

Why avoid difficult problems? Exploring the avoidance behavior within startup motive

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Abstract

Some commonly acknowledged large-scale societal problems include over-population, war, climate change, energy production, lack of electricity and clean water, deforestation, malaria, poverty and famine, and cancer. Entrepreneurs are known as problem-solvers in a market economy. Therefore, why more entrepreneurs are not interested in solving large-scale societal problems? This paper analyzes a discussion thread in an online community specialized in high-technology startups to explore this specific question of entrepreneurial motivation. It concludes that “trivial startups” are a result of particularities of domain-specific expertise, reference points and first-world bias, among other things. In this discussion there is also a value dichotomy in which both sides seem to make sense – on one hand, some founders criticize modern startups for not attempting to solve the societal problems of the world, while others see all startup activity worth undertaking. The end result of the conflict remains unresolved as unpredictable paths of innovation and creation of wealth and employment are properties of trivial applications regardless of whether they solve societal problems directly or not, whereas the opportunity cost of a better society through full focus on societal issues cannot be precisely determined.

I Introduction

As Steve Jobs so famously said to John Sculley – “... you can keep selling sugar water - or come with me and change the world.”

In the classical view of entrepreneurs as “heroic” icons, they are seen to have the ability to change the world, and to solve highly difficult problems in a market economy through their determination and perseverance; relating to re-organizing production capabilities, commercializing new technologies and innovations, and supplying markets with products that are in demand. This role does not commonly consider the public interest, at least directly. Instead entrepreneurs are seen as rational profit seekers motivated by self-interest. Yet, the world knows many problems that entrepreneurs have assisted in solving in domains of health care (George W. Merck), transportation (Henry Ford), food production (Ray Kroc), electricity (Thomas Edison), and so on. Further, social inclinations are shown by successful ex-entrepreneurs shifting to philanthropy, and recently the increase of popularity in social entrepreneurship and social startups. Therefore, societal aspirations do not necessarily exclude profit seeking. Startups, in particular, are often seen as an alternative to working for a company that are may suffer from legacy structures and processes (e.g. Christensen & Bower, 1996), trapped in organizational inertia (Kelly & Amburgey, 1991), and handicapped in innovation¹ (Bond & Houston, 2003). This is why novel solutions to existing problems relate to new ventures, but it is also understood as a part of startup motive.

Earlier research has addressed entrepreneurial motives quite extensively; see e.g. Kirkwood (2009)

¹ “The older, larger, and more successful organizations become, the more likely they are to have a large repertoire of structures and systems that discourage innovation” (Van de Ven 1986).

on push and pull factors, Korunka et al. (2003) for entrepreneurial personality traits, Ardichvili et al. (2003) for opportunity recognition. For example, Hessels, Gelderen, and Thurik (2008) divide startup motives to three types of research: 1) “pull” and “push” (opportunity or necessity), 2) cost and benefit (decision making of entrepreneurs), 3) psychological motives (e.g. achievement, power), and 4) “multinomial logit-type investigations” which analyze the interactions between stages of entrepreneurial processes. In a recent column of MIT Technology Review, titled “Why we can’t solve big problems”, the state of innovations was heavily criticized (Pontin, 2012). Further, there have been calls by investors for more ambitious, disruptive solutions, explicitly opposing what they refer to as “vanity apps”². For example, venture capitalist Bruce Gibney argues that the venture capital industry has in the past decades reduced its risk tolerance. A key to his tenant is that not all technological solutions create equal benefit; among them are “fake technologies”. Finally, a similar question was posed in *Quora*³, an online discussion forum with an emphasis on technology entrepreneurship:

Why is so much of Silicon Valley obsessed with small ideas that don't solve a problem? The world does not need another mobile photosharing app or SMS-based event planning system. (...) Why do the vast majority of startups seem to settle for low-success-rate vanity apps that solve no real problem?

This paper asks: Why are some founders not tackling large-scale societal problems? As such, the research question can be described as “loaded” with the following assumptions:

- 1) Founders are *aware* of the existence of large-scale problems but not willing or able to act. They may lack particular information, or their capability is inadequate to consider action. These factors would then translate into avoidance, which is defined here as non-action to solve a specific problem.
- 2) Some business ideas are *more trivial* than others from society’s perspective – both support⁴ and refutation⁵ exist for this assumption. In a system of scarcity, prioritization is needed; in a system run by demand, no predictive behavior before scarcity will necessarily take place – this matter will be returned to in the implications.
- 3) The focus of problem-solving action is decided “*after the plunge*” – the assumption is based on the idea that the decision to become an entrepreneur precedes the choice of problem. This is compatible with earlier literature of venture creation as “an iterative, nonlinear, feedback-driven, conceptual, and physical process” (Bhave, 1994).
- 4) The entrepreneur applies *problem-solution logic*; this assumption states that the entrepreneur chooses a particular problem out of many included in the conceptual “problem consideration set”⁶. There are other motives, but this examination focuses on entrepreneurs driven by problems and solutions.

² For example Nathan Myhrvold, investor in new energy solutions, asserts: “*In the next few decades, we need more technology leaders to reach for some very big advances. If 20 of us were to try to solve energy problems—with carbon capture and storage, or perhaps some other crazy idea—maybe one or two of us would actually succeed. If nobody tries, we’ll all certainly fail.*”

³ See <http://www.quora.com/Startups/Why-is-so-much-of-Silicon-Valley-obsessed-with-small-ideas-that-dont-solve-a-problem>

⁴ “Photosharing is less important and less ambitious than many other things. Leave apologetics aside and just say it”

⁵ “The worthwhile problems are the ones you can really solve or help solve, the ones you can really contribute something to. No problem is too small or too trivial if we can really do something about it.”

⁶ Cf. consideration sets in marketing, which refer to choice of consumers between products.

Hence, the focus is on finding explanations to why founders choose *not* to select business ideas that relate to solving large-scale problems of societal nature – outcomes motivated by welfare of society as a whole, or a deprived part of it (cf. utilitarianism). The paper deals not with the question of whether to become an entrepreneur or not (the “plunge” decision), nor with what type of people enter what type of problem fields, but the plunge (Sarasvathy, 2004) has already been taken, and the entrepreneur is considering which problem to tackle with his venture. Therefore, this examination is bounded to ‘problem–solution logic’ according which entrepreneurs first identify problems and then select one that they begin to solve through entrepreneurial action. Further, problem avoidance is seen as alternative behavior for seeking, negatively associated with factors promoting taking of action, such as push and pull factors, and positively associated with entry costs and perceived barriers (which reduce feasibility) and bilaterally associated with opportunity recognition⁷ an outcome of information about industries, problems and contextual factors⁸.

Finally, the study does not consider avoidance behavior’s frequency in the world, i.e. how common of an attitude it is, but rather the *potential* of its existence, as argued by informants. This is an important notation, because the newly risen “social startups” demonstrate that some founders are indeed willing to tackle societal problems (Lehner, 2012). Frequency is not a necessity in theoretical examinations because 1) theory describes potential of a phenomenon (courses of events), not their actual occurrence, and partly due to 2) Tomas’ theorem: “*If men define situations as real, they are real in their consequences*”. In the conclusions of this study it is argued that profit-seeking is a part of the avoidance, but many other reasons to this behavior are shown as well. The study’s contribution is a model describing avoidance reasons and their conceptual relations.

II Literature review

Previous research has examined the startup as rational decision making from the perspective of economic feasibility. For example, Vesper (1990) identified four sets of factors for opportunity recognition, labeled head start factors, apparent feasibility, cost factors, and payoff potential of the business. He argues (Vesper, 1990): “*Key questions include how much can be made, how much can be lost, and how likely breakeven can be attained.*” This perspective ignores welfare gains as a component of startup motive – as it turns out, this is a valid explanation for avoidance: since founders emphasize economic criteria, societal problems are neglected. According to push and pull based views, firms are founded due to necessity and opportunity, respectively – for example, low income and poor employment conditions are push factors, whereas a new invention, autonomy and perception of a lucrative business represent pull factors (Acs, 2006). Push factors are less relevant for problem-solution logic than pull factors, because they tend to *result from* a problem (e.g. poverty, necessity), whereas pull factors are characterized by recognizing problems in the market and creating solutions that can be formed into lucrative businesses.

There are also alternative explanations relating with interaction between the individual and society which have been given many names. For example, “someone else’s problem” refers to distancing oneself from an acute problem due to lack of direct attribution of responsibility. The effect can reduce productivity e.g. in team collaboration (Blackwell & Arnold, 1997). In a similar vein, social psychologists Darley and Latané (1968) report the “bystander effect” according to which shared responsibility leads to non-action in the presence of others, who are expected to take action. This is what they refer to “diffusion of responsibility”, and what some economists call ‘tragedy of the commons’ (Hardin, 1968). Studying children’s inaction when their classmates were subject to emergency, Thornberg, (2007) discovered among the reasons “responsibility transfer” which exhibits the attitude of “someone else’s problem”. The profit orientated view posits that problems are not resolved if their solution does not guarantee profit for the firm. In fact, the societal problems are not considered in the

⁷ Opportunity recognition and avoidance are flipsides of the same coin: the other states what is preferred and the other what is not – however, reasons for not preferring to solve certain ideas are not as straightforward.

⁸ Terms ‘entrepreneur’ and ‘founder’ are used interchangeably; so is ‘entrepreneurial motive’ and ‘startup motive’ of which the latter form is preferred due to its correspondence with informants’ language.

market setting; if they are not included in demand, no supply will arise. Therefore, many issues remain out of scope. This relates to critique given by ecological economists (see e.g. Common & Stagl, 2005) who strive to include exogenous factors such as pollution as variables in economic models. The promise of technology is that it increases efficiency; through e.g. dematerialization, less waste-producing manufacturing and new material compounds, logistic chains, storage turnover increases, on-demand manufacturing and recycling, fewer resources are required to produce same quantities than previously. Therefore, in theory when consumption and production grow, technology balances material flows so that perishing is minimized, and as few resources are tied to unused (redundant) goods at any given time.

Avoidance behavior has also been studied in psychology. Characteristics of such behavior include i.a. unwillingness to process certain information, trying to avoid specific situations, and desire to escape undesired thoughts, persons and places (Schoenfeld, 1950; Pearlin & Schooler, 1978). The definition applied here is milder, but follows the same logic: problem avoidance is inaction to particular type of targets, resulting from lack of information, factors reducing feasibility (i.e. costs) and deviating goals of the entrepreneur and the society⁹. Essentially the degree of utilitarianism and egoism varies by the individual – thereby, it is a natural state of personality that some founders are more inclined to societal impact than others. At the same time, norms and values of the society shape this orientation. The main point is that individuals, also entrepreneurs, risk in the lack of direct attribution of responsibility attitudes of inaction in regards to shared, large-scale societal problems. The social dimensions seem to prohibit problem-solution logic; paradoxically, the more people become aware of the problem, the more it is expected that somebody else deals with it (e.g. the government, the academic community, non-profit organizations...). It is perceived that other stakeholders *should* take action or rationalized that they *must have* taken action already – in either case; it is not for the individual to act¹⁰. This effect, however, is expected to influence entrepreneurs less than others, given a risk-seeking, action-oriented perspective to entrepreneurs¹¹.

III Data and method

Quora is an online discussion forum open to a wide range of topics (Quora, 2012). The service is user-driven, i.e. topics and taxonomies (“tags”) are created by participants, and are therefore user-generated content (Krumm et al., 2008). Many Quora discussions relate to startups, although exact data on the content or demographics of participants is not available¹². The participants include founders, investors, and other individuals interested in startups. The heterogeneous pool of participants enables advanced discussions on startup-related topics from many perspectives.

Table 1 The Quora discussion thread

Word count	Participants
13,421	51

The data was gathered on October 30th, 2012. The discussion thread consists of 51 answers by unique participants, all included in the analysis. The role classification in Table 2 is based on Quora user profiles. Some missing information was retrieved through LinkedIn¹³. Information of five individuals could not be found.

⁹ Notice no reference is made to avoidance coping, which is a cognitive strategy to avoid sources of stress (Pearlin & Schooler, 1978).

¹⁰ Notice that the condition is distinct from perceived lack of means, e.g. “I cannot act, because the problem is too big for me to solve.”

¹¹ In reality, entrepreneurs differ by traits; on average, they may be more risk-seeking than managers (Stewart & Roth, 2001), but contextual factors influence risk attitudes (Kahneman & Tversky, 1979).

¹² <http://www.quora.com/What-are-the-demographics-of-Quora-users>

¹³ A professional social network in the Internet.

Table 2 Discussion participants

Founder	Author	Student	Retired	Employee	N/A
36	3	2	1	4	5

Categories are mutually exclusive. The majority of participants were entrepreneurs, 36 in total (~70%). Entrepreneurs include those who either have an active company or have started one in the past¹⁴. One third of these were developers, i.e. technically oriented founders. Only six persons were female (~12%) which highlights male dominance of technology entrepreneurship. The lack of researchers (0%) implies that academicians are not active in Quora discussions. The analysis was based on grounded theory (Glaser & Strauss, 1967) which is an inductive method aimed at theory generation. The goal is to increase abstraction level, find patterns and create such constructs that facilitate understanding the focus of study – entrepreneurial avoidance behavior. In this study the method was applied to generate theoretical constructs and it resulted in a model of startup motive. The process of data analysis follows Strauss and Corbin (1998):

- 1) Initial reading and open coding
- 2) Category building (node hierarchy)
- 3) Relationship building
- 4) Model building

Throughout the process coding is redefined according to new insights and interpretation of the researcher¹⁵. Iterations are finished when no new categories emerge from the data (Strauss & Corbin, 1998). Coding can be defined as “the analytic processes through which data are fractured, conceptualized, and integrated to form theory” (Strauss & Corbin, 1998). The analysis process was aided by the software package QSR NVivo 10 which is well suited for inductive qualitative analysis (e.g. Richards, 1999). Category building consists of grouping the constructs into meaningful categories. Relationship building is also referred to as axial coding. Overall, the analysis process is iterative, so that the accuracy of categories is refined in all stages to increase fit with data. The model-building is an inductive process that stems from data reduction (coding) and finding apparent and non-apparent (assumed) relationships between constructs. The analysis was aided by reading material beyond the initial sample; these include other Quora threads treating similar subjects, discussion in MIT technology review’s website, and other available sources.

IV Findings

IV.I Proposed model of problem avoidance

The following model in Figure 1 describes factors relating to avoiding specific problems.

¹⁴ Because inactive founders represent entrepreneurs views as well.

¹⁵ Grounded theory is an interpretative method and therefore vulnerable to researcher bias – through systematic, rigorous and self-critical workflow the bias can be reduced.

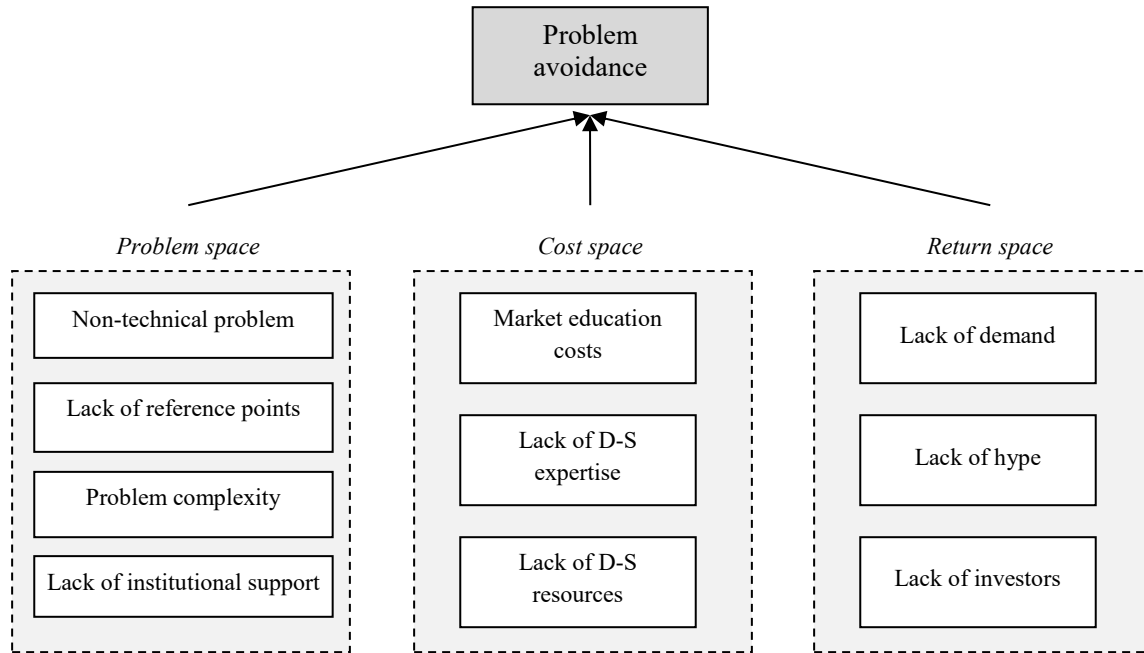


Figure 1 Model for startup problem avoidance

Problem avoidance is not necessarily an active choice but rather an outcome of decision making which is preceded by perceived costs and benefits. The underlying assumption is therefore that founders aim at maximizing gains (determined by their goals, not always economic) and minimizing cost. Problem orientation determines the direction of startup motive, i.e. whether it is geared towards societal or economic impact – hence, one is preferred over the other, and problems of other kind are not solved as a primary goal. Orientation is associated with the motive’s valence (“high” or “low”) – the combination of orientation and valence is displayed in Table 3.

Table 3 Orientation and valence

Orientation	Valence	
	High	Low
<i>Economic</i>	High-growth business startups	Lifestyle business startups
<i>Societal</i>	High-growth social startups	Lifestyle social startups

Founders’ decision-making is influenced by reference points that contribute to available information, i.e. problem awareness. It is assumed that problem awareness does not indicate opportunity recognition, if a solution is not economically viable.

IV.II Arguments for model

Ten main reasons for avoidance behavior were identified. They were classified under three categories, namely 1) return space, 2) cost space and 3) problem space. In addition, the model contains 4) goal mediators. Table 3 displays findings in a concentrated form.

Table 4 Reasons for problem avoidance

RETURN SPACE	Exhibit
low perceived demand	<i>People make things the general public wants. Note that I didn't say needs, I said wants. People may not need another photo-sharing app, but they apparently sure did want one; Instagram has 10 million registered users.</i>
lack of hype	<i>However, in terms of what gets built, until the world gets tired of yet another social thing, yet another e-commerce thing, or yet another shallow ad-supported thing, don't expect much innovation. The simple stuff sucks up all the capital and all the talent.</i>
lack of investors	<i>The reason, why Silicon Valley is obsessed with small ideas is because investors are interested in making money. If the world is benefitted as a side-effect then all well and good but that is not the main purpose of investment into tech firms</i>
COST SPACE	
perceived need for market education	<i>Since it's not easy to educate people on new processes, SV startups (...) would have a hard time to find money to invest on breakthrough projects that would need to be communicated, before just being sold, to customers.</i>
lack of domain-specific expertise	<i>While 'healthcare' or 'clean energy' might feel like big opportunities, if you don't understand or have a deep interest in the category you're tackling, you're unlikely to succeed at building a really successful company.</i>
lack of domain-specific resources	<i>You don't just start these companies over a weekend on the back of a napkin. Takes real resources (money, expertise, people, persistence) to solve them. Not everyone has what it takes to build solutions in that field, so they gravitate toward areas where they're more likely to be successful.</i>
PROBLEM SPACE	
lack of institutional support	<i>Complex problems can be addressed by building ecosystems, and no one entity can easily do that. You need a combination of players -- from VCs/entrepreneurs/startups to university/government to big companies/R&D.</i>
complexity of problem	<i>The impact-full solutions are more technically challenging. More technically challenging solutions are harder to develop. Harder to develop = longer time to market.</i>
non-technical problem	<i>Unfortunately, most things we call "problems" do not exist within (...) ideal circumstances. They don't have an ecosystem of pre-existing tools to speed development. They don't have app stores to make distribution a snap. (...) Instead, maybe to get distribution they have to play a game of essentially bribing doctors.</i>
lack of reference points	<i>Admittedly, there's also the problem of imitation. If I see other people having success making fun iPhone apps, I feel the tug: I could do that. The naive person (...) will see the photo-sharing app and make another photo-sharing app.</i>
GOAL-MEDIATORS	
profit-seeking motive	<i>At the present time, where real time applications are just starting to get created, any systems that facilitates for rapid real time information (tweets/pics) sharing seems to gain popularity and use quickly. And thus these are the "lowest hanging fruit" that can be created for profit.</i>
low ambition (valence)	<i>Since it is easier not to deal with existential fear, or at least, easier to deal with the fear attached to ambition, you end up with startups that don't really solve anything.</i>
deferred impact (econ. or social)	<i>Large, disruptive ideas start with teams who jump into the game, start with small, tangible problems, then grow and expand from there. But that requires their getting into the game in the first place. They need a starting point of something that feels achievable and caters to their passions and aptitude.</i>

IV.III Demand and hype

Low perceived demand is associated with lucrateness of the market – as argued by economists; markets with low purchasing power are less feasible than markets with higher purchasing power or growth traction. Demand is associated with a founder's profit-seeking motive; inversely, socially oriented founders are less sensitive to it. Profit motive is ultimately prohibitive to societal motive; one is dominating and the other is instrumental at best¹⁶. Pure profit seeking excludes societal impact and vice versa. The proxy of demand (e.g. downloads, purchases of apps) prove the demand for “vanity apps”:

It IS a free market and simple apps are low-hanging fruit. Like many answers have suggested, the staggering number of users using gaming applications and “non-essential” applications illustrates a simple economic principle: supply and demand. If people are spending time on those apps, they are gaining happiness and utility.

The degree of hype (perceived growth of demand) both includes and excludes certain fields; i.e. hyped sectors of business overshadow other sectors. First, this affects founders directly as they observe other startups in their surroundings through *reference points*. Second, demand and hype are, along with founder's motives, associated with investor preferences: “*Media's, investors', and founders' lack of creativity and scientific curiosity. Right now, popular tech culture is obsessed with software, especially social, web, and mobile software.*” Demand in certain industries drives investor to invest in startup with similar ideas, thereby building hype and positively influencing the growth of the industry's supply side. Because both socially and profit oriented founders (with high ambition valence) are guided at least partially by investor expectations, the solution space tends to decrease to popular industries. When a field of business is not fashionable among investors, the founder is more likely to avoid it. The difference between hype and demand is that the latter is fact-based while hype represents an expectation of demand; the expectation may be true or false, but demand can be objectively verified¹⁷. It is also noteworthy that participating to hype is a rational choice if 1) it is a verified result of increase in demand, 2) enable access to resources that serve as competitive advantage, and/or 3) is associated with low entry costs (e.g. infrastructure, platforms, work force):

“Acqui-hires” in Silicon Valley are offering acceptable (and faster) returns to VCs. Thus, it makes sense for them to pump out a variety of services and apps built on top of pre-existing platforms (e.g. Facebook, iPhone). This almost pre-determines that such new “innovations” will be “small ideas” as you suggest.

Participating in hype is rational until the collapse because before the collapse one can achieve great rewards. Avoiding high entry cost is rational because it decreases chance of success. Rationality, if determined in logical actions to achieve one's goals – therefore, there is a stark contrast between rationality of social entrepreneurs and profit driven entrepreneurs; although both behave logically (one is maximizing social rents and the other societal rents). Demand is understood as a driver for profit oriented founders, whereas societally oriented startups are driven by social problems.

IV.IV Domain specificities

Domain-specific expertise is defined here as topical experience and know-how that relates to an industry, business model or type of problem. It is associated with personal relationships, networks, and knowledge that have the potential to decrease the cost and increase the ability to execute a business idea. Lack of domain expertise describes the fact that founders are geared towards specific problems and business

¹⁶ For example, socially oriented founders may want to obtain profit to guarantee investments that will increase the startup's ability to achieve societal impact.

¹⁷ Although there are proxy measures for hype as well (Bakker, Lente, & Meeus, 2008), its nature as a social phenomenon is associated with biased decision making

ideas, as it influences what opportunities emerge for the founder¹⁸. Personal history influences experience gained on specific societal and industry domains. Therefore, large-scale societal problems that founders are not experienced in are less likely to be chosen as problems to solve by startup activity, regardless of the scope of the opportunity (therefore, irrelevant to valence). Through different education, life- and work experience founders gain a unique understanding of different market opportunities and problems across particular industries and geographical areas. Domain-specific expertise increases the ability to solve problems; therefore, the required resources and learning curve are lower; as these influences risk perception, a positive attitude towards a problem is more likely to result. In other words, through domain-specific expertise a founder becomes aware of new problems; because he has experience in that field, he is more likely to be willing and able to solve them. In the lack of domain-specific expertise, founders may try to compensate by reducing their level of ambition – i.e. adjusting to smaller problems:

Large, disruptive ideas start with teams who jump into the game, start with small, tangible problems, then grow and expand from there. But that requires their getting into the game in the first place. They need a starting point of something that feels achievable and caters to their passions and aptitude.

Therefore, problems in which less domain-specific expertise is not possessed are deemed more complex and thus avoidable.

IV.V Reference points

Domain-specific expertise influences reference points, i.e. available cases of success or failure to which a founder compares to his opportunity perception to determine feasibility. Therefore domain-specific expertise is also an indirect driver in rationality because reference points determine the satisficing conditions (Simon, 1950) under which the startup motive emerges. Founders are influenced by social drivers such as peers, role models, and primed towards certain type of problems which correspond to their immediate environment. In other words, founders are unaware and/or disinterested in problems beyond their habitat, e.g. third world country. It is important to note that the motive is not because those markets are less profitable in economic sense, although they may be so, but because lack of identification resulting from lack of information and distance of geography and culture. The problems taking place in different societies are crucially different:

(...) we need to start tackling some of these larger, systemic issues. They are hard work. They are not going to self-correct - and they often don't include a Sunset view in WeHo. That does not mean that they are destined to fail - or that they are any more or less important (or less rewarding) than another photo-sharing app or SMS tool. It just means that the objectives at the outset are different - and take a larger more global view.

Thus, the founders in a certain environment are primed towards problems particular to that environment, which they perceive and are aware of. In the first world, when big problems have been solved, only smaller ones remain – thus, “yet another photo sharing application” becomes an understandable consequence of market evolution, an escalation of depleting problems. Further, unknown environments raise the feelings of uncertainty, even fear:

Unfortunately, most things we call “problems” do not exist within these kinds of ideal circumstances. They don't have an ecosystem of pre-existing tools to speed development. They don't have app stores to make distribution a snap. They don't have direct relationships to end users that make designing straightforward.

¹⁸ “Most startups are founded by young people with no or little experience ... so what do they do? They do the ‘easy’ consumer stuff where you don’t necessarily need to have worked in that field for X years to successfully understand the problem and execute it.”

Therefore, lack of domain-specific expertise leads to a lack of suitable reference points¹⁹. It also increases the perceived entry cost when considering an entry to a specific market because lack of information introduces uncertainty. Lack of reference points, increased entry cost and unawareness of the problem lead to high risk perception – the most likely startup motive is therefore avoidance. The need for social identification manifests through group-conforming behavior (Hogg & Abrams, 1988). For founders the group consists of other founders – as described by them, there is certain “hype” in mobile applications representing a driver for the startup motive. Such a status of hype can be explained by technology acceptance, according to which certain platform (or industries) are difficult to replace once they reach dominant position in the entrepreneurial “consideration set” (Lee, Kozar, & Larsen, 2003).

Finally, individuals differ in their tendencies to accept deferred gratification or not, as proven by psychologists (Schneider & Lysgaard, 1953). Founders may therefore be tempted to grab the “low hanging fruit”. However, it is argued here that deferred gratification is in fact an antecedent to lowered ambition which is particularly relevant when the founder is lacking domain-specific expertise. If there are no proven examples to which the founder is able to relate to, ideas within an unknown particular field are less likely to emerge – consider the possibility of an American founder to solve local African problems without proper knowledge. The role of information seems self-evident, but it is not at all trivial. When “heroes” and role models for startups originate from e.g. mobile applications, more information from these projects is likely to be gathered, subsequent skills developed (refer to connection between reference points and domain-specific expertise), and more mobile applications are likely to be created as a result. Therefore, reference points enforce the hype effect.

IV.VI Deferred impact

The founder expects to accumulate learning gains which increase his probability of economic or social returns in subsequent ventures – therefore, time orientation imposes expectations. Individuals, however, differ by their time orientation: there are the short-term oriented and the long-term oriented. Deferred impact is presumably more likely for first-time founders with a long-term orientation: they expect learning gains which increase the reaching of their goal in subsequent startup iterations, or new ventures. In other words, the perspective to entrepreneurship is not a “one-shot game” but a “sequential game” – these individuals are looking to minimize entry efforts to maximize learning gains. The same logic is associated with expectation of quick (or deferred) returns by profit-seeking investors:

If investors have a choice of investing in a blockbuster cancer drug that will pay them nothing for fifteen years or a social media application that can go big in a few years, which do you think they're going to pick? If you're a VC firm, you're phasing out your life sciences division.

The capability to solve problems is associated with learning curve:

You don't just start these companies over a weekend on the back of a napkin. Takes real resources (money, expertise, people, persistence) to solve them. Not everyone has what it takes to build solutions in that field, so they gravitate toward areas where they're more likely to be successful.

It is important to acknowledge learning gains, as they are associated with accumulating domain-specific expertise and a potential gateway to solving more challenging problems: “*While ‘healthcare’ or ‘clean energy’ might feel like big opportunities, if you don’t understand or have a deep interest in the category you’re tackling, you’re unlikely to succeed at building a really successful company.*” Yet, entry to a market may require more than domain expertise which is an intrinsic property of the founder – at times financial and other external resources are needed, in particular when entry costs are high. In fact, entry cost is relative to properties of the founder/startup, so that few resources decrease the willingness to

¹⁹ I.e. examples of companies within industry, examples of available problems, opportunities and business models.

tackle large-scale problems. Resources, such as domain-specific expertise, are to be looked at relative to the field, or proximity. If there is a large gap between domain expertise and resources required to cover entry costs (which are not all curable by finances), an entry to a particular domain field is not likely.

This is especially relevant 1) when assuming the profit-seeking entrepreneur²⁰, although the condition is relevant for socially oriented founders as well as the barriers are real; 2) when lack of support structures defines a situation in which a certain idea is perceived unfeasible because its execution requires enablers that are not present; 3) large-scale problems are associated with longer time to market than “low hanging” market opportunities, thereby decreasing their feasibility; and 4) need for market education is an expected barrier to adoption which increases the perceived cost. Costs prohibit entry to a particular market; they are assumptions by founders that influence how well problems are understood, how complex they are judged to be and how well they are seen to fit founder’s problem-solving capacity. The higher the gap between possessed capacity and required capacity higher the anxiety, thereby adding to the cost of tackling a problem.

IV.VII Non-technical problems

Hardin (1968) mentioned the class of “no technical solution problems” which have no technical solution and require altering “rules of the game” or morality. Non-technical can be defined as problems that cannot be solved through technological means, because they involve e.g. societal, cultural and political dimensions that are required to define the problem. A participant in MIT discussion pinpoints the vagueness of societal problem definition, taking the example of tuberculosis: should the solution focus on fighting the bacteria that causes tuberculosis, poverty that weakens the immune system or society that does not address poverty? This perspective is also discussed by Quora participants:

Or you’re talking about “real problems” like poverty, healthcare etc. Here, the problem isn’t software at all, usually. The innovations needed are in other areas. Software is just a piece of a larger puzzle. There is no reason to expect the software people to take the lead in solving them.

The assumption that healthcare, or energy dependency or education can be fixed by innovation. (...) Those three are problems created by politics and the voters who chose to support them. (...) To fix that you don't need SV funding, you need politicians who care about the future of this country and voters who support them.

Yet, the unexpected usage of technology, i.e. user innovations, may provide partial solutions to some non-technological problems. In these situations, the problem is not defined ex ante, but solution is applied through local circumstances. This propagates the creation of ambiguous technologies that can be adapted to several purposes, for example through increased price transparency, solving coordination problems between buyers and sellers, and emancipating micro-enterprises (United Nations, 2010).

In his column article, Pontin (2012) argues for three requirements needed for technology to solve large-scale problems: 1) political and societal willingness (“political leaders and the public must care to solve a problem”), 2) supportive institutions (i.e. collaboration between universities, firms, and government), and 3) the problem needs to be of technological nature. The latter premise excludes such problems that are a result of e.g. corrupt governance, unequal distribution of wealth and other norms that reign in the societal sphere. For example, excessive consumption is not a technological problem – it is built into societies. These problems, according to Pontin (2012), cannot be solved through technology. The same logic was also made explicit by informants of this study. Hence, the entrepreneur cannot be isolated in a meaningful way from his institutional setting – such an argument, however, is incompatible with some view of the entrepreneur as the brave individual who goes for disruption; a view that this

²⁰ “Just as the VC’s decided their lowest risk was to invest in momentum, founders have decided their risk is to throw together minimum viable products, launch them into the market with as much social viral know how as they can muster, and hope to strike it rich.”

study also aims to debunk²¹. However, there is also risk of overestimating technology's role in the short term, as proposed by Roy Amara²². This may impose unrealistic expectations to entrepreneur's capability of commercializing inventions. Finally, it is not obvious that the role of technology is solely problem-solving and not problem-creating²³.

V Concluding remarks

V.I Main argument

I have argued that entrepreneurs base their problem-solving *foci* on information which is available to them and processed, and act upon problems they experience more familiar and corresponding to their capabilities (domain-specific expertise), and so that probability of solving a problem increases with problem awareness. Therefore, they are naturally biased in observing and acting upon problems. This is depicted in Figure 3. On the other hand, we find support for the notion that equally in the market economy there are considerable path dependencies at place, driving talent towards creating "vanity apps" instead of solving other, perhaps more acute problems of the world. Hence, we cannot separate values and desired outcomes of the discussion, as per Hume's guillotine, or as desired by the original poster of the Quora question. If it turns out as a conclusion that social factors prevent the solution of particular social problems (with or without technology), then we can consider that the development of society is a requisite in solving some of these problems; but less developed societies cannot develop until they solve these problems and hence they face a chicken-egg dilemma of vicious sort.

V.II Limitations

Two specific concerns of validity are discussed: the nature of inquiry and assumptions. First, the data risks respondent bias – because other answers are visible to respondents, they may exhibit group behavior such as conformity (i.e. group think) instead of deviation of the norm (speaking one's true mind). While this is a concern for individual respondents, the material as a whole reveals a variety of both confirming and conflicting views, thereby not seemingly suffering from major group dynamics. The frequency of trivial apps is unknown, so we are unable to tell how widespread the phenomenon is in the real world. The lack of hard facts is a limitation – however, opinions of founders do count, because it is based on these opinions and perceptions they form attitudes and decided actions. Therefore, they are crucial in understanding the avoidance behavior.

The sample consists mostly of respondents who have started their own company or companies, thereby entrepreneurs. However, they are not all in the software business, and therefore may give false estimations of motives of those individuals developing e.g. mobile applications. Further, most respondents are US-based, so the opinions are most likely culturally influenced and represent opinions of individuals in a developed country instead developing countries where societal problems are often more acute. Second, assumptions of the study can be contradicted, at least considering the following arguments:

²¹ There are several studies discussing the boundaries of entrepreneurial motivation; it is not meant here to display entrepreneurs as some type of "heroes" but also not as "puppets" of their circumstances; merely to acknowledge that the shades of grey in the entrepreneurial motivation may make it impossible to draw definite conclusions.

²² "We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run."

²³ "Every technology we have ever developed that has a beneficial action has an equal and opposite negative reaction. Let me give you some examples of what I mean. The internal combustion engine (and various other forms of engines) may facilitate our ability to do more work, travel faster, and live better in many ways but it also has had the opposite effect of causing climactic changes that threaten the ability of the planet to sustain life as we know it. Advances in medical and agricultural technology - i.e., drugs, treatments, food production - enable people to live longer and expanding populations but lead to greater and unsustainable impacts on the environment and planetary resources that are destroying the ability of the planet to sustain life. (...) With the help of technology we are causing our own destruction at an ever faster pace."

- 1) Preferences and prioritization of resource allocation – *who decides which problems are more important than others? Should startups even try to solve large-scale societal problems?*
- 2) Impreciseness of triviality concept – *what is trivial and what not?*

Regarding the first point, one has to set a moral stance to answer. When orientation is profit and ambition is high, societal problems satisfy the requirements for a startup only when they overlap with a considerable market opportunity. But even when the orientation is less about profit (but valence high), one can consider the role of reference points. For example, one can postulate that while Facebook has influenced the way people communicate, yet it is lacking a *significant positive impact* in the real world beyond the Internet. Some may argue it is a *nice-to-have product* and should not be created until more important problems are solved. Indeed, scarcity breeds to choice; choice is done based on preferences. It is only if we assume some choices are more valuable than others that we can prioritize one solution over the other. Such cases become more apparent when introducing the concept of commons (Hardin, 1968); exploitation of resources in solving a set of problems may result in another set of problems that ultimately influence the former – problems and solutions, therefore, exist not in vacuum. Defining all mobile applications trivial and all clean-tech products non-trivial, for example, is not an adequate solution as there are clearly differences between individual firms within an industry. Consider, for example, a mobile application that monitors one's heart rate and automatically alerts help in case of emergency. Should the lifesaving capability be considered as 'trivial' or 'non-trivial'? Clearly, this ability would make it less trivial than another application designed for entertainment. It is therefore reasonable to argue that aggregate groupings cannot be used to determine whether all firms under that classification, e.g. industry, should be seen as trivial or not. Moreover, at the individual level, the potential of positive externalities (e.g. learning, acquiring domain-specific expertise) extends the attribution of triviality beyond the unit firm. This is the root cause for unpredictability of innovation: in a trivial startup, a founder accumulates learning gains that result in his next venture solving a considerable social problem. This possibility cannot be ruled out which greatly reduces the strength of the triviality argument. Although the definition of "trivial" is fuzzy, there are grounds to argue that directing entrepreneurial energy towards solving large-scale problems would produce positive welfare effects. Unexpected effects of innovation may also include "user innovations" in which the product is used in another purpose. For example, the use of social media varies; although many people use it for casual communication, it has been used in times of crises (e.g. Arab spring).

Further, since the study does not present any statistical findings about the frequency of avoidance behavior or other claims (e.g. investment allocations by industry), it cannot be stated how common phenomenon avoidance is, and we could be studying a popular myth²⁴. However, the degree of importance cannot be determined through measures such as receiving venture funding, as there can easily be found examples of counterevidence, i.e. unsuccessful, trivial applications that have received considerable funding²⁵. This would disprove the underlying logic that venture investors are able to distinguish trivial and non-trivial startups, as both are included in their portfolios. Second, the funding cannot be directly seen associated with motivation and realization of successful projects during all times, all places - consider e.g. Facebook that was started without no external funding. This implies that startups can make an impact without the need for venture financing. Finally, venture investing is traditionally driven by profit-seeking; in such an environment, socially beneficial ideas tend to be unpopular unless they additionally present a lucrative business case. This skews our ability to use venture funding as a measure for desired impact. However, as funding plays an important role in the motivation and

²⁴ This is also the main argument of Michael Wolfe in answering the Quora thread: "Despite the multitude of fun, buzzy apps and games getting media coverage and popping up in app stores, the lion's share of the talent and money in the industry is going into very large opportunities. This is the 'dark energy' of the industry that most people don't see if they rely on Fast Company as their reference."

²⁵ Triviality defined as low ambition in social and economic terms.

realization of ventures, it is likely to be a mediating factor for shaping the nature of ideas entrepreneurs generally tend to choose.

V.III Wider implications

Based on this study (as well as the profit-seeking profile of the entrepreneur), it is not realistic to expect entrepreneurs solely to take charge of solving large-scale societal problems. In contrast, they can be viewed as seekers of opportunity arising from progress. Society, science and other stakeholders share the interest which creates a natural opportunity to collaborate in specialized roles of innovation. For example, the U.S. space program in the 1960s is a classic example of a large-scale collaboration project to solve a large-scale problem: How to get a man to the Moon?²⁶ Nevertheless, the role of public sector is to influence the incentives indirectly though e.g. taxes (penalties for non-favorable, reductions for favorable solutions), subsidies and investments (e.g. incubator programs). The scope of stakeholders reaches beyond entrepreneurs; at least to cover science.

As universities seem to be moving towards private funding, commercialization has also entered the academia – however, if not cautiously applied, commercial requirements may advocate short-term returns over basic research and long-term disruption. In solving these problems, science collaborates with entrepreneurs who aim to commercialize scientific discoveries into practical applications. This constitutes of division of labor for large-scale problem solving. Consequently, the policy-makers' dilemma becomes apparent: since classical profit seeking, purpose of the firm and economic models are largely ignorant to solving societal problems, it is quintessential that policy-makers in mixed economies acknowledge their power to set prices, restrictions, standards and incentives, thus reducing short-term gains of firms and effects on shared resources of which rational decision-makers are unable to care for in the presence of weak state.

Entrepreneurs are an important vehicle in solving such dilemmas through market economies. Which incentives and measures, then, could we create to turn founders more knowledgeable and interested (i.e. primed) in solving those problems? If the perception of problems differs, knowledge of different problems should raise the interest to solve them. This, arguably, causes the disagreement of purpose. Essentially, solving the problems and building mobile applications is not 'either-or', but 'both-and' because innovations influence each other unexpectedly. The scarcity of entrepreneurial motivation is the only requirement to having both. The principal means to influence are means that attack the relationship between the motive and its antecedents, such as information. Specific strategies may include:

- 1) **increase awareness** of societal problems
- 2) **educate skills** to solve societal problems
- 3) **signal norms and values** of utilitarianism
- 4) **promote** successful social startups
- 5) **subsidize** development of social startups
- 6) **increase collaboration** between public sector, technology and science, and entrepreneurs.

Obviously, for incentive schemes to be effective policy-makers would be required to make correct allocation decisions *a priori*, ability often considered central governance is lacking. For certain cases, such as hunger and poverty, the choice would seem obvious – these ventures would need to be incentivized to aid solution. However, even among the sociological research the question of external intervention to a community is not straight-forward due to potential inefficiencies in allocation; it is not the question that aid is not needed but that the *means* are ineffective (Bourguignon & Sundberg, 2007). Second, the nature of innovation is complex. Researchers of innovation agree that innovations are at times created by accident (Austin, Devin, & Sullivan, 2012). Attempts of controlling this process might result in either less innovation or innovation determinism, in which societal values drive technological

²⁶ However, the problems were of technological nature, and some could argue for its increment to social welfare. Yet, the example holds for organizing collaborative resources.

change. On the other hand, all moral statements regarding deviations to rationality are always subject to hypocrisy. As eloquently put by Hardin (1968) in his account of “double bind”, that is controversial signals, given by the society:

The long-term disadvantage of an appeal to conscience should be enough to condemn it; but it has serious short-term disadvantages as well. If we ask a man who is exploiting a commons to desist “in the name of conscience,” what are we saying to him? What does he hear? -- not only at the moment but also in the wee small hours of the night when, half asleep, he remembers not merely the words we used but also the nonverbal communication cues we gave him unawares? Sooner or later, consciously or subconsciously, he senses that he has received two communications, and that they are contradictory: 1. (intended communication) “If you don’t do as we ask, we will openly condemn you for not acting like a responsible citizen”; 2. (the unintended communication) “If you do behave as we ask, we will secretly condemn you for a simpleton who can be shamed into standing aside while the rest of us exploit the commons.”

Finally, the emergence of “trivial” industries introduces positive effects, e.g. creation of wealth and employment, and satisfying demand. According to a survey by Technet, the ‘app economy’²⁷ has created 466,000 new jobs in the U.S. during 2007–2012 (Mandel, 2012). These include some professions (defined by required skills) that did not previously exist; a characteristic of a new industry. The argument hold that the success of “trivial applications” is a reaction to demand and therefore entails positive externalities of new industries, such as increase in economic activity, emergency of new firms, knowledge spillovers and creation of employment. Therefore, their critical assessment is of hypothetical nature, regarding the opportunity cost: What would have been the outcome if the same resources would have been allocated to renewable energy, for example? Why was it not? And what is the interaction between industries, as well as long-term implications of the app economy? Hence, the role of markets is suspect. If consumers require certain products, where can we draw a line beyond which their choice should be limited? In one extreme, *marché libre* would never take such a position; on the other end, a centralized economy would take the choice for central government and production; however, real life examples have exhibited that this does not lead to better outcomes. Consider e.g. ‘doom’s day development’ where consumers would require such products that would destroy long-term production resources: such a scenario is possible because the decision making is utterly atomistic and no-one pays attention to the whole (cf. bandwagon effect).

Even with educated consumers, free-riders continue enjoying the possibility of exhausting common resources. The ‘free will problem’, however, is the boundary constraint to effectiveness of any intervention – new startups are born from intrinsic motivation; when external problems are of different kind, and they naturally are to an extent, entrepreneurial resources will not be optimally allocated to *either* type of activity: maximizing profit or social welfare. Only if intrinsic motivation would be harmonized with a set of shared goals, at the loss of individuality, could individuals be leveraged to solving common problems in their full capacity.

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²⁷ A term coined to reflect the mobile application industry.

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