile devices shipped worldwide [Statcounter, 2020] and successfully implements many of the ideas which GM's Magic Cap operating system was aiming to realise.

In a coherentist sense, General Magic was successful at inventing the truth of personal communicators operated through touch screens and fitting into people's pockets. That did attract significant monetary success in terms of the IPO, which represents endorsement of a coherent piece of truth regardless of its abstract nature. Besides, invention of this coherentist truth can be deemed successful insofar as the vision was realised twenty years later. However, the end goal of investment is to yield products that customers experience as useful or desirable to the extent that sales will generate return on investment during the lifetime of the company. In that sense, the "first hand experience" which is promoted by the correspondence theory remains a necessary condition to achieve commercial success at the outlet of the investment process. This suggests that rather than being opposed, invention and discovery of truth, or coherence and correspondence, should be combined in the endeavour to create new and successful products, in order to resolve the tension between making a product vision successful and avoiding the financial waste

---

<sup>1</sup> An Initial Public Offering (IPO) consists in obtaining capital from the public by listing a company on the stock exchange market.

associated with failure. As it happens, this combination is instantiated in the *Lean Startup* method [Ries, 2011; Cagan, 2018], which is the product development methodology of choice for a majority of contemporary startups.

In order to fully grasp the Lean Startup method, it is necessary to understand a few of the product development subcultures which underpin this approach: (i) fail early, (ii) Agile software development, (iii) Scrum process and (iv) lean production.

The *fail early* principle (i) originates in system design and stipulates that a system which reports failures immediately is less costly to maintain, debug and develop, than a system which carries on with the execution of a flawed process [Shore, 2004]. The term has been used as a metaphor in business since about 2001, particularly in the pharmaceutical industry, in search of a principled way to minimise the cost associated with innovation uncertainty risk [Khanna & al., 2016]. Interestingly, the fail early principle acknowledges that failure in innovation is unavoidable. Along those lines, a culture of glorification of failure has developed amongst Silicon Valley startups [Surowiecki, 2014]. So rather than seeking complete avoidance of failure, modern product creation theory seeks to minimise its cost.

In parallel to the *fail early* approach, the *Agile* development methodology (ii) surfaced and started attracting attention around 2001 [Beck & al 2001; Fowler & Highsmith, 2001]. Agile was initially focused on software development but is applicable to any kind of product development. The Agile manifesto is fairly short and stipulates the preference of individuals and interactions over (impersonal) processes and tools, working software over comprehensive documentation, customer collaboration over contract negotiation, and responding to change over following a plan [Beck & al 2001; Fowler & Highsmith, 2001]. One of the concrete instances of the Agile manifesto is a management process (iii) called *Scrum* [Deemer & al, 2012]. Scrum breaks down the development of technical products, initially complex software systems but more generally any complex product, into short goal-driven iterations called sprints which are time-boxed and kept short (i.e., usually no longer than one or two weeks long). Execution on those iterations is delivered by small engineering teams, usually below 10 people, which are assembled in a cross-functional way (i.e.,

gathering software developers with designers, data specialists etc.) to avoid knowledge silos, and which are self-organised rather than hierarchically organised. Emphasis is put on rapid response to change and risk, through a structure of meetings including daily catch-ups where questions such as “what have you done yesterday, are you blocked (i.e., did some risk realise), what will you do today” are rapidly discussed and solutions immediately worked out amongst the members of each scrum team. Scrum can be scaled for larger projects or companies by implementing “scrum of scrums”, i.e., each scrum team designating a representative to propagate the reporting of risks, impediments, dependencies and assumptions, which were resolved by the scrum, to other levels of the company, via “meta-scrum” meetings [Sutherland, 2001].

Agile/Scrum presents several characteristics of interest with regards to minimising the cost of failure: extreme time-boxing, rapid response to risks, and abandoning middle management and long-term planning in aid of putting cross-functional specialist teams, the people who know best and are thus the most capable of forming a coherent vision, at the forefront of innovation and risk management.

On the cost minimisation side of efficiency, *lean production* principles (iv) are derived from methods introduced in the car manufacturing industry by Toyota across the 1930es and gradually developed and refined across the second half of the 20th century [Womack & al, 2007]. Lean manufacturing and its lean software development counterpart focus on optimising the efficiency of flow in production, where the optimisation variable is the avoidance of waste (for example, minimising stocks of unused parts). In other words, any expenditure of resources which does not serve the overarching goal of creating value for the customer is waste which should be relentlessly tracked and eliminated. This methodology then proceeds with the detailed analysis and taxonomy of various kinds of waste which can arise in manufacturing and software development, and how to avoid these. For example, the waste of staff skills and capabilities is theorised and avoided through the *Six Sigma* management principle [Pande & al, 2001].

The *Lean Startup* methodology [Ries, 2011] bundles the above production subcultures into an approach which instantiates product development as a stepwise process of validated learning rather than forming a detailed end-to-end long-term plan to turn a vision into a product. Indeed, *Lean Startup* proposes to develop



a product through a series of short cycles acting as experiments: each new product feature, development idea or new business model is implemented as cheaply as possible and tested against real or potential customers to validate that the desired effect is achieved or failed, in a manner of hypothesis-driven experimentation. Each validated learning experiment is therefore a step which steers product development iteratively towards satisfaction of the customer, while containing the cost of failures by failing early and failing at minimal cost.

Marty Cagan, in his seminal book “Inspired: how to create tech products customers love” [Cagan, 2018], has recently gone one step further, without branding his approach, by proposing to relativise the formality of the Lean and Agile approaches in aid of focusing on the objectives that these seek to achieve: tackling risks upfront rather than at the end, defining and designing products collaboratively rather than sequentially under pre-defined requirements, and solving problems rather than implementing features. In his view, although product vision describes long-term objectives of what the product is set to achieve, it is meant to “fall in love with the problem, not with the solution” [Cagan, 2018, chapter 25 p.129] and mostly acts as a tool to inspire and evangelise production teams and investors. Product development per se is achieved through a stepwise process of product discovery, according to the principle of Lean Startup methodology, but where the validated learning experiments extend to tackling all possible forms of risk: value risk (“will the customer buy it”), usability risk (“can the user figure out how to use it”), feasibility risk (“can we build it”) and business variability risk (“does this solution work for our business”). Cagan also insists that each learning step should rely on prototypes developed at low cost, possibly just on paper if that is viable, and that the iterations should be fast and frequent (of the order of testing 10 to 20 new ideas per week). In that sense, the press releases described above as part of Amazon’s *working backwards* approach are a way to experiment with customer desires at the minimal cost of ink and paper.

Interestingly, the reconciliation of vision and discovery which supports these contemporary approaches to product development echoes the “original and fitting” attributes of creativity discussed by Rob Pope [2005, pp.57-60]: while product vision brings originality, by playing into the margin of abstraction allowed by coherence, validated learning brings fitness to customers’ desires and needs, because it finds

correspondence. This duality is perhaps reconciled by David Bohm [Bohm, 1996] who proposes that creativity is the recognition and re-fashioning of an abstract notion which he calls *ratio*, understood both as *proportion/measure*, in a sense akin to measuring the correspondence of truth with facts, and *reason/intelligibility*, in a sense more akin to the coherence theory of truth where beliefs or visions are true as long as they are coherent. But rather than sealing that reconciliation into yet another static ontology, it can also be expressed as the dynamic paradigm formulated by Blackburn [2018] as:

“Truth is the goal of enquiry, the aim of experiment, the standard signalling the difference between it being right to believe something, and wrong to do so.” [Blackburn, 2018, pp.13]

“To revert to Bentham’s saying, treating truth in the abstract may be stretching up to reach the stars, but the actual practices of real people are the flowers at our feet.

This introduces a sea change in philosophy, or, since it is not fully appreciated event today, perhaps it is better to say that it *should* introduce a sea change in philosophy. [...] Instead of facts first, with method analyzed in terms of its contribution to fact, we look at the methods first, and then describe fact in terms of the ideal endpoint (which we may never reach) of satisfactory applications of method.” [Blackburn, 2018, pp.71-72]

Adopting Blackburn’s metaphysical view that “truth is the goal of enquiry” as a model of product creation thus supports the idea that method is what matters, and thus validates the adoption of dynamic product development approaches as introduced by Lean Startup [Ries, 2011] and modernised by Marty Cagan [Cagan, 2018], rather than encouraging reliance on more static dogmas of correspondence or coherence. In that sense, the parallel established in this essay between a metaphysical model of truth creation and the practical context of contemporary product development methodology reveals agreement between both domains on the suggestion that truth can be invented, but that invention can fail, or in other terms, the suggestion that the invention of truth and products is made possible by subsuming vision and discovery into the dynamic framework of enquiry.

## References

- Beck, Kent; Beedle, Mike; van Bennekum, Arie; Cockburn, Alistair; Cunningham, Ward; Fowler, Martin; Grenning, James; Highsmith, Jim; Hunt, Andrew; Jeffries, Ron; Kern, Jon; Marick, Brian; Martin, Robert C.; Mellor, Steve; Schwaber, Ken; Sutherland, Jeff; Thomas, Dave. 2001. "Manifesto for Agile Software Development". <http://agilemanifesto.org/>
- Bezos, Jeff. 2004. "2003 Letter to Shareholders". <https://ir.aboutamazon.com/annual-reports/>
- Blackburn, Simon. 2018. "On truth". Oxford University Press.
- Bohm, David. 1996. "On creativity". Routledge.
- Burks, Arthur (Editor). 1997. "Collected Papers of Charles Sanders Peirce", Charles Hartshorne, Paul Weiss and Arthur W. Burks (Editors). Thoemmes Continuum.
- Cagan, Marty. 2018. "Inspired: how to create tech products customers love" (2nd edition). John Wiley & Sons.
- Carter, Josh. 2018. "Before General Magic there was Paradigm", blog post, 30/07/2018. [http://joshcarter.com/magic\\_cap/paradigm\\_concept\\_book/](http://joshcarter.com/magic_cap/paradigm_concept_book/)
- Deemer, Pete; Benefield, Gabrielle; Larman, Craig; Vodde, Bas. 2012. "The Scrum Primer: A Lightweight Guide to the Theory and Practice of Scrum (Version 2.0)". <https://www.scrumprimer.org/>
- Fowler, M. and Highsmith, J. 2001. "The Agile Manifesto". Software Development, Vol. 9, No. 8 (August 2001), pp. 28-32.
- Glanzberg, Michael. 2018. "Truth". The Stanford Encyclopedia of Philosophy. Edward N. Zalta ed. <https://plato.stanford.edu/archives/fall2018/entries/truth/>
- Isaacson, Walter. 2011. "Steve Jobs". Simon & Schuster.
- James, William. 1907. "Pragmatism". <https://www.gutenberg.org/ebooks/5116>
- Joachim, Harold Henry. 1906. "The Nature of Truth". Oxford: Clarendon Press.
- Kerruish, Sarah and Maude, Matt (directors). 2019. "General Magic", documentary film. Spellbound Productions.
- Khanna, Rajat, Guler, Isin and Nerkar, Atul. 2016. "Fail Often, Fail Big, and Fail Fast? Learning from Small Failures and R&D Performance in the Pharmaceutical Industry". Academy of Management Journal. 59 (2): 436–459. <https://journals.aom.org/doi/abs/10.5465/amj.2013.1109>
- Pande, Peter S.; Neuman, Robert P.; Cavanagh, Roland R. 2001. "The Six Sigma Way: How GE, Motorola, and Other Top Companies are Honing Their Performance". McGraw-Hill.

Pope, Rob. 2005. "Creativity - Theory, history, practice". Routledge.

Ries, Eric. 2011. "The Lean Startup - How constant innovation creates radically successful businesses". Penguin Random House.

Bishop Jones, Roger (Editor). 2012. "The Metaphysics". Aristotle (Author), Roger Bishop Jones (Editor), W D Ross (Translator). CreateSpace Independent Publishing Platform.

Shore, Jim. 2004. "Fail fast". IEEE Software, September/October 2004 issue.

Statcounter. 2020. "Mobile Operating System Market Share Worldwide", interactive market analysis web page. <https://gs.statcounter.com/os-market-share/mobile/worldwide/#monthly-201208-202003>

Surowiecki, James. 2014. "Epic Fails of the Startup World". The New Yorker, May 19 2014.

Sutherland, Jeff. 2001. "Agile Can Scale: Inventing and Reinventing SCRUM in Five Companies". Cutter IT Journal, Vol. 14, No. 12, 2001.

Vogels, Werner. 2006. "Working backwards". Blog post.  
[https://www.allthingsdistributed.com/2006/11/working\\_backwards.html](https://www.allthingsdistributed.com/2006/11/working_backwards.html)

Womack, James P., Jones, Daniel T. and Roos, Daniel. 2007. "The machine that changed the world - How lean production revolutionized the global car wars". Simon & Schuster.

# Desiring to disrupt

© 2020 Sacha Krstulović

With continued interest for the exploration of creativity in contemporary entrepreneurship, this essay looks at the question “Is every invention an adaptation?” in the context of the industrial development of consumer products and services, while seeking information and inspiration from a number of psychology theories. The question itself can be understood in two ways. On the one hand, invention can be understood as the object of invention, and adaptation understood as focusing on that object. In that case, an object resulting from adaptation is understood as coming at the end of successive refinements of itself or as the result of a combination and distillation of readily existing objects, and the question becomes that of the possibility of creating radically original objects. On the other hand, if invention is understood as the action of inventing, and adaptation is understood as a process, then the question may rather be focusing on the nature of the dependency between the creative act and the environment, for example adaptation in the Darwinian sense of survival of the fittest. This essay will consider both interpretations. After setting the scene by introducing the industrial notion of disruptive product or service, we will examine the distinction between adaptive and radical creativity, where a number of psychology studies suggest that inventions and inventors spread across a continuum between both extremes. Then, an account of Simonton’s update of Campbell’s “Blind Variation and Selective Retention” (BVSR) theory [Simonton, 2011; Simonton, 1999; Campbell, 1960] will suggest that the invention process is essentially Darwinian insofar as a selection phase conditions the survival of the fittest invention, where fittest can be most useful, most aesthetically pleasing, most bought in

the market, or some other fitness metric<sup>2</sup>. In this context, adaptiveness does not need to be opposed to radicality insofar as position between both depends on the sightedness inherent to the domain of invention.

Let us first frame the question in an applied industrial context. Clayton Christensen, in his bestseller “The Innovator’s Dilemma” [Christensen, 1997], argues that firms are under a continuous obligation to disrupt their own market by reinventing their business models and product lines. This is in order to survive a constant threat coming from newer, more innovative companies who are relentlessly appearing in the same market and are likely to steal a proportion, if not the entirety, of the market share. The concept of development phases and disruption in the life span of a product or service is typically illustrated by S-curves, as in Figure 1. The idea of S-curves is that after a period of sustained growth in performance and value, products or services will eventually reach a plateau where they can’t sustain any more improvement or value growth. Disruption happens when a new product starts a second S-curve in the same market. The disruption between both curves is usually difficult to detect because most of the time, new products perform worse than the incumbents in their initial stages of development. Hence, the *innovator’s dilemma*, as put forward by Christensen, is that of the managers who hesitate to invest in the development of early-stage technology because worse performance or regression to market uncertainty contradicts the simpler rule of profit maximisation through growth of an established market. Instead, Christensen advocates that firms have a duty to innovate and occupy the space of their own disruption, thus preempting the competition against new entrants.

---

<sup>2</sup> The breadth of possible fitness metrics may be what gives Darwinism the form of a universal theory. Simonton [1999] suggests that “some critics may view this very inclusiveness as a fault rather than a virtue. [...] A theory that explains everything may ultimately explain nothing.” However, mention of Darwinism in this essay is intended as an archetype of adaptive selection within a cultural or industrial substrate which intrinsically defines a metric of fitness.

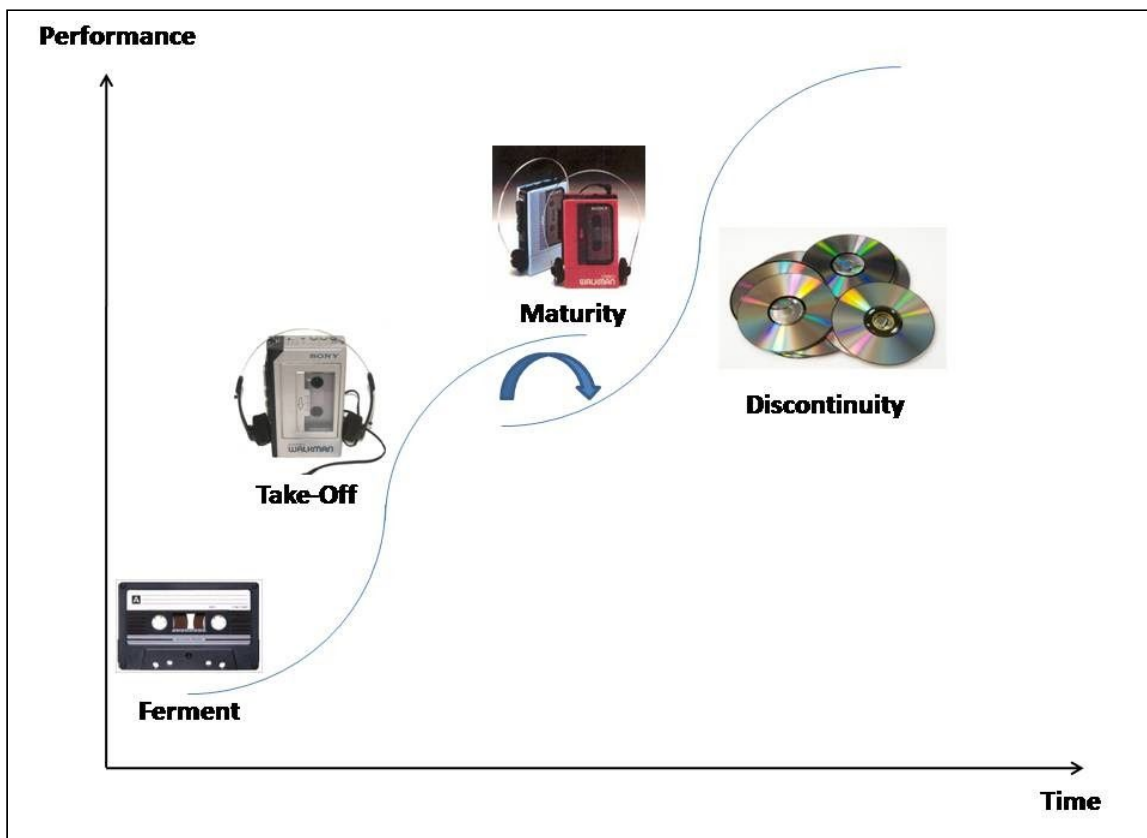


Figure 1: An example of two s-curves in the audio industry. The CD disrupted the cassette tape.

[Source: <https://www.galsinsights.com/the-innovation-s-curve/> ]

Classical examples of businesses having suffered from disruption include that of the Kodak firm, who went from being a leading brand of photographic film across the 20th century to nearing bankruptcy in 2012 [Kmia, 2018; Shih, 2016], and more recently the taxi and hotel industry which found their market shares threatened by the sudden rise of Uber and AirBnB. Although these are strongly related to the rise of digital technologies and services, Christensen [1997] cites other examples where hardware industries such as hard drives or excavators have witnessed similar disruptions. These case studies underline the strategic importance and demand placed on innovation in business: it is presented as the number one condition for survival.

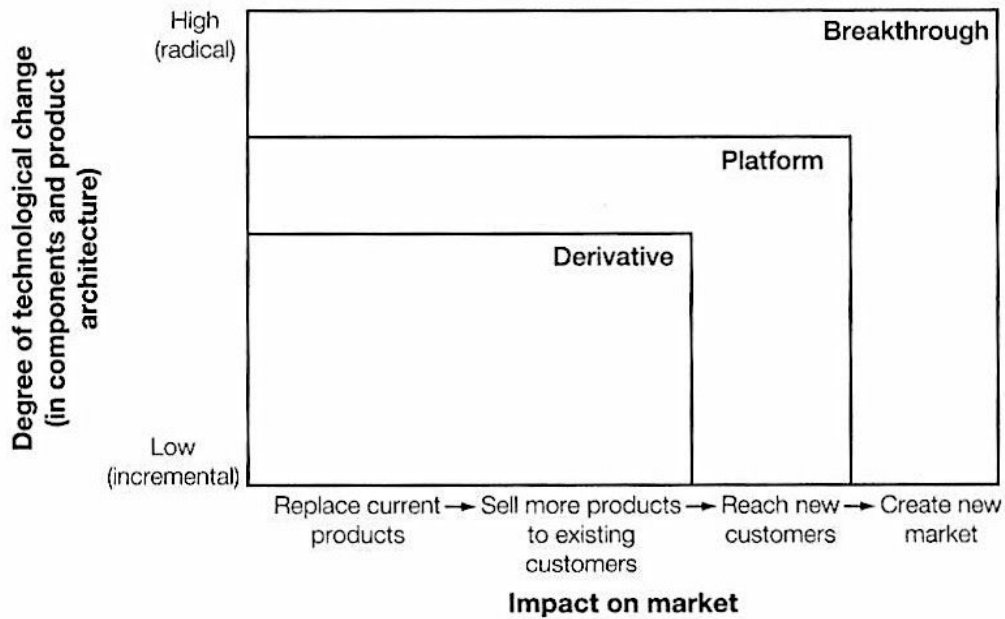
Along those lines, Geoffrey Moore [2006] explicitly draws a parallel between free market economy and Darwinian evolution:

“[...] free-market economies operate by the same rules as organic systems in nature:

- Competition for scarce resources of customer purchases creates hunger that stimulates innovation.
- Customer preferences for one innovation over another create a form of natural selection that leads to survival-of-the-fittest outcomes.
- Each new generation restarts the competition from a higher standard of competence than the prior generation.
- Thus over time successful companies must evolve their competence or become marginalized.”

Moore [2006] then proceeds with listing and analysing 15 different innovation strategies corresponding to various ways of either creating a new market or entering an existing one. Some of these strategies are adaptive, for example *value engineering* which consists in finding cheaper ways to build an existing product, while others are more radical, such as disruption which aims at creating an entirely new market.





**Figure 2: Degrees of technological change (or innovation) and their impact on the market.**

**[Dyer & al, 2019]**

Thus, Moore suggests that innovation strategies ranging from adaptive to radical are all business-worthy in practice. However, Dyer & al [2019] suggest that radical innovation, albeit more risky, is more likely than adaptive innovation to yield a large market impact (Figure 2), thus supporting the *high risk / high return* business paradigm. Besides, while entrepreneurship literature fosters the general understanding that innovation must routinely provide adaptation to changing consumption habits and rising new technologies, startups such as Uber and AirBnB have achieved a supplement of fame because of their incredibly fast growth rates and the huge amounts of investment they attracted (\$24.7 billion for Uber and \$5.4 billion for AirBnB, according to <http://crunchbase.com> at the time of writing). Such fame echoes the general fascination exerted by disruption, in business as much as in art or science: this fascination biases the question of whether innovation is adaptive or disruptive in nature, but it does not solve it. As a matter of fact, although entrepreneurship literature makes a point of listing many success stories of business disruption, it is less convincing at suggesting how to succeed in achieving disruption methodically or intentionally. Disruption suggests by definition that something in the new products will have come up with novelty and fitness in a way that was not obvious to the incumbents. Thus, beyond general statements of the need to innovate, it still seems useful to enquire upstream towards the source of the elusive eureka

moment, in order to pinpoint the conditions or mechanisms which yield disruption, under the assumption that disruption may be more advantageous than adaptation.

Interestingly, a parallel exists in the field of psychology, where a number of studies focused on creativity are distinguishing radical creativity, sometimes referred to as “Big-C creativity”, from incremental creativity, denoted “small-c creativity”, as well as from routine, non creative performance [Madjar & al, 2011; Gilson & al, 2012; Kaufman & Beghetto, 2009; Simonton, 2010].

Madjar & al [2011] as well as Gilson & al [2012] apply a methodology initially fostered by Kirton [1976], where psychology researchers aim to determine the factors leading to one or the other type of creativity in quantifiable ways. In his seminal article, Kirton [1976] proposes the “Kirton Adaption-Innovation Inventory”, or KAI test, as an instrument to locate the respondents along a continuous adaptiveness-innovativeness scale. A questionnaire about tasks is submitted to the tested subjects, where they are asked to rate task difficulty on a 5-point scale ranging from very easy to very hard. The tasks themselves are calibrated to involve larger or smaller proportions of 32 human factors including, e.g., “has original ideas”, “often risks doing things differently”, “fits into the system” or “never seeks to break or bend the rules”, which are therefore proposed as psychological factors of inclination towards either adaptation or radical innovation. In this type of work, factors are literally meant in the mathematical sense of a set of reference axes across which psychological profiles can be projected, decomposed and quantified. Using a similar methodology, Madjar & al [2011] as well as Gilson & al [2012] analyse the drivers towards Big-C or small-c creativity in management and business contexts, under the assumption that “both are necessary for organizations to remain competitive, grow and survive” [Gilson & al, 2012]. They conclude that intrinsic motivation, willingness to take risks, resources for creativity and career commitment are associated primarily with *radical creativity*, whereas supportive supervision, the presence of creative coworkers and organisational identification are associated with *incremental creativity*, and conformity plus organisational identification are linked with *routine performance*. From there, they deduce managerial advice to foster one or the other creativity style through acting on company culture, supervision style, extrinsic motivators (e.g. salary) or applying particular criteria for staff recruitment.

Mumford and Gustafson [1988] also consider a distinction between “levels of creative undertaking”. They cite Ghiselin [1963], who distinguishes *major contributions*, where ideas or understandings are generated to solve a variety of problems, from *minor contributions*, in which existing understandings are extended to “solve a more limited but still significant problem”. They further cite Besemer & Treffinger [1981, p. 97], who comment that “some but not all creative products transform the manner in which their audience perceives the world”. Mumford and Gustafson [1988] then proceed with analysing the influence of a variety of individual and situational attributes on creative behaviour. Interestingly, they consider evolutions in cognitive processes in addition to more static attributes: personal attributes such as age, achievement and psychology traits; differential cognitive processes such as production processes, association processes and unconscious processes; developmental considerations of early influences versus latest influences or cultural influences; extrinsic influences such as climatic conditions and evaluative conditions. Although they suggest that “the effective translation of ideas into action will depend on a variety of individual and situational attributes”, they also suggest that “the integration and *reorganization of cognitive structures* is likely to underlie *major creative contributions* and that the application of *existing cognitive structures* is likely to underlie *minor contributions*” [Mumford & Gustafson, 1988; italics ours], thus suggesting a more dynamic view of individual development towards creative abilities than a view purely based on selection or environmental state, or in other terms, they promote an extension of Kirton’s analysis to the dynamic factors which are yielding evolutions of an individual’s cognitive processes in one direction or another.

What the above-cited psychological studies convincingly settle on is the notion that innovation can be graded along a scale varying from adaptive to radical. Then they proceed with proposing analysis grids along sets of intrinsic, extrinsic and dynamic factors likely to locate individual innovation capabilities somewhere along that scale. However, from the standpoint of business strategy, with value creation and survival in mind, we are still interested in identifying the source of the more radical, perhaps more surprising innovations, i.e., the disruptive ones whose attack nobody saw coming, where surprise is yielding a strategic advantage, and which get investor’s favours.

The attribute of non-obviousness (or surprise), added to novelty and fitness as attributes of disruptive products, pertains to the quest for a standard definition of creativity. Pope [2005, pp. 57-60] mentions “original and fitting” as one of the possible perspectives towards a definition, while Simonton [2012a] extends it with the third attribute “non-obvious”, which he reformulates as “surprising”. Interestingly, these three attributes are the exact conditions required for a piece of intellectual property to be patentable<sup>3</sup>, namely: nobody has done the same thing before, it is fit for some useful purpose, and it must not be obviously deducible by what the law calls “the person with ordinary skill in the art”. If surprise seems of the essence in Simonton’s definition of creativity, it does embody the crucial strategic advantage when it comes to disruption. Let us therefore look at Simonton’s theory in more detail.

[Simonton, 2012a] argues that this three-pronged definition, rather than the two-pronged one, validates a theory originally proposed in 1960 by [Campbell, 1960] and later modernised by Simonton himself [Simonton, 1999; Simonton, 2011]. This theory, called “blind variation and selective retention” (BVSR), predicates that creativity as well as discovery are the result of a two-phased process. In the first phase of blind variation (BV), a variety of thought trials are blindly formed, which are then weeded out in the subsequent phase of selective retention (SR), itself based on assessing usefulness. In that sense, variation provides the novelty and selection provides the usefulness which are underpinning the two-pronged definition. However, Simonton demonstrates that surprise, related to blindness towards the future, is necessary for BVSR to stand as a definition of the invention process. The definition of blind variation deserves some attention as it has been the core of controversies about Campbell’s original theory. Simonton clarifies this definition as being inclusive of all possible variation processes, either random or directed by prior knowledge. The term “blind” is meant as denoting the “lack of foresight in the production of variations - the inability to generate purposively the most adaptive variations” [Simonton, 1999]. Citing Simonton again [Simonton, 2012b]: “Simply put, creative ideas are discovered by generating and testing ‘thought trials’ that may or may not prove useful because the creator cannot know beforehand what will prove fruitful without engaging in some trial-and-error procedure”. But the thought trials themselves can be

---

<sup>3</sup> USPTO criteria for patentability are detailed in <https://www.uspto.gov/web/offices/pac/mpep/mpep-2100.html> (accessed 15/06/2020). On USPTO rules to examine obviousness, see <https://www.uspto.gov/web/offices/pac/mpep/s2141.html> (accessed 15/06/2020).

sighted or blind: “Sightedness takes place whenever factual- or theory-driven expectations correspond to actual outcomes. In other words, ideas that are the most useful have the highest probabilities and ideas that are the least useful have the lowest probabilities [of being thought-trialled]”. Conversely, “Some degree of blindness occurs when ideational probabilities are not highly correlated with their corresponding utilities”. In that sense, blind variation presents more potential than sightedness for radically creative ideas to arise, or for ideas *which will be judged radically creative* to arise. Blind variation does not deny the value of expertise, but it balances it against the necessity of experimenting which may be imposed by the creative domain of interest. In turn, stronger requisites for experimentation entail by definition a supplement of non-obviousness or surprise, which will tend to pull the judgements emitted about the creative outcomes towards the more radical end of the scale<sup>4</sup>.

Coming back to this essay’s question, the BVSR theory therefore suggests that the ideas or concepts which survive in the future are the useful ones, i.e., the ones for which experimentation proves fitness. As noted by Simonton [1999], this process appears strikingly analogous to Darwinian natural selection. However, the addition of surprise proves essential to distinguishing radical creativity as a frontrunner. Indeed, inventions are always resulting from an adaptation process which corresponds to the selective retention (SR) phase of the BVSR process, but they can be judged more adaptive or more radical depending on the degree of sightedness of the first part of the process which is about generating a variety of ideas more or less blindly, depending on the domain.

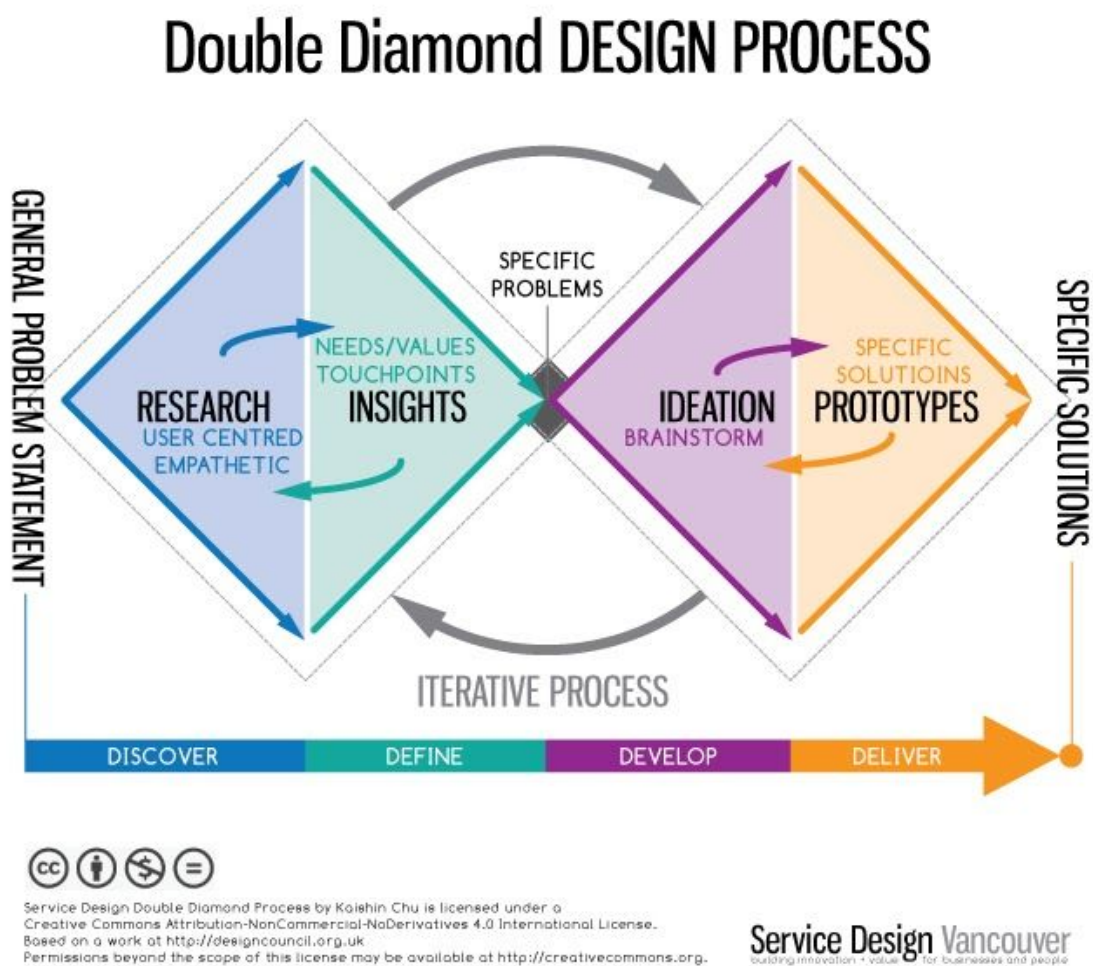
Interestingly, the general form of the BVSR process appears mirrored in *design thinking methodology* as used in the industry. To begin with, let us look at the UK’s Design Council promotion of the “Double Diamond” as a universal depiction of the design process [Ball, 2020]<sup>5</sup>. The process is called double diamond because it consists of the repeated application of divergent thinking followed by convergent thinking (Figure 3). The convergent/divergent paradigm is echoed in many other design thinking

---

<sup>4</sup> An analogy I personally use with my managers to explain the blind nature of scientific research is that of the first Spanish conquistadores setting out to find the golden cities and having to find their way across the unknowns of the South American jungle: although their general expertise in navigation and survival skills cannot be denied, they will have no other choice than trial and error to determine, e.g., which fruits or animals are dangerous, having never encountered any of the jungle ones before.

<sup>5</sup> Many more pages about the “double diamond” can be found on the UK’s Design Council website <https://www.designcouncil.org.uk/> by inputting that term in the site’s search box.

methodologies, for example the process promoted by design firm IDEO (Figure 4; <http://www.ideo.com>), whose president and CEO Tim Brown speaks of the divergent part as creating choices and of the convergent part as making choices [Brown, 2009, p. 73]. The standard design process promoted by Stanford University’s d.school (Figure 4; <https://dschool.stanford.edu/>; [Doorley & al, 2018]) closely follows: although it does not directly resort to the visual divergent/convergent analogy, the “empathize” and “ideate” phases are more about the exploration of variation, while the “define” and “prototype/test” phases are more about distillation and selection.



**Figure 3: A depiction of design thinking as a double-diamond process. [Service Design Vancouver.]**

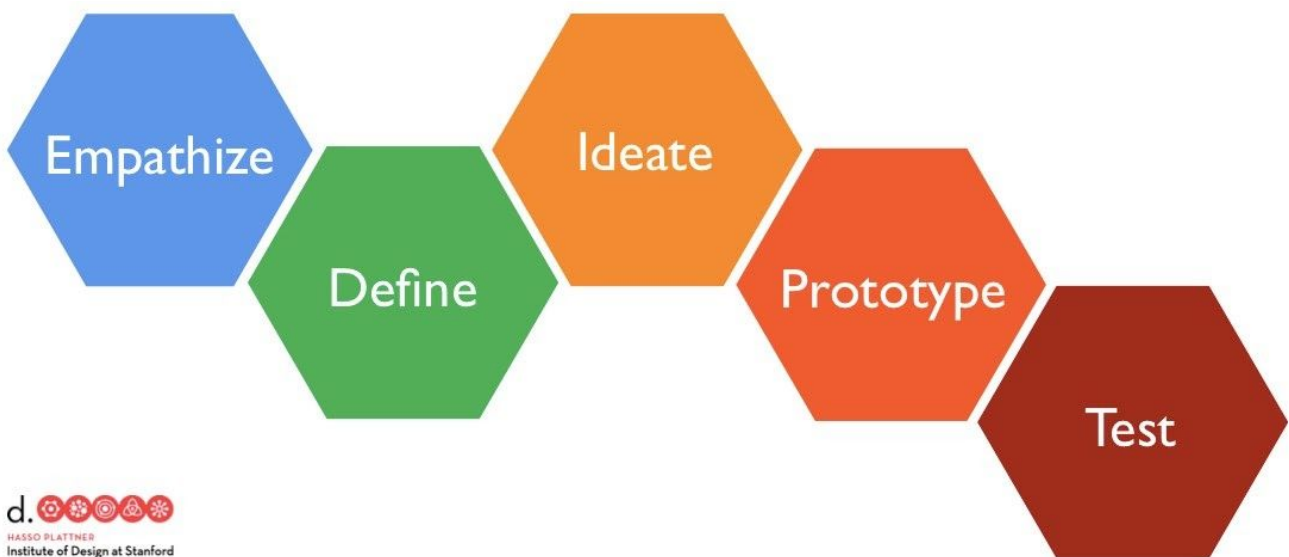
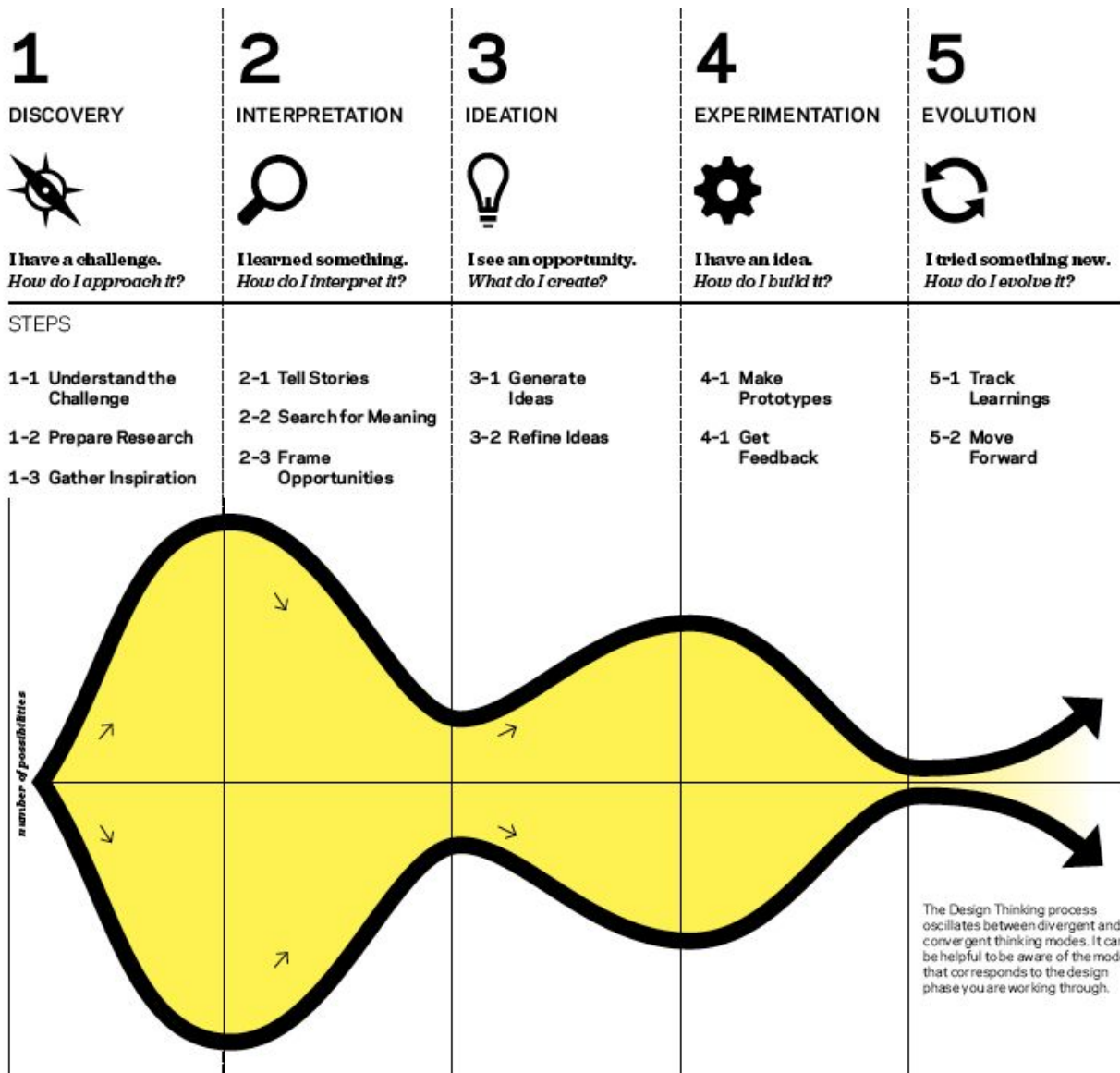


Figure 4: IDEO's design thinking process, visually illustrated as divergent/convergent, aligned with Stanford d.school's equivalent process. [Sources: IDEO and Stanford d.school.]

Tracing back the origins of the terms *divergent thinking* and *convergent thinking*, these are generally attributed to psychologist Joy Paul Guilford, who is one of the forefathers of both the study of creativity in psychology [Guilford, 1950] and the application of factorial analysis to the specific study of creativity and intellect [Guilford, 1956]. Guilford's "Structure of Intellect" (SI) theory [Guilford, 1956] decomposes and rates intellectual abilities across 3 dimensions of operations, content and product, themselves decomposed into rubrics, where divergent and convergent intellectual production are mentioned as two out of six of the operation rubrics<sup>6</sup>. Divergent thinking is meant as the ability to generate multiple solutions to a problem and is deemed essential to creativity; in design thinking, that is the phase where ethnographic studies would generate lots of exploratory and unstructured field information in diamond 1, or lots of ideas from a brainstorm in diamond 2. Conversely, convergent thinking covers the ability to deduce a single solution to a problem, which in Guilford's SI theory is rather associated with rule-following or problem-solving; in design thinking, convergent thinking covers the distillation of multiple user insights into a more focused problem definition in diamond 1, as well as the trial and elimination of hypothesised or prototyped ideas in diamond 2 (figure 3 and figure 4). To be sure, citing the Design Council website: "The two diamonds represent a process of exploring an issue more widely or deeply (divergent thinking) and then taking focused action (convergent thinking)".

The parallel between the divergent/convergent phases of design thinking and the blind variation/selective retention phases of the BVSR theory appears obvious. However, Campbell and Guilford do not appear to have cited each other's work, and we have not found any mention of Guilford in Simonton's work. Both, however, are cited by Runco and Acar [2012], who review the pros and cons of a large number of psychometric techniques aiming at measuring divergent thinking capabilities, under the hypothesis that "Divergent thinking often leads to originality, and originality is the central feature of creativity" [Runco & Acar, 2012].

---

<sup>6</sup> A convenient summary of the other dimensions and rubrics of Guilford's "Structure of Intellect" (SI) theory [Guilford, 1956] can be found on Wikipedia: [https://en.wikipedia.org/wiki/J.\\_P.\\_Guilford](https://en.wikipedia.org/wiki/J._P._Guilford).



By showing that Simonton's updated BVSR theory is echoed in various instances of divergent/convergent design processes deployed in the industry, a salient one being patent examination processes, this essay concludes that innovation processes involve adaptation in the Darwinian sense of survival of the fittest redefined as survival of the most useful. This reinforces the conclusion of our previous essay, which was that "truth is the goal of enquiry", i.e., that an enquiry process, experimentation, provides the selection part which is essential to the achievement of innovation in the domains where blindness is high. However, blindness is not always high: [Furr & Dyer, 2014] underline that different types of management may be required along the S-curve, i.e., high uncertainty at the beginning of a product's lifetime might require more *Innovation school*-type entrepreneurial management, geared towards radical creativity, invention and disruption, while later stages of value creation might require more traditional *Business-school*-type management, geared towards adaptation, value engineering and efficiency of delivery (figure 5; [Furr & Dyer, 2014]). The BVSR framework supports the possibility of disruption through invention without requiring to oppose adaptation and invention, or "small-c" versus "Big-C" creativity, insofar as the position along that continuum depends on the availability of sightedness, which is itself relative to the creative domain of interest or to the degree of advancement of a product, market, domain or civilisation. When it comes to focusing on the object of creation, inventions can therefore be rated across a continuum from adaptive to radical, relative to the combined degree of novelty, usefulness and non-obviousness of the new sights or new insights embodied by the invention.

In contemporary entrepreneurship, Design Thinking connects with the Lean Startup and Agile processes, which were discussed in our previous essay, as shown in figure 6. While Design Thinking is the source of new ideas, iterative enquiry through Lean and Agile pursues the validation of the proposed ideas (the selective retention part of BVSR), and seeks to maximise the efficiency of selective retention while minimising the cost of failure. The BVSR theory supports the possibility to innovate in radical or disruptive ways, however it does not guarantee success, insofar as surprise and originality remain the result of a blind process. As such, innovation must provision for the risk of failure, which will be the topic of the next essay.

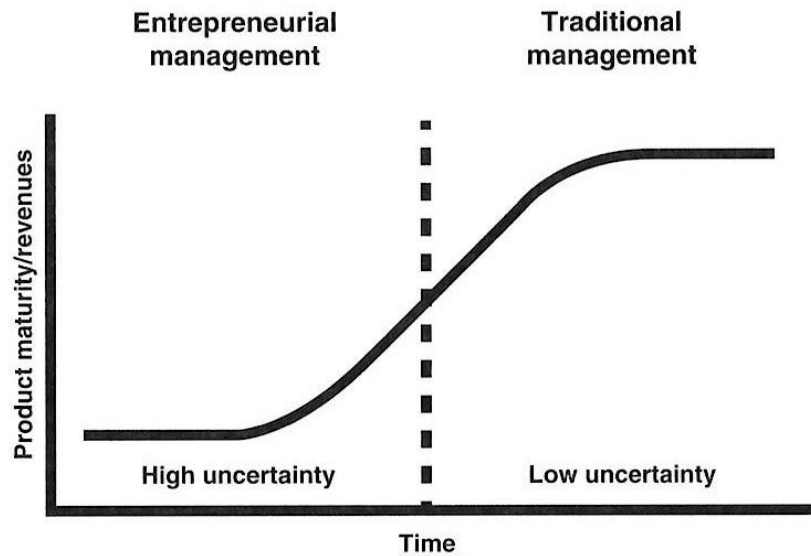


Figure 5: The S-curve and appropriate management styles as proposed by Furr & Dyer [2014].



Figure 6: In modern product or service development, Design Thinking’s iterative enquiry, commented on in this essay, integrates with the Lean and Agile methods, which were commented on in our previous essay. [[dave.landis@lithespeed.com](mailto:dave.landis@lithespeed.com)]<sup>7</sup>

<sup>7</sup> Diagram featured in: <https://lithespeed.com/lean-ux-dont-part-1-3-2/> (accessed 01/07/2020).

## References

- Ball, Jonathan. 2020. "The Double Diamond: A universally accepted depiction of the design process". Blog post. Accessed 17/06/2020.  
<https://www.designcouncil.org.uk/news-opinion/double-diamond-universally-accepted-depiction-design-process>
- Besemer, S. P., and Treffinger, D. J. 1981. "Analysis of creative products: Review and synthesis". *J. of Creative Behavior*, 15, pp. 158-178.
- Brown, Tim. 2009. "Change by design". Harper Business. (2019 edition revised and edited.)
- Campbell, D. T. 1960. "Blind variation and selective retention in creative thought as in other knowledge processes". *Psychological Review*. No. 67, No. 6, pp. 380-400.
- Christensen, Clayton. 1997. "The Innovator's Dilemma. When New Technologies Cause Great Firms to Fail". Harvard Business Review Press. (2016 edition.)
- Doorley, Scott; Holcomb, Sarah; Klebahn, Perry; Segovia, Kathryn and Utley, Jeremy. 2018. "Design thinking bootleg". d.school at Stanford University. Downloaded on 17/06/2020 from:  
<https://dschool.stanford.edu/resources/design-thinking-bootleg>
- Dyer, Jeff; Gregersen, Hal; and Christensen, Clayton M. 2019. "The Innovator's DNA". Harvard Business Review Press.
- Furr, Nathan and Dyer, Jeff. 2014. "The Innovator's Method". Harvard Business Review Press.
- Ghiselin, B. 1963. "Ultimate criteria for two levels of creativity". In C. W. Taylor and F. Barron (eds), "Scientific creativity: Its recognition and development", pp. 30-43. New York: Wiley.
- Gilson, Lucy L.; Lim, Hyoun Sook; D'Innocenzo, Lauren; Moye, Neta. 2012. *Journal of Creative Behavior*, vol. 46, No. 3, pp. 168-191.
- Guilford, J. P. 1950. "Creativity". *American Psychologist*, 5(9), pp. 444-454.
- Guilford, J. P. 1956. "The Structure of Intellect". *Psychological Bulletin*, 53, pp. 267-293.
- Kaufman, J. C. and Beghetto, R. A. 2009. "Beyond big and little: The four c model of creativity. *Review of General Psychology*, Vol. 13, No. 1, pp. 1-12.
- Kaufman, J. C. and Sternberg, R. J. (eds). 2010. "The Cambridge handbook of creativity" (first edition). Cambridge University Press.
- Kirton, Michael. 1976. "Adaptors and Innovators: A Description and Measure". *J. of Applied Psychology*, Vol. 61, No. 3, pp. 622-629, 1976.

- Kmia, Oliver. 2018. "Why Kodak Died and Fujifilm Thrived: A Tale of Two Film Companies". Blog post. Accessed 15/06/2020.  
<https://petapixel.com/2018/10/19/why-kodak-died-and-fujifilm-thrived-a-tale-of-two-film-companies/>
- Madjar, Nora, Greenberg, Ellen and Chen, Zhang. 2011. "Factors for Radical Creativity, Incremental Creativity, and Routine, Noncreative Performance". *J. of Applied Psychology*, Vol. 96, No. 4, pp. 730-743, 2011.
- Mumford, Michael D. and Gustafson, Sigrid B. 1988. "Creativity Syndrome: Integration, Application, and Innovation". *Psychological Bulletin*, Vol. 103, No. 1, pp. 27-43, 1988.
- Moore, Geoffrey. 2006. "Dealing with Darwin: How Great Companies Innovate at Every Phase of Their Evolution". Capstone.
- Pope, Rob. 2005. "Creativity - Theory, history, practice". Routledge.
- Runco, Mark A., and Acar, Selcuk. 2012. "Divergent Thinking as an Indicator of Creative Potential". *Creativity Research Journal*, 24(1), pp. 1-10, 2012.
- Shih, Willy. 2016. "The Real Lessons From Kodak's Decline". *MIT Sloan Management Review*, Magazine Summer 2016 edition, May 2016. Accessed 15/06/2020.  
<https://sloanreview.mit.edu/article/the-real-lessons-from-kodaks-decline/>
- Simonton, Dean Keith. 1999. "Creativity as Blind Variation and Selective Retention: Is the Creative Process Darwinian?". *Psychological Inquiry*, Vol. 10, No. 4, pp. 309–328, 1999.
- Simonton, Dean Keith. 2010. "Creativity in highly eminent individuals". In [Kaufman & Sternberg, 2010], pp. 174-188.
- Simonton, Dean Keith. 2011. "Creativity and Discovery as Blind Variation: Campbell's (1960) BVSR Model After the Half-Century Mark". *Review of General Psychology*, Vol. 15, No. 2, pp. 158–174, 2011.
- Simonton, Dean Keith. 2012a. "Taking the U.S. Patent Office Criteria Seriously: A Quantitative Three-Criterion Creativity Definition and Its Implications". *Creativity Research Journal*, Vol. 24, No. 2-3, pp. 97-106, 2012.
- Simonton, Dean Keith. 2012b. "Foresight, Insight, Oversight, and Hindsight in Scientific Discovery: How Sighted Were Galileo's Telescopic Sightings?". *Psychology of Aesthetics, Creativity, and the Arts*, 6(3), pp. 243–254, 2012.

# Failure, vulnerability and mindfulness

© 2020 Sacha Krstulović

In Rose Tremain's novel "Music & Silence" [Tremain, 1999], set in 1629's fictitious Europe, character Earl Johnnie O'Fingal is living a happy family life in Ireland, until he is awoken one night in the middle of a dream seeing himself as a composer writing a beautiful piece of music. His efforts to recreate the graceful lament prove unfruitful, and they turn into an obsession which gradually sinks Johnnie O'Fingal into depression, physical and emotional degradation, and neglect of his wife and children. The final push towards death comes during a trip to Dublin where he randomly attends a concert in a church to discover that the air was actually written by someone else, which leads him to conclude: "now I know that I am empty of anything noble, anything that transcends the ordinary and workaday. I have given up years of my life to this search and it has all been in vain. All that I have done is to make myself ridiculous and contemptible."

Although the character and situation are fictional, they convey an extreme sense of one of the risks associated with creativity: the risk of failure, which is the focus of this essay. We will not study the risks pertaining to the impact of the created products on the rest of the world. Failure is the lack of achieving something wanted or aimed for. As such, it sits in opposition against human will and questions the possibility of controlling creative outcomes. When desire for the outcomes is exacerbated by pressure imposed by cultural or existential factors, for example in the case where investment is used to develop a

business built on innovation, we will show that there can be danger for the mental health of the creator. First, we will analyse three cultural factors which may underpin devaluing perceptions of failure: ambiguities around Darwin's "survival of the fittest", Protestant ethics as the precursors of capitalism, and the possibility of corrupting Nietzschean philosophy. Then, we will note that loss aversion may arise from natural cognitive bias in situations of risk, as empirically proven by behavioural economics. Furthermore, examining divergent/convergent models of creativity will suggest that a proportion of failure is inevitable and necessary, but not sufficient, for creative success to happen. According to psychology studies, the tension between devaluing cultural views on failure and the immanence of it may trigger anxiety. I will suggest that resolutions of this tension can be found in embracing vulnerability, developing an autotelic personality to practice entrepreneurship as a flow activity, and practicing mindfulness.

Let us start with setting the scene in the context of entrepreneurship. "Fail early, fail fast, fail often" is a common mantra in startup culture [Basulto, 2012; Tobak, 2017]. This owes partly to system theory stipulating that the cost of system failure, understood as the waste of investment money, is lesser if reported early [Shore, 2004]. The mantra also owes to business failure statistics indicating that roughly 55% of businesses fail after 5 years of existence [Hopkins, 2019; U.S. Bureau of Labor Statistics, 2016; Archambault & May, 2018], as well as to a fear-mongering rumour that "75% of startups fail" [Jarvis, 2015; Gage, 2012<sup>8</sup>]. A layer of ambiguity is added by conflating failure with the acquisition of experience [Surowiecki, 2014; Nobel, 2011; Basulto 2012; Birkenshaw & Haas, 2016; Zunino & al, 2017]. Failure thus appears relativised or even romanticised in the wake of success. Anxiety or depression resulting from failure are less studied and more discreet realities [Gasca, 2018; Gasca & al, 2014; Cain, 2015; Zichermann, 2019]. Donatien Garnier, a former colleague of mine who successfully grew and sold his business, testifies in an interview: "Building a start-up can be extremely challenging on your mental health as you go through a roller coaster of wins and losses" [IdeaSpace, 2020]. Thus, a paradox exists between

---

<sup>8</sup> Deborah Gage's 2012 Wall Street Journal article "The Venture Capital Secret: 3 Out of 4 Start-Ups Fail" quotes force detail of a study from Harvard Business School's lecturer Shikhar Ghosh, in aid of a "75% of startups are failing" storyline, but without giving a reference - my best effort to find out which publication of Ghosh's she could be referring to has remained unfruitful. Gage's article has itself been profusely referenced across the internet and seems the original source of the "75% startups failing" legend. Reality would seem closer to a "55% of businesses fail after 5 years" statistic, with a variation of +/-5% depending on countries, sectors and years, around which various governmental sources consistently oscillate [UK: Hopkins, 2019; USA: U.S. Bureau of Labor Statistics, 2016; Canada: Archambault & May, 2018].

the utilitarian concept of learning from failure and the mentally strenuous experience of it, a tension whose resolution does not seem to have received much attention. As a first step, this calls for researching the cultural underpinnings of devaluing views of failure.

“Lack of product/market fit”, a technical term to denote customers’ lack of appetite for buying a product, appears as one of the primary reasons for failure [CB Insights, 2019]. Usage of the term “fit” evokes natural selection and the principle of “survival of the fittest”, generally understood as elimination of the weak by market competition. However, “survival of the fittest” may not have represented Darwin’s original thinking [Darwin, 1859; Paul, 1988; Basulto, 2012]. Indeed, the phrase was coined by Herbert Spencer [Spencer, 1910; Paul, 1988], who may have been supporting the political agenda of social Darwinism [Sweet, undated; Weinstein, 2019]. In Darwin’s original text, although species selection by humans is understood as optimising human-defined criteria, e.g., performance (racing horses), aesthetics (dogs, cats) or industrial yield (cows, cereals), whether nature itself optimises selection on the basis of utilitarian criteria remains unclear [Paul, 1988]. From an ecological standpoint, and in view of human-induced climate change or the extermination of various useful species (bees, Amazonian trees), whether evolution has brought human civilization to an optimal state seems in itself debatable. Rather, natural evolution understood as the evolution of a dynamical system, where the dynamics are impartial and possibly foreign to human judgement, does not necessarily imply that what comes after is better than what comes before. In other words, “natural selection” may not necessarily imply “survival of the better”. Furthermore, the complexity, randomness or power of the dynamics at play may be wider than what human judgement can grasp, thus suggesting limits to the control that the will can exert on achievement<sup>9</sup>. With that more impartial and humbler interpretation of natural evolution in mind, it is possible to conceive failure as an instance of uncontrollable, immanent and non-judgmental change of state, akin to ageing or death. From there, devaluing interpretations of failure are better sought amongst the metrics of judgement constructed by human culture, in that case the class system promoted by social Darwinism.

---

<sup>9</sup> As John Lennon puts it in song “Beautiful Boy”: “Life is what happens to you / While you're busy making other plans.”

Looking at another socio-cultural construct, let us notice that the father of Herbert Spencer, who coined “survival of the fittest”, was sympathetic to Quakerism [Sweet, undated]. Indeed, across the 19th and the early 20th century, Quakers founded major corporations such as Cadbury, Barclays Bank, Price Waterhouse and many more [Jackson, 2010; Kavanagh & Brigham, 2017]. More generally, a link between Protestant ethics and the spirit of capitalism has been established by sociologist Max Weber [Weber, 1930]. The general basis for Protestant and Quaker ethics<sup>10</sup> is that behaviour in life is conditioned by the desire to achieve salvation in the afterlife. This entails following a vocation in the case of Protestants, and benefiting the community in the case of Quakers. In both cases, the wealth generated by industrious behaviour must not be spent for the pleasure of the wealth owner. In Protestant culture, appearing industrious and avoiding indulgence in worldly pleasures are manifestations of preordainment which add up as incentives to accrue wealth instead of consuming it. In Quakerism, wealth should be capitalised upon and reinvested for the good of the community, e.g. by employing other people. More generally, there might be a correlation between the capitalist US economy being the wealthiest in the world and the fact that it was founded by Anglo-Saxons, thus by a majority of Protestants and derived religious currents. If that hypothesis is correct, then shame from failure in capitalism might be the manifestation of a residual cultural memory of religious shame.

The social-Darwinist and Protestant approaches, however, are fairly static: someone is a failure if they were preordained to fail either by natural unfitness or by God. A more dynamic and perhaps more optimistic approach to failure is expressed by popular phrase “what does not kill me makes me stronger.” This phrase was initially written by Nietzsche [1888] and summarises concepts more widely expounded in “Thus spake Zarathustra” [Nietzsche, 1885]. Two core concepts are “the will to power” and the overman/superman (*übermensch* in German). On the “will to power”, Nietzsche was influenced by the writings of William Rolph [Rolph, 1884; Hill, 2018], an anti-Darwinist who proposed that life, rather than undergoing the struggle for existence, is wilfully seeking expansion. In Nietzsche’s words, life is “an incarnate will to power, it will strive to grow, spread, seize, become predominant – not from any morality or immorality but because it is living and because life simply is will to power” [Nietzsche, 1913]. From there derives the concept of the

---

<sup>10</sup> Quakers are a dissident branch of Protestantism. They differ on questions of clerical hierarchy and preordainment.



*übermenschen*, those who are striving to achieve a higher, more powerful state of being. Such *übermenschen* are exploiting life's hardships as opportunities for growth, hence the popular phrase. However, both concepts can be misconstrued, as attested by the misappropriation of Nietzsche's ideas by extremist German politics: Kaiser Wilhelm II has exploited "will to power" to justify waging World War I [Hill, 2018], and the Nazis have exploited the *übermenschen* concept to dire consequences [Hicks, 2010]. The point here is not to debate whether Nietzschean philosophy was genuinely conducive to Nazism, it is to examine the possibility that a dynamic, optimistic and somewhat entrepreneurial notion of improvement can be recast into brutal interpretations. Indeed, if the will to power is the will to seize predominance, there must be victors and losers, *übermenschen* and *untermenschen*. From that perspective, the existence of an *untermensch* correlates with seeking justification for the humiliation and extermination inflicted to particular populations, e.g., during World War II. Entrepreneurship may not be as extreme, however brutality is possible in any domain where competitive improvement is involved: football may require active regulation of players' image of exemplarity in order to counteract hooliganism; Mixed Martial Arts may advertise post-fight gentlemanly handshakes to reframe themselves into fair play. Rather than being necessary, brutality is possible but may depend on nudging particular cultural interpretations in and of the domain.

With three examples of devaluing conceptions of failure in mind (social-Darwinist "survival of the fittest", religious damnation from Protestant ethics and brutalist reframing of "what does not kill me makes me stronger"), the next step is to research if these may be expressing a deeper and more general trait of human cognition. As a matter of fact, behavioural economics, which have emerged in the eighties and have induced spectacular paradigm shifts in economy and marketing, have empirically proven that human decision processes under risk are naturally biased toward loss aversion [Kahneman & Tversky 1979; Kahneman & al, 1991; Kahneman 2011]. Indeed, decision processes appear to be split between system 2, the more rational and slower function of the brain, and system 1, the more primal, intuitive, quicker and loss-averse function of the brain, which tends to prevail under risk or uncertainty. These conclusions are initially drawn from the study of economic situations and utility theory, but they open up the hypothesis that human cognition at its most primal level may be naturally loss or failure averse in competitive or creative situations in general.

“What does not kill me makes me stronger”, i.e., assimilating failure with accruing experience [Nobel, 2011; Basulto, 2012; Birkinshaw & Haas, 2016; Zunino & al, 2017], may in fact express an attempt to trade logical system 2 reassurance against intuitive system 1 loss aversion. A similar thought structure may be manifested in “Lean Startup” approaches, based on validated learning and iterative enquiry [Ries, 2011; Krstulović, 2020a]: businesses who develop their products through a step-by-step process, where hypotheses are validated or invalidated through iterative user testing, should logically be less likely to fail on market fit in the long run. However, the tested hypotheses must be formulated to begin with. This requires to exert design thinking [Brown, 2009; Krstulović, 2020b], which is underpinned by divergent/convergent or blind variation/selective retention (BVSR) models of creativity [Simonton, 2011], i.e., where a phase of (possibly blind) idea generation is followed by a phase of elimination of unfit ideas. As Simonton [1984] puts it bluntly: “empirical research has shown that quality tends to be the consequence of quantity (...). Those who produce more masterworks also produce more rubbish”. In that sense, failure appears not only as unavoidable, but also as necessary for any radically creative success to be achieved. However, it also appears that blind divergence does not guarantee the generation of successful ideas. Reassurance sought into “failing equals learning” may thus practically fall short [Cain, 2013; Tobak, 2017; Zichermann, 2019].

At this point, natural or cultural failure aversion sits in tension against the immanence of creative failure, an internal conflict typical of the causes of mental stress [Salomon, 2013; Lazarus & Folkman, 1984]. From there, I propose three paths towards the resolution of this tension: embracing vulnerability to achieve shame resilience, reframing entrepreneurship as a search for meaning through flow, and practicing mindfulness to facilitate awareness and serenity.

Shame resilience theory has been recently developed by sociologist Brené Brown [Brown, 2006; Brown, 2012]. It relies on four pillars [Brown, 2012, p.75]: (1) recognising and acknowledging personal shame triggers, (2) developing critical assessment and awareness of the shame triggers (e.g. “Were the goals realistic and attainable to begin with?”), (3) reaching out to others, sharing one’s story and seeking empathy and (4) speaking about shame to maintain awareness, thus embracing vulnerability. Another central

element is understanding the difference between guilt, defined as “I did something bad”, and shame, “I am something/someone bad”, i.e., distinguishing dynamic action from the stasis of being. This meets empirical observations obtained in the business development context by Leticia Gasca [Gasca & al, 2014; Gasca, 2018a; Gasca, 2018b]. Gasca founded the “Fuckup nights”<sup>11</sup> (sic), a series of meetings where entrepreneurs are invited to share stories about their failures, which have met viral success across 300 cities from 90 countries. These were occasions to observe the cathartic effect of sharing business failure stories [Gasca, 2018a]. Gasca herself testifies of the failure of her first business, a social enterprise commercialising indigenous handicrafts, particularly the feelings of anxiety when announcing business failure to the villagers whose livelihood it was supposed to improve, a case where responsibility for others was involved. Gasca [2018a, p.194] directly addresses the entrepreneurs whose businesses have failed in terms of “you are not your business, you are more than this”, thus also distinguishing action from being. More generally, rather than recommending to fail fast, she recommends to “fail mindfully” [Gasca, 2018b]. The insights suggested by Brown and Gasca’s work are the following: (a) emotional vulnerability associated with failure is a plain fact which should be faced and managed rather than obliterated by logical reassurance or denied under cultural alibis, and (b) embracing vulnerability is likely to have a beneficial cathartic effect.

Catharsis may also be found in awareness of the motives to undertake business or creative endeavours, which may relate to deeper notions of search for meaning in life. Viktor Frankl, a psychiatrist and survivor of Nazi concentration camps, attributes his survival to being able to focus on a purpose for life beyond everyday reality [Frankl, 1946], a principle which he later incorporated into a new psychotherapeutic method called logotherapy (greek ethymology for “therapy by meaning”). Mihaly Csikszentmihalyi recorded similar experiences from Hunagrian poets György Faludy and Tibor Tollas, who took their minds off harsh imprisonment conditions by respectively writing and translating poetry, both without pen and paper and using their minds only [Csikszentmihalyi, 2015]. However, Csikszentmihalyi frames these examples within larger thinking about the achievement of happiness in life, which he strongly associates with achievement of the psychological state of flow [Csikszentmihalyi, 1992; Csikszentmihalyi, 2015]. The flow state,

---

<sup>11</sup> <https://www.fuckupnights.com/>

colloquially known as “being in the zone”, is a state in which the practitioner of an activity, for example reading, playing chess, climbing a mountain or creating something, is reaching hyperfocus and a sense of achievement of personal potential presented as the most enjoyable way of experiencing life. From that standpoint, failure and related hardships can be “left behind” if they are happening within flow or within an overarching yet personal sense of meaning. Along those lines, Csikszentmihalyi describes the characteristics of the “autotelic personality”, i.e., people who find meaningful goals within themselves, as being curious, persistent, biased towards selflessness, and driven by intrinsic motivation rather than being driven by external factors (e.g. money, power or fame). Whether an autotelic personality is proper to certain people or can be developed by everyone is debatable: “serial entrepreneurs” will keep opening new businesses regardless of whether their former ventures succeeded or failed, whereas other people may choose to come back to working as an employee after a failed entrepreneurship experience. Nevertheless, business failure may be relativised, and the chances of resilience higher, if the enterprise was started out of intrinsic motivation rather than extrinsic motivation, i.e., out of a sense of meaning rather than out of a sense of acquisition.

The psychological state of flow can be paralleled with the practice of mindfulness [Kabat-Zinn, 2012], which is broadly defined as pursuing the psychological experience of full awareness of the present moment without judgement. Mindfulness practice cultivates opportunities to develop a sense of distancing and acceptance of the “objects of the mind”, with benefits including better awareness and management of emotions [Kabat-Zinn, 1990]. The practice itself includes simple meditation techniques such as focusing awareness on one’s breath or on one’s body sensations (counting the breaths, bodyscan). It may also rely on Japanese Zen traditions [Suzuki, 1904/1971; Nagatomo, 2020] such as seated meditation (*za-zen*), or the practice of flow-inducing activities such as the tea ceremony (*chanoyu*), the art of floral arrangement (*ikebana*), or some pacific instances of martial arts such as archery (*kyudo*), sword drawing (*iaido*) or aikido. The pitfall of misconstruing mindfulness as dehumanisation should however be guarded against: the mention that Anders Brevik claimed the practice of “*bushido* meditation”, as an opening to Benesch’s article on reconsidering samurai ethics [Benesch, 2016], makes that point with shocking clarity. Mindfulness and Zen culture should rather be considered as opportunities to achieve flow and to embrace emotions and

facts of life, for example vulnerability, failure and related anxieties, as a first step towards managing these and achieving well-being. When it comes to entrepreneurship, it may be a case in point that Alex Tew, who came up with the “Million Dollar Homepage”<sup>12</sup> in 2005, founded the successful mindfulness app and startup called “Calm”<sup>13</sup> in 2012 after having suffered from depression across a long period of failing to replicate his initial hit [Crockett, 2018].

The full validation of the beneficial effects of mindfulness as a resolver of the tension between failure aversion and uncertainty would require to study its interaction with the two systems underpinning behavioural economics, for example studying whether mindfulness practice would change the statistics supporting Kahneman and Tversky’s experimental conclusions. However, research work at this intersection seems scarce and limited to rare blog posts on the topic [Ulammandakh, 2016; Fogel, 2016; Mitchnick, 2019]. Ulammandakh’s blog post [2016] seems particularly intriguing, as it suggests that the practice of activities straddling system 1 and system 2, e.g. breathing which can both happen unconsciously and be controlled consciously, may be rewiring the brain in ways that make intuition more accessible to logical regulation. This conclusion seems corroborated by judge Jeremy Fogel [2016], who suggests that “mindfulness can improve judicial functioning not only by mitigating the unbidden intrusion of ‘system 1’ thinking [i.e., when it comes to limiting unconscious assumptions] but also by increasing the richness of ‘system 2’ thinking [where system 2 is presented as normative of the judicial function]”. Peer-reviewed references going deeper into these directions do not seem available at this stage.

To recap and conclude, this essay has framed and explored the question of creative failure risk in the context of entrepreneurship and business development. Three cultural contexts likely to underpin devaluing views of failure are (1) the social-Darwinist interpretation of “survival of the fittest”, (2) the Protestant origins of capitalism, suggesting that failure may encode the memory of religious damnation, and (3) the possibility to misconstrue the Nietzschean philosophy of “what does not kill me makes me stronger” into brutal interpretations. These devaluing views on failure sit in tension against the views that (1) failure aversion may simply manifest a natural behavioural bias and that (2) failure may be unavoidable and a necessary

---

<sup>12</sup> <http://www.milliondollarhomepage.com/>

<sup>13</sup> <https://www.calm.com/>

condition to achieve success. This tension may correlate creative failure with mental disorders. I suggest that resolution of this tension may be found in (a) the application of shame resilience theory, or in other words, embracing vulnerability, (b) the development of an autotelic personality through an approach to entrepreneurial activities motivated by intrinsic rather than extrinsic factors, i.e., practicing entrepreneurship as a flow activity, and (c) the practice of mindfulness whose goal is to develop awareness, selflessness, flow and peak performance in all circumstances. Studying the possible influence of mindfulness on behavioural economics remains open to further study.

## References

- Archambault, Richard and Song, May. 2018. "Canadian new firms: births and survival rates over the period 2002-2014." Innovation, Science and Economic Development Canada, Small Business Branch. [http://www.ic.gc.ca/eic/site/061.nsf/eng/h\\_03075.html](http://www.ic.gc.ca/eic/site/061.nsf/eng/h_03075.html)
- Basulto, Dominic. 2012. "The new #Fail: Fail fast, fail early and fail often." Washington Post. 30/05/2012. [https://www.washingtonpost.com/blogs/innovations/post/the-new-fail-fail-fast-fail-early-and-fail-often/2012/05/30/gJQAKA891U\\_blog.html](https://www.washingtonpost.com/blogs/innovations/post/the-new-fail-fail-fast-fail-early-and-fail-often/2012/05/30/gJQAKA891U_blog.html) (Accessed 22/08/2020.)
- Benesch, Oleg. 2016. "Reconsidering Zen, Samurai, and the Martial Arts." The Asia-Pacific Journal | Japan Focus. Vol. 14, Issue 17, No. 7, Article ID 4921. 01/09/2016. <https://apjif.org/2016/17/Benesch.html>
- Birkinshaw, Julian and Haas, Martine. 2016. "Increase Your Return on Failure." Harvard Business Review. May 2016 issue. <https://hbr.org/2016/05/increase-your-return-on-failure> (Accessed 22/08/2020.)
- Brown, Brené. 2006. "Shame resilience theory: a grounded theory study on women and shame." Families in Society, vol.87, no. 1, pp. 43-52.
- Brown, Brené. 2012. "Daring greatly." Penguin Random House.
- Brown, Tim. 2009. "Change by design". Harper Business. (2019 edition revised and edited.)
- Cain, Matthew. 2013. "Made to fail. 13 secrets of successful startups." Self published, available to buy on Amazon.
- CB Insights. 2019. "The Top 20 Reasons Startups Fail." Market report. November 2019. (Accessed 22/08/2020.) <https://www.cbinsights.com/research/startup-failure-reasons-top/>
- Cope, Jason; Cave, Frank; Eccles Sue. 2004. "Attitudes of Venture Capital Investors Towards Entrepreneurs with Previous Business Failure." LUMS Working Paper 2004/017. Institute for Entrepreneurship and Enterprise Development, Lancaster University Management School.
- Crockett, Zachary. 2018. "How the Million Dollar Homepage kid became the \$250m app man." The Hustle. 12/05/2018. <https://thehustle.co/million-dollar-homepage-alex-tew> (Accessed 22/08/2020.)
- Csikszentmihalyi, Mihaly. 1992. "Flow: the classic work on how to achieve happiness." Rider, Random House Group. (2002 edition.)
- Csikszentmihalyi, Mihaly. 2015. "Flow: Living at the Peak of Your Abilities." Nightingale-Conant, Audible audiobook.
- Darwin, Charles. 1859. "On the origin of species." Project Gutenberg. 2009-2013. <http://www.gutenberg.org/ebooks/1228>
- Fogel, Jeremy D. 2016. "Mindfulness and Judging." Federal Judicial Center. PDF available from: <https://www.fjc.gov/content/321600/mindfulness-and-judging>  
See also: <https://www.fjc.gov/content/321599/mindfulness-and-judging-resources-judges>

Frankl, Viktor E.. 1946. "Man's search for meaning." English translation: Rider Books / Ebury / Random House, 2004.

Gage, Deborah. 2012. "The Venture Capital Secret: 3 Out of 4 Start-Ups Fail." The Wall Street Journal (U.S. Edition). 19/09/2012. (Accessed 20/08/2020.)

<https://www.wsj.com/articles/SB10000872396390443720204578004980476429190>

Gasca, Leticia (editorial director); Zimbrón, Carlos; Salazar, Julio; Lopez de Nava, Luis; Villatoro, Pepe. 2014. "The fuckup book (1st edition)." The Failure Institute. (English edition 2015.

<https://thefailureinstitute.com/blog/the-fuckup-book/> )

Gasca, Leticia. 2018a. "Sobrevivir al fracaso." ("Surviving failure." In Spanish.) Penguin Random House.

Gasca, Leticia. 2018b. "Don't fail fast - fail mindfully." TED Salon: Brightline Initiative. June 2018.

[https://www.ted.com/talks/leticia\\_gasca\\_don\\_t\\_fail\\_fast\\_fail\\_mindfully](https://www.ted.com/talks/leticia_gasca_don_t_fail_fast_fail_mindfully)

Hicks, Stephen. 2010. "Nietzsche and the Nazis." Ockham's Razor Publishing.

Hill, Gary. 2018. "The Fictitious Influence of Darwin on Nietzsche." (Accessed 21/08/2020.)

<https://www.irefuteitthus.com/fictitious-darwin-and-nietzsche.html>

Hopkins, Rhys. 2019. "Business demography, UK: 2018." Office for National Statistics. 19/11/2019.

<https://www.ons.gov.uk/businessindustryandtrade/business/activitysizeandlocation/bulletins/businessdemography/2018>

IdeaSpace. 2020. "Focus on a Founder with Donatien Garnier." IdeaSpace, Cambridge. August 2020.

<https://www.ideaspace.cam.ac.uk/content/focusonafounderdonatiengarnier> (Accessed 17/08/2020.)

Jackson, Peter. 2010. "How did Quakers conquer the British sweet shop?" BBC News Magazine.

20/01/2010. <http://news.bbc.co.uk/1/hi/magazine/8467833.stm>

Jarvis, Paul. 2015. "8 Out of 10 Statistics Are Completely Made Up." Huffington post, 01/30/2015.

[https://www.huffpost.com/entry/8-out-of-10-statistics-ar\\_b\\_6516014](https://www.huffpost.com/entry/8-out-of-10-statistics-ar_b_6516014) (Accessed 20/08/2020.)

Kabat-Zinn, Jon. 1990. "Full Catastrophe Living: How to cope with stress, pain and illness using mindfulness meditation." Piatkus. (Revised edition 24 Sept. 2013.)

Kabat-Zinn, Jon. 2012. "Mindfulness for beginners." Sounds True Inc. 2016 edition (book + CD).

Kahneman, Daniel and Tversky, Amos. 1979. "Prospect Theory: An Analysis of Decision under Risk." *Econometrica*, Vol. 47, No. 2 (Mar., 1979), pp. 263-291.

Kahneman, Daniel; Knetsch, Jack L.; Thaler, Richard H. 1991. "Anomalies - The Endowment Effect, Loss Aversion, and Status Quo." *Journal of Economic Perspectives*, Vol. 5, No. 1, Winter 1991, pp. 193–206.

Kahneman, Daniel. 2011. "Thinking, fast and slow." Penguin Random House, 2012.

Kavanagh, Donncha and Brigham, Martin. 2017. "The Quakers: Forgotten Pioneers." Chapter for Peltonen, T.; Gaggiotti, H.; Case, P. (editors). "Origins of Organizing." Edward Elgar. 2017.



- Krstulović, Sacha. 2020a. "The invention of truth in 21st century entrepreneurship." Essay submitted to the ICE for the Undergraduate Diploma in Creativity Theory, History and Philosophy. April 2020.
- Krstulović, Sacha. 2020b. "Desiring to disrupt." Essay submitted to the ICE for the Undergraduate Diploma in Creativity Theory, History and Philosophy. July 2020.
- Lazarus, Richard S. and Folkman, Susan. 1984. "Stress, Appraisal, and Coping." Springer, New York.
- Mitchnick, Mark. 2019. "Our Two Brains, Mindfulness, and Decision-Making." Mindful Leader, blog post, 01/07/2019. (Accessed 22/08/2020.)  
<https://www.mindfullleader.org/blog/27302-our-two-brains-mindfulness-and-decision>
- Nagatomo, Shigenori. 2020. "Japanese Zen Buddhist Philosophy." The Stanford Encyclopedia of Philosophy. Spring 2020 Edition, Edward N. Zalta (editor). (Accessed 22/08/2020.)  
<https://plato.stanford.edu/entries/japanese-zen/>
- Nietzsche, Friedrich Wilhelm. 1885. "Thus spake Zarathustra." Translated by Thomas Common. Project Gutenberg. 2008-2016. <http://www.gutenberg.org/ebooks/1998>
- Nietzsche, Friedrich Wilhelm. 1888. "The Twilight of the Idols." Translated by Anthony M. Ludovici, 1911. Project Gutenberg. 2016. <http://www.gutenberg.org/ebooks/52263>
- Nietzsche, Friedrich Wilhelm. 1913. "Beyond good and evil." Translated by Helen Zimmern. Project Gutenberg. 2009-2013. <http://www.gutenberg.org/ebooks/4363>
- Nobel, Carmen. 2011. "Why Companies Fail—and How Their Founders Can Bounce Back." Harvard Business School Working Knowledge. 27/03/2011. (Accessed 20/08/2020.)  
<https://hbswk.hbs.edu/item/why-companies-failand-how-their-founders-can-bounce-back>
- Paul, Diane B. 1988. "The Selection of the 'Survival of the Fittest'." Journal of the History of Biology, Vol. 21, No. 3 (Autumn, 1988), pp. 411-424. Springer.
- Ries, Eric. 2011. "The Lean Startup - How constant innovation creates radically successful businesses". Penguin Random House.
- Rolph, William Henry. 1884. "Biologische Probleme." Leipzig: Wilhelm Engelmann.
- Salomon, Kristen. 2013. "Mental stress." p. 1227 in Gellman, Marc D. and Turner, J. Rick (editors). "Encyclopedia of Behavioral Medicine." Springer, New York.
- Shore, Jim. 2004. "Fail fast". IEEE Software, September/October 2004 issue.
- Simonton, Dean Keith. 1984. "Creativity and leadership: Causal convergence and divergence." In: Gryskenicz, S. S.; Shields, J. T.; Sensabaugh, S. J. (editors). "Blueprint for innovation: Creativity Week VI". 1983. pp. 187-202. Greensboro, NC: Center for Creative Leadership.  
 Also reprinted in: Gyskiewicz, Stanley S. and Allen Hills, David (editors). "Readings in Innovation." Center for Creative Leadership, 1992.

- Simonton, Dean Keith. 2011. "Creativity and Discovery as Blind Variation: Campbell's (1960) BVSR Model After the Half-Century Mark". *Review of General Psychology*, Vol. 15, No. 2, pp. 158–174, 2011.
- Spencer, Herbert. 1910. "The principles of biology (Vol. 1)." Project Gutenberg. 2017.  
<http://www.gutenberg.org/ebooks/54612>
- Surowiecki, James. 2014. "Epic Fails of the Startup World". *The New Yorker*, May 19 2014.
- Suzuki, Shunryu. 1904/1971. "Zen mind, beginner's mind. Informal talks on Zen meditation and practice." Shambhala Publications Inc.
- Sweet, William. Undated. "Herbert Spencer (1820—1903)." IEP - Internet Encyclopedia of Philosophy. (Peer-reviewed but undated.) <https://iep.utm.edu/spencer/> (Accessed 22/08/2020.)
- Tobak, Steve. 2017. "Why 'Fail Fast, Fail Often' Is All Hype." *Entrepreneur Europe*. 25/01/2017.  
<https://www.entrepreneur.com/article/288147> (Accessed 22/08/2020.)
- Tremain, Rose. 1999. "Music & Silence." Vintage, Penguin Random House.
- Ulammandakh, Bill. 2016. "The Story of Enlightenment: The Neuroscience of Mindfulness Meditation." *Medium*. 11/09/2016. (Accessed 22/08/2020.)  
<https://medium.com/@bilguun/the-story-of-enlightenment-the-neuroscience-of-mindfulness-meditation-c61dc55cfd1>
- U.S. Bureau of Labor Statistics. 2016. "Business Employment Dynamics." Last Modified Date: 28/04/2016.  
<https://www.bls.gov/bdm/entrepreneurship/entrepreneurship.htm> (Accessed 20/08/2020.)
- Weber, Max. 1930. "The Protestant ethic and the spirit of capitalism." Translated by Talcott Parsons. Routledge / Taylor & Francis e-Library 2005.
- Weinstein, David. 2019. "Herbert Spencer." *The Stanford Encyclopedia of Philosophy* (Fall 2019 Edition), Edward N. Zalta (ed.). <https://plato.stanford.edu/archives/fall2019/entries/spencer/> (Accessed 22/08/2020.)
- Zichermann, Gabe. 2019. "The 3 Big Myths of Tech Failure (and how to not delude yourself)." *Medium*. 01/08/2019. (Accessed 22/08/2020.)  
<https://medium.com/swlh/the-3-big-myths-of-tech-failure-and-how-to-not-delude-yourself-56382e13bb15>
- Zunino, Diego; Dushnitsky, Gary; van Praag, Miriam. 2017. "Badge of Honor or Scarlet Letter? Unpacking Investors' Judgment of Entrepreneurs' Past Failure." IZA Institute of Labor Economics. Discussion paper series, September 2017.