

The Middle Class of Business: Endurance as a Dependent Variable in Entrepreneurship

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Abstract

The prediction-control (PC) space offers a theoretical framework for the entrepreneurial method and shows how it can foster the development of a middle class of business, defined as ventures that grow and endure over time, but don't necessarily grow very large in size. Analogous to the middle class in history fostered by the scientific method, the middle class of business is likely to provide spaces of non-churn and non-change requisite for the cocreation of robust communities and new ends worth achieving for human well-being. Such new ends are also likely to be crucial to tackling the problems of the 21st century and beyond.

Keywords

economics, cognition/knowledge/learning, economic development, small business (SME), effectuation

Those coming on were unstoppable. They were undeterred by fairy stories about Adam's paternal blessing, or fables about an ancient elite of instinctive virtue; indeed, once they became gentlemen some were happy to accept these fictions. ... Assimilation into the gentry required the adoption of distinctive forms of behaviour and habits of mind.

James, Lawrence. *The Middle Class: A History* (p. 34). Thistle Publishing. Kindle Edition.

Capital investment in entrepreneurship, whether from public or private sources, has a scale bias. On the one hand, public funding seeks to incentivize the largest number of start-ups (Blattman & Ralston, 2015; Chen, 2002; Decker et al., 2014; Falco & Haywood, 2016; Malchow-Møller et al., 2011; Naudé, 2010). Private money, on the other hand, chases big successes such as unicorns¹ or gazelles² (Aldrich & Ruef, 2018; Henrekson & Johansson, 2010; Samila & Sorenson, 2011).

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Analogously, entrepreneurship research has a firm-size bias. Most research has either examined self-employment, start-ups and small/family firms (Kolvereid & Isaksen, 2006; Lofstrom et al., 2014; Thurik et al., 2008; Tsvetkova et al., 2019; Wiklund & Shepherd, 2005), or VC-backed innovative high-growth ventures (Bartz & Winkler, 2016; Colombo & Grilli, 2010; Davila et al., 2003). Very little attention has been paid to the “middle class of business,” consisting of ventures modest in size but enduring for higher than average periods of time.

In this article, I would like to spotlight this underexamined phenomenon.

In addition to making a case for the middle class of business as a focus of research, we will examine initial pathways to accomplishing that research. These pathways connect to the earlier article on the entrepreneurial method (Sarasvathy & Venkataraman, 2011), which argued that teaching entrepreneurship the way we teach science, to everyone who has access to any kind of education, will result in a more robust economy than teaching entrepreneurship only to potential entrepreneurs. An interesting historical parallel here is that the introduction of science education to all fostered the rise of the middle class (Elliott, 2003; Maddison, 2007). Similarly, the introduction of entrepreneurship education to all should foster the rise of a middle class of businesses. However, we need a theoretical framework to help guide research, teaching, and policy related to the possible rise of a middle class of business.

I begin the development of the framework by making a case for why a middle class of business, with endurance over time as the dependent variable, would be a valuable and worthwhile objective in the first place. Then I trace the historical connections between the scientific method and the rise of the middle class and how this can help us theorize about the entrepreneurial method and the possibility of a middle class of business. Thereafter, I specify what constitutes the entrepreneurial method and how it can be conceptualized as the prediction-control (PC) framework. That leads to an exposition of how this framework for the entrepreneurial method can help develop a middle class of business. Finally, I discuss possibilities for future research that can build on the PC framework.

Defining a Middle Class of Business

The size distribution of firms in the economy has been a topic of interest to economists over the years (Cabral & Mata, 2003; Growiec et al., 2008; Schaper et al., 2008; Simon & Bonini, 1958). Published reports from the Small Business Administration in the United States (www.sba.gov) show that 90% of firms in the economy are really tiny (less than 20 employees) and less than 0.002% of firms grow to larger than 500 employees. Similar percentages can be found in Organisation for Economic Co-operation and Development (OECD) countries as well (Audretsch & Elston, 1997; Audretsch et al., 2014). Yet more countries are increasingly focused on entrepreneurship as the primary way to grow not only self-employment, but employment generally (Blattman & Ralston, 2015; Branstetter et al., 2014; Chen, 2002; Naudé, 2010). This raises the question of how to grow a middle class of businesses rather than incentivize more start-ups or chase promises of gazelles and unicorns (Acs & Mueller, 2007; Henrekson & Johansson, 2010).

Moreover, the role of venture age in job creation offers compelling reasons to consider endurance over time as a key dependent variable of interest, equally if not more important than size or growth per se. According to Hathaway and Litan (2014, p. 2)

The share of firms aged 16 years or more was 23 percent in 1992, but leaped to 34 percent by 2011—an increase of 50 percent in two decades. The share of private-sector workers employed in these mature firms increased from 60 percent to 72 percent during the same period.

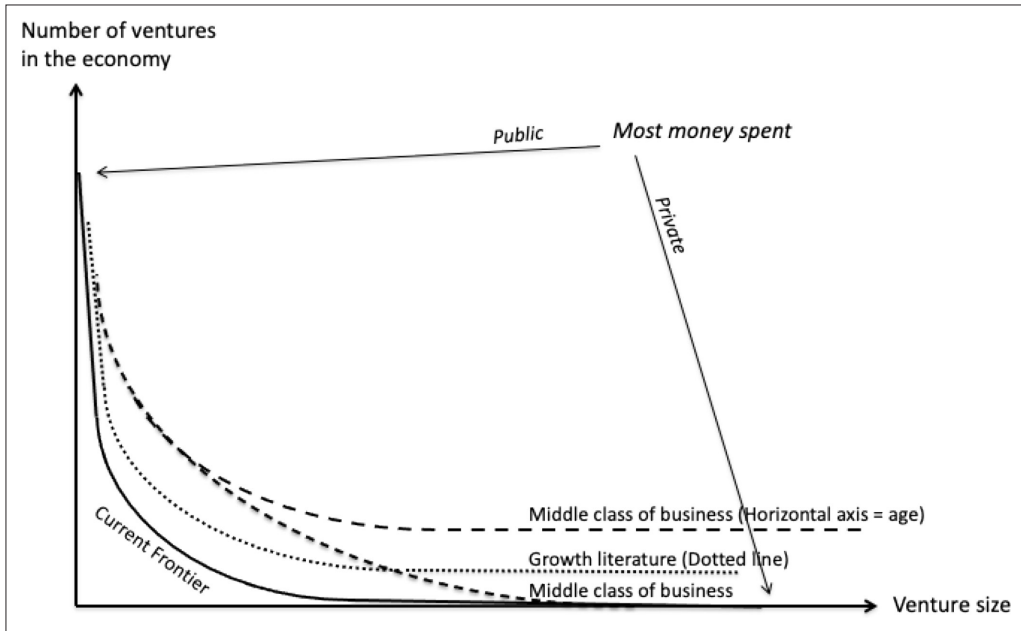


Figure 1. The basic argument for a middle class of business.

This suggests that modest growth with endurance over time could and should be a topic of considerable interest in entrepreneurship research. Figure 1 graphically captures this argument.

The current frontier curve in Figure 1 shows the typical shape of size distribution of firms in most economies, with the number of firms on the vertical axis and the size of firms over time on the horizontal axis. Most firms are very small, with zero or one employees, as illustrated by the height of the curve along the vertical axis in the left-most part of the two-dimensional space. Large firms, defined as those with over 500 employees, form a very small proportion of all firms. Hence, the right-hand part of the curve asymptotically approaches the horizontal axis. While there are variations across countries, this curve is typical of most economies. Several reasons explain the shape, ranging from the arguably disavowed Gibrat's law (Evans, 1987; Lotti et al., 2009) to the allocation of managerial talent and entrepreneurial skills (Gomes & Kuehn, 2017; Poschke, 2018), as well as the influences of technology, industry, per capita income, and occupational choice (namely an individual's choice between seeking a job or starting a venture; Acemoglu, 2012; Daunfeldt & Elert, 2013).

Given the shape of the current frontier curve in Figure 1, it is easy to see that most policy initiatives and investments either seek to incentivize entry into entrepreneurship or aspire to find ways to identify so-called unicorns or gazelles. Most governments and intergovernmental agencies such as OECD closely monitor start-up rates, proudly touting increases and worrying over decreases or stagnation (OECD, 2018). Private equity such as venture capital firms funnel vast sums into start-ups, using a high-risk, high-return strategy wherein they hope at least one in ten of their investments will justify the entire portfolio (NVCA, 2014). The literature on venture growth—one offshoot of this pursuit of unicorns and gazelles—seeks to understand how to move the current frontier into the dotted line curve in Figure 1, with a view to increasing the number of larger firms (McKelvie & Wiklund, 2010; Wiklund, 1998; Wright & Stigliani, 2013).

However, the aim of policy and education is not only a higher return on investment for any private equity portfolio, but also the creation of jobs and economic development. For these purposes, age, or endurance over time, is a better predictor than size (Decker et al., 2014; Haltiwanger et al., 2013). Most new jobs are created by newer (younger) firms, and even though older firms (e.g., firms over 16 years old) have slower growth, they employ the most people (Coad, 2009; Hathaway & Litan, 2014).

One way to interpret this is to consider increasing the endurance over time of firms in the middle of the distribution, irrespective of how many get started and how many grow very large. This idea is captured by the two dashed line curves in Figure 1, one showing an increase in the middle class of firms only in terms of size and the other showing both an increase in size and endurance over time, where the horizontal axis is reconceptualized as venture age instead of venture size.

In sum, a modest increase in size with a substantial increase in endurance over time is postulated as the focus here—namely, a middle class of business. The focus of theorizing is neither on high growth in the size of ventures nor on increase in the number of new ventures in the economy. A typical numerical target in terms of size and age could be to increase the number of ventures that have between five and 300 employees and profitably survive for 16 years or longer. Note that this will result in a reduction in the height of the curve along the vertical axis in Figure 1, signifying a decrease in firms with less than five employees.

Why Is the Middle Class of Business a Valuable Objective?

One way to answer this question is to argue that a middle class of business is valuable in exactly the same way that the middle class of income is in the economy. Why is the middle class important? For most of human history before 1700, per capita income grew about one-tenth of 1% per year (McCraw, 1998). This began to change in the 18th century, but the rise of the middle class as an economic category occurred mostly in the 19th and 20th centuries (Archer & Blau, 1993). Historians associate the rise of the middle class with everything from the Enlightenment to the spread of the scientific revolution and modernity itself (Elliott, 2003). For example, Landes (1998) explains England and European development in the 18th and 19th centuries in terms of the growth of the middle class. Some even predict the future as belonging to Asia—China in particular, due to its middle class (Kharas, 2010; Rohwer, 1996).

Sociologists concur, emphasizing the fact that a focus on class struggles between the bourgeoisie and proletariat has resulted in the neglect of the middle class as a primary topic of investigation (Archer & Blau, 1993). And a World Bank study by economist Easterly (2000) concludes,

A higher share of income for the middle class and lower ethnic polarization are empirically associated with higher income, higher growth, more education, better health, better infrastructure, better economic policies, less political instability, less civil war (putting ethnic minorities at risk), more social ‘modernization,’ and more democracy.

All of these infer, in one way or another, that the rise of the middle class is associated with economic, personal, and societal welfare.

In sum, there is value in the “middle” in middle class. The middle class bridges at the societal level the chasm of an intolerably unequal set of opportunities and quality of life while driving, at the level of individuals and families, the impetus to move across that bridge. Similar chasms with similar distasteful consequences exist in the realm of business. When companies grow too large, they tend to become monopolistic and predatory, not to mention lobbying to influence and/or

corrupt government officials and agencies (Posner, 2009), hence the need for antitrust laws. Similarly, economies with the largest number of ventures tend to be poor economies (Olson, 2002), where most entrepreneurship is due to necessity rather than opportunity (Minniti et al., 2006). That is why most countries seek to encourage the latter as a way to reduce the former (Olafsen & Cook, 2016).

This exposition of the necessity for and benefit of the “middle” points to the conceptualization of the middle as a classification in size, evocative of the German *Mittelstand*, for example, that consists in companies with less than 100 employees (Audretsch & Elston, 1997, p. 98). The literature on the topic is not clear on what constitutes the *Mittelstand*, even as it bemoans the fact that it is being eroded in the past few decades (Berghoff, 2006). In a recent article positing the *Mittelstand* as the antithesis to Silicon Valley entrepreneurship, Pahnke and Welter (2019) argue that ownership by families and a sense of belonging are important characteristics of the *Mittelstand*.

In contrast, the definition of the middle class of business proposed above emphasizes endurance over time, rather than size or ownership structure. Consequently, it is feasible to include all kinds of ownership structures in the middle class of business, encompassing cooperatives and nonprofits, as well as traditional for-profit or newer hybrid social ventures.

Endurance as Dependent Variable

Before considering endurance on its own merit, let us recap arguments from the literature on firm size, paying close attention to overlaps between size and age. The importance of growth (increase in size over time) as a dependent variable of considerable importance has been attested to in a variety of studies, including a recent special issue in this journal (Leitch et al., 2010). In an exhaustive survey of theories and empirical evidence on firm growth, Coad (2009) began with the older neoclassical argument that economies of scale and scope that accrue with firm size contribute to firms’ stability and endurance over time. More recent theories, however, take into account uncertainty and bounded rationality, and even the idea that “many firms shape their own destinies, as it were, and make opportunities for themselves that did not seem to exist before” (Coad, 2009, p. 8). This concurs with Marris (1999), who concluded that the main contribution of firm growth might be in its role in competitive dynamics leading to innovation rather than in securing stability and efficiencies.

Cohen and Klepper (1992) made a related argument in their examination of the role of small versus large firms in fostering technological progress. On the one hand, small firms add vitality through the diversity of innovations they introduce into the economy, by undertaking riskier innovation activities, for example (Coad et al., 2016). It may take large firms, on the other hand, to garner the kinds of resources it takes for large strides in technological progress to happen—investments in R&D, for example. The debate positing opposing roles for small and large businesses is a very old one. Even Schumpeter came down on both sides of this issue, first supporting the entrepreneurial churn of smaller and newer firms (Schumpeter, 1934) and later advocating for the demise of capitalism as all innovation is brought inside large organizations (Schumpeter, 2003[1943]).

Recent empirical works continue to keep the debate alive. For example, Pe’er and Vertinsky (2008) found that local creative destruction of established firms releases resources for new entry. Furthermore, that new entry also increases productivity of the region. However, too many failures of existing firms in a given locality deter new entry. This is evocative of the literature on spinoffs (Klepper, 2009). Employees of large firms who found spinoffs benefit from the knowledge they acquired while working for the parent firm. Yet when employees simply leave

employers to start their own ventures, they are likely to hurt those firms (McKendrick et al., 2009). That is the basis for non-compete clauses in employment contracts (Marx, 2011).

Whereas the vast literature on size and growth has generated valuable and intriguing findings, it is time we also paid attention to the age and endurance of firms. However, it is useful to remember that “age” is not the same as “endurance.” Let us consider a few observations.

Growth takes time, and therefore growth in size is already related to age. However, no arguments have been advanced in terms of endurance with only modest growth in size. Extant literature has been consumed with the importance of innovation, which implicitly sets up competitive dynamics as a game involving large numbers of losers with only a few winners (Haltiwanger et al., 2004). Growth in size thus becomes the Holy Grail, implying the need to accept and even encourage the ceaseless churn of creative destruction as the dominant paradigm in entrepreneurship. Churn in job markets, especially in the context of business cycles, enables labor movement for higher-valued uses (Lazear & Spletzer, 2012). Yet the churn may also dampen job growth (Burgess et al., 2000).

Similarly, the churn of creative destruction of firms is at best a mixed blessing (Pe'er & Vertinsky, 2008, Sarkar et al., 2006; Vissa & Bhagavatula, 2012). Haltiwanger et al. (2012), for example, found that over the first decade of the 21st century, while job creation occurred in young firms, all real earnings growth occurred in established firms—hence the need to consider an additional focus on endurance over time. Here again, the connection between age and size cannot be ignored. Without falling into an unquestioning acceptance of growth in size as the primary objective of value, we need to begin by acknowledging that endurance over time will also involve reasonable increases in size. However, it might be useful to make size a constraint rather than an objective function in studies of endurance over time.

Similarly, age can mean stagnation, especially if artificially propped up through regulations or some other means. Yet ventures can endure without stagnation and restrictive labor laws. There are at least two advantages to endurance. First, it provides local stability, specifically employment stability. Local here is in terms of place or geography, although it can also apply to industry and technology. Spaces and periods of non-churn and non-change allow individuals and communities to thrive while fabricating and harvesting not only productivity gains from innovations but also gains that shape human and social well-being. The pursuit of well-being involves more than income and prosperity. In fact, it involves the freedom to choose what is worth pursuing in the first place (Sen, 2001). Yet the concept of well-being that includes the freedom to choose between ends and even fashion new ends is crucial to tackling larger problems such as climate change and migration (Kivimaa & Kern, 2016).

This brings us to the second advantage to endurance—namely, a more deliberate and conscious kind of innovation, in addition to innovations that bubble up from more familiar notions of market churn fueled by start-ups. This innovation has to do with new ends, not only new combinations to achieve old ends. Reconceptualizing what is worth striving for calls for the need to develop the entrepreneurial method as a tool to communicate, collaborate, and cocreate new possibilities beyond traditional notions of market and government (Ostrom, 2010). Before we consider these loftier promises of the method, we at least need to begin by pushing back against the unquestioning presumptions in current models of competitive dynamics regarding the importance of growth and innovation as the predominate dependent variables in our research.

This pushback is not new. In the same book in which he coined the phrase “creative destruction,” Schumpeter also pointed to the confusion at the heart of behavioral assumptions of self-interest in theories of competitive dynamics. In particular, he argued that economists attributed to detached individuals and childless couples, motivations derived from the economics of household production that historically happened within families.

In order to realize what all this means for the efficiency of the capitalist engine of production we need only recall that the family and the family home used to be the mainspring of the typically bourgeois kind of profit motive. Economists have not always given due weight to this fact. When we look more closely at their idea of the self-interest of entrepreneurs and capitalists we cannot fail to discover that the results it was supposed to produce are really not at all what one would expect from the rational self-interest of the detached individual or the childless couple who no longer look at the world through the windows of a family home. Consciously or unconsciously they analyzed the behavior of the man whose views and motives are shaped by such a home and who means to work and to save primarily for wife and children. As soon as these fade out from the moral vision of the businessman, we have a different kind of *homo oeconomicus* before us who cares for different things and acts in different ways. For him and from the standpoint of his individualistic utilitarianism, the behavior of that old type would in fact be completely irrational. He loses the only sort of romance and heroism that is left in the unromantic and unheroic civilization of capitalism—the heroism of *navigare necesse est, vivere non necesse est*³ And he loses the capitalist ethics that enjoins working for the future irrespective of whether or not one is going to harvest the crop oneself. (Schumpeter (2003[1943], p. 160)).

In today's world, this mistaken behavioral assumption exalts innovation, continual competitive churn, and the unvarnished pursuit of growth for its own sake while providing no antidotes to the resultant job losses, erosion of communities, and populist backlash that these have engendered. My aim here is not to trivialize or inveigh against the importance of growth and innovation as desirable objectives for entrepreneurship research. Instead, it is to spotlight an additional variable worthy of our attention—namely, endurance.

This spotlight leads to the question: Why should we simply accept the shape of the current frontier curve in Figure 1 as inevitable? Interestingly enough, most studies of the history of the middle class attest to the fact that before the 18th century, the shape of the income distribution was similar to the current frontier curve in Figure 1, but grew outward in the middle as education in the sciences grew (Bhalla, 2007; López & Weinstein, 2012; Maddison, 2007; Van Dülmen, 1992). Just as the rise of the middle class changed the shape of the income-distribution curve, so too could the rise of a middle class of business change the shape of the dotted-line curve in Figure 1 to create the dashed-line curves. And this can happen purely through education, with little or no regulatory changes.

To summarize the main argument thus far: the middle class of business, defined as new ventures that grow and endure over time, but don't grow fastest or into the largest companies in size, has received way too little attention in entrepreneurship education and research. Yet, analogous to the middle class (defined in contrast to the rich and the poor in terms of income) in history, the middle class of business is likely to provide stable employment and a requisite tax base to allow the cocreation of robust communities that enhance the well-being of individuals and families embodied in new ends worth achieving. Such new ends may be crucial to tackling the problems of the 21st century and beyond. Finally, just as spelling out and widely disseminating the scientific method helped propel the middle class, the entrepreneurial method can drive the rise of the middle class of business. Let us consider, therefore, how to develop a framework to study and apply the entrepreneurial method in research, policy, and education.

The Entrepreneurial Method

The idea that entrepreneurship can be conceptualized as a method à la the scientific method was introduced in Sarasvathy (2009) and further developed in Sarasvathy and Venkataraman (2011). Just as science is a method to understand the world outside our control that we are born into and

live within, entrepreneurship is a method for manipulating, shaping, and cocreating that world through things within our control.

Key building blocks of the scientific method can be dated back at least to medieval times both in the prescholastic West and in the near East (Bolyard, 2017). But historians generally trace its impact on education and the emergence of the middle class to the book *Novum Organum* by Francis Bacon, published in 1620. In this and earlier works, Bacon argued for the use of induction through systematic data collection, experiments and the use of reason rather than fanciful deductions from syllogisms. In Bacon's writings, connections between ideas about science were already intertwined with the making of one's own fortune. According to (Cochrane, 1958), Bacon repeatedly referred to different versions of the adage "every man should be the maker of his own fortune" in several of his writings. But Bacon (1605) was aware of nuances in the links between learning and the making of one's own fortune:

Neither doth learning admire or esteem of this architecture of fortune otherwise than as of an inferior work, for no man's fortune can be an end worthy of his being, and many times the worthiest men do abandon their fortune willingly for better respects: but nevertheless fortune as an organ of virtue and merit deserveth the consideration.

There were at least three mechanisms through which Bacon's elucidation of what in the 19th century came to be called the scientific method triggered the creation of the middle class (Houghton, 1941; McCraw, 1998; McCreary, 1973). First, it severed the link between divine revelation and the creation of new knowledge. This meant that there was a "method" that could be taught to anyone and everyone who had access to education. Second, it challenged the assumption that one has to die within the socioeconomic class one was born into. This propelled a "market" in labor, as opposed to peasantry, slavery, or indentured servitude. And third, even tiny increases in free income set in motion a virtuous cycle of consumption and production that further fueled the virtuous cycle of education and technological progress, embodied in the industrial revolution. And these two reinforcing virtuous cycles produced the middle class that we hold dear today. A similar set of mechanisms can work in conjunction with the entrepreneurial method leading to the development of a middle class of business. We can examine this in detail after first developing the framework for the entrepreneurial method.

It is important to understand a couple of nuances in analogizing the entrepreneurial method to the scientific one. As we will see in the framework in the next section, the scientific method and the entrepreneurial method are not entirely separate in empirical reality. We find evidence for entrepreneurial thinking and action in the development of science and the middle class. Similarly, the scientific method sometimes offers useful tools for entrepreneurial action.

Neither method obviates the necessity for human judgment and intuition. For example, entrepreneurs have to judge when to treat a customer like data about exogenous market forces that can falsify or reify their hypotheses and when to treat them like cocreators shaping an as yet non-existent market. Similar judgments will be required in deciding when to use technology as a means to achieve predetermined ends and when to imagine new ends worth achieving, given new technology. It is also possible (and if the history of science is any indication, perhaps even inevitable) that any method, even the very idea of a "method," can be carried too far (Feyerabend, 1993). Keeping these concerns and subtleties in our peripheral vision, let us develop a research program based on the entrepreneurial method that can lead to a middle class of business.

Guiding the development of the framework will be a summary review of empirical findings from extant research on entrepreneurship education. As Kuratko (2005) explained, even after the explosion of entrepreneurship education programs in the past four decades, it is not clear what the content of entrepreneurship education should be. Most studies on entrepreneurship education

put the cart before the horse. They focus on the outcomes of entrepreneurship education as a way to determine what the content should be. As Elert et al. (2015, p. 209) state as motivation for their study comparing alumni of Junior Achievement Company Program with a matched sample of non-alumni, “The goals of most such efforts are to increase the rate and quality of firms started (Fairlie et al., 2014; Inci, 2013; Holtz-Eakin, 2000; Leibenstein, 1987; Weitzel et al., 2010).”

A few studies have found a positive impact of particular entrepreneurship training programs on some attitudes and even overall entrepreneurial intentions in some cases (Souitaris et al., 2007), other studies find no relationship between entrepreneurship education programs and start-up intentions or actions (Astebro & Hoos, 2016; Oosterbeek et al., 2010). Some come to the conclusion that teaching personal initiative is more effective than teaching business skills (Campos et al., 2017). This suggests that any framework for the entrepreneurial method should take into account not only elements related to building businesses but also elements that develop *entrepreneurs* capable of thinking and acting in entrepreneurial ways.

Moreover, a framework for the entrepreneurial method should be independent of proximate measures of outcome such as the ones used in the studies above. This might seem to fly in the face of common sense. But both recent empirical findings including the ones above as well as historical precedents support this argument.

In addition to mixed findings in the individual studies listed above, a recent meta-analysis of 73 studies, Bae et al. (2014) found a significant but small correlation that disappeared after controlling for pre-education entrepreneurial intentions. Similarly, disappointing results were found in a large-scale, longitudinal study conducted by the U.S. Department of Labor and the Small Business Administration in which free entrepreneurship training was randomly offered to 4000 individuals interested in starting or improving a business (Fairlie et al., 2015). While training did dramatically increase the likelihood of business ownership in the short run (around 6 months), the effects dissipated over 18 to 60 months. Nor did the training positively impact scale, profitability, or other measures of performance. On a more positive note, Martin et al. (2013) found in their meta-analysis that entrepreneurship education and training do lead to an increase in entrepreneurship-related human capital assets such as specific skills and knowledge. Another study, Walter and Block (2016), showed that entrepreneurship education resulted in a higher likelihood of self-employment in entrepreneurship-*hostile* institutional environments rather than entrepreneurship-*friendly* institutional environments.

An interesting new study that combines insights from education research and human capital theory offers both a typology and an empirical investigation of it within entrepreneurship education in Sweden (Rahm, 2019). The typology is organized along a rubric of “realism” and “antirealism” and connects effectiveness of education programs along dimensions involving societal engagement and impact as well as individual development. Curriculum under realism is centered on the subject matter of entrepreneurship and entrepreneurship skills (2019, p. 66–67). Under antirealism, social aspects of education are underscored. (2019, p. 70). Furthermore, this latter approach seeks to “prepare students to actively participate with their entrepreneurship in democratic societies. Students should be taught to relate to entrepreneurship in a variety of perspectives—in their careers, in their role as citizens, and in their own daily living” (2019, p. 72). Finally, the study found that the latter curriculum based on the fuller development of entrepreneurs as human and social beings was causally related to relevant entrepreneurial outcomes, while the former consisting of skills training was not.

This coheres with historical parallels of science education that provide even stronger bases for moving away from education targeted at particular proximal outcomes to the dissemination of a generalized method that would target everyone, whether existing entrepreneurs and firms or those seeking to start or those who will never become entrepreneurs. In other words, the aim would be to build a populace capable of entrepreneurial action and interaction, both proactive

and supportive, as and when required for a variety of purposes including the well-being of individual lives, stable communities, and thriving economies.

This reminds us why we do NOT use instrumental outcome criteria to evaluate the content of other types of education. For example, could science education have developed or even survived criteria such as how many people become scientists? Or worse still, on the criterion of how many invent new technologies or win Nobel prizes? Consider the fact that there was a total of 600 scientists over the first 150 years of science education (Kearney, 1964)! Should core courses in law or accounting or music be judged on the basis of how many people become lawyers and accountants and professional musicians? The aim of good education is for students to actually learn and understand the content and then use that in ways that matter to them. Some of them will go on to become more professional and expert in particular subjects such as science and economics, and a few will even end up winning Nobel prizes or eradicating diseases. In other words, lessons from studies of expertise should be more relevant to the creation of content within a rigorous theoretical framework than deriving content from short-term correlations with predetermined outcome variables.

In that spirit, the theoretical framework below is evidence based and can be tested, validated, modified, and fine-tuned, using methods and measures other than post-hoc surveys of proximal performance outcomes such as whether people started ventures or succeeded in them.

At the Heart of the Entrepreneurial Method: The PC Framework

The PC framework in Figure 2a is at the heart of the entrepreneurial method. The framework is typological in nature (Doty & Glick, 1994). In other words, it goes beyond a taxonomy, defined as a set of mutually exclusive ideal types used merely for classifying instances. Instead, Figure 2a is a typology based on theoretically relevant dimensions (prediction and control) that relate to key dependent variables (such as size or age of firms and the accrual of expertise in entrepreneurs). Furthermore, as typologies typically do, this framework facilitates contingent and interconnected understandings of actual phenomena that cannot easily be classified purely as ideal types.

The PC framework is general enough to capture entrepreneurship as a method à la the scientific method, as expounded in Sarasvathy and Venkataraman (2011). We need to distinguish the notion of “method” both from its applications to a wide variety of phenomena as well as to the content of particular courses and programs built on these possible applications. In science, for example, there are not only multiple curricula and disciplines such as physics, chemistry, and biology and their applications such as in engineering, but the notion of the scientific method also transcends all of these and can be studied on its own. The scientific method consists of a philosophy and a worldview embodied in a framework that includes generalized techniques such as careful data collection, replication, and randomized, controlled experimentation that cut across specialized techniques in physics or astronomy or biology. Similarly, the PC framework of the entrepreneurial method encompasses a worldview about the cocreation of human futures embodied in generalized techniques that cut across applied content in specialized programs such as youth entrepreneurship, life-sciences venturing, or social-impact financing.

Keeping with the generality of the method, the PC framework encompasses a wide variety of ventures—for-profit, nonprofit, social, or hybrid, taking a wide variety of organizational forms such as companies, cooperatives, and even yet-to-be invented structures. However, the framework has two boundaries. It does not include self-employment, and it excludes political structures such as governments and armies, as well as large corporations, even though these can also begin as entrepreneurial ventures and incubate such ventures within their walls. These exclusions

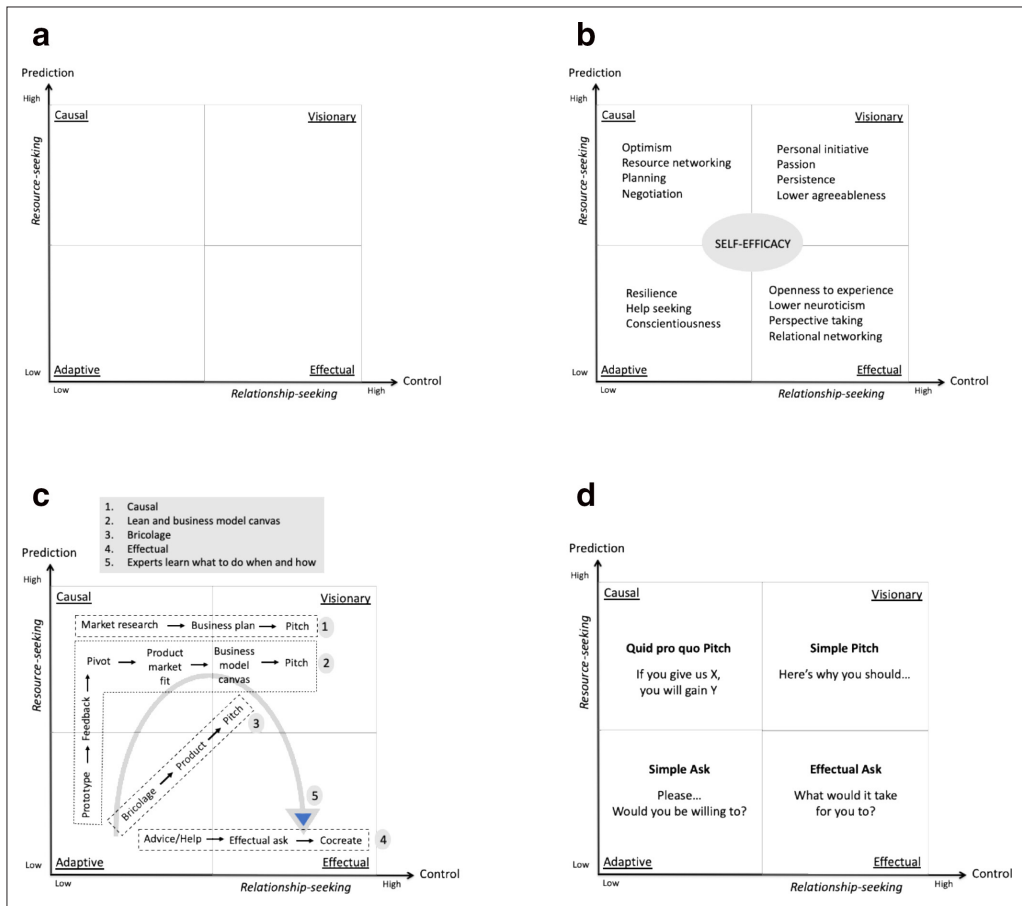


Figure 2. (a) Prediction-control framework. (b) Mapping of psychological variables. (c) Mapping of pedagogical tools. (d) Applied to the ask.

might seem arbitrary and can be relaxed in future research. But for the moment, the bounds are useful for focusing the explication and discussion of the framework.

An outline of the bare-bones PC framework can apply to 3 sets of phenomena of theoretical interest: (1) development of entrepreneurs; (2) development of ventures; (3) development of expertise across multiple ventures over the career of an entrepreneur.

The Bare-Bones PC Framework

Figure 2a depicts the theoretical framework as a modification of the typology outlined in Wiltbank et al. (2006). Derived from Sarasvathy (2001), where effectuation was defined as nonpredictive control, that typology in Wiltbank et al., was limited to strategic decisions within existing organizations. Since then, versions of the typology have been applied to angel investing (Wiltbank et al., 2009) and to the development of entrepreneurial expertise more generally (Dew et al., 2018; Read et al., 2016; Sarasvathy, 2009). In particular, the growing literature stream on causal and effectual actions offers more texture and precision than the nomenclature of planning and

transformation used in Wiltbank et al. For recent reviews of this literature, see Grégoire and Cherchem (2020), as well as McKelvie et al. (2020).

The dimensions of the typology in Figure 2a consist of prediction on the vertical axis and control on the horizontal axis. This offers four quadrants (Adaptive, Causal, Visionary, and Effectual) for organizing entrepreneurial traits, action, and interaction. Although the space can be conceptualized separately or alternately in terms of the actual or perceived predictability and controllability of the future, for the purposes of development here, we can assume the following: the left-hand side of the figure assumes that environment and futures are exogenous to human action; the right-hand side assumes environments and futures can be endogenous. We can make this even more precise by limiting the framework to using more or less predictive information (vertical axis); and leveraging elements more or less within or outside the control of any particular actor/s (horizontal axis). As is usual in theory development, these limitations can be relaxed and nuances added in as appropriate in future work.

Figure 2b: Development of Entrepreneurs

Normally, stable traits and learned behaviors are conceptualized within non-overlapping spaces. However, that is true only in a static view of reality. Over time, traits not only influence learning; they can also be changed through learning, especially learning from experience. In a recent study using 16-week intensive longitudinal randomized experiments, Hudson and Fraley (2015) found that people who wanted to increase any Big Five personality trait not only expressed actual increases in their self-reports of that trait, but also exhibited that increase in trait-relevant daily behavior—over the subsequent 16 weeks. This has been shown to be true not only in cognitive terms, but in neurological (Doidge, 2007) and even genetic terms (Youdell, 2018). Moreover, deliberate practice involved in the development of expertise can deliberately reshape purpose, traits, and even identity (Ericsson & Pool, 2016, p. 172).

Scholars of entrepreneurship education have also highlighted the importance of focusing on the development of entrepreneurs. Dimov and Pistrui (2020) argued for the need to create content that enables first-person transformation in learners. Rahm (2019) showed the importance of curricula that go beyond venture-creation skills to personal and societal engagement through entrepreneurship. Additional empirical evidence for the relative importance of content involving psychological variables over traditional business skill development is chronicled in Campos et al. (2017), Glaub et al. (2014), and Rauch et al. (2005).

As a testament to its generalizability to the entrepreneurial method, Figure 2b maps various psychological (mindset) variables that have been found to be relevant to entrepreneurial action. Figure 2c maps dominant tools and techniques that currently form the content of entrepreneurship venture-development training programs. Together, these show that a wide variety of educational content as well as research findings to date can usefully be mapped onto the framework. Let us dive a bit deeper into Figure 2b and c before proceeding to a fuller discussion of the connection to the development of expertise in 2d.

At the center of Figure 2b is the concept of self-efficacy. There is wide ranging consensus in psychology that self-efficacy is at the heart of human agency (Bandura, 2006) and the exercise of control (Bandura, 1997). As such, it is a variable that could underlie all four quadrants in the PC framework in Figure 2b. Boyd and Vozikis (1994) argued for the role of self-efficacy in fostering entrepreneurial intentions and actions, and Chen et al. (1998) found that it distinguished entrepreneurs from managers. More recently, Zhao et al. (2005) found strong evidence for the mediating role of self-efficacy in the development of entrepreneurial intentions.

In a meta-analysis of the Big Five personality traits in entrepreneurship, Zhao and Seibert (2006) found that entrepreneurs scored higher than managers on Conscientiousness and Openness

to Experience and lower on Neuroticism and Agreeableness, with no significant differences in Extraversion. Arguments for where they can be placed within the PC framework go as follows: when entrepreneurs believe they can both predict and control the future, they are likely to be less agreeable. Conscientiousness does not depend on prediction and control and could be a more generic characteristic useful in adapting to changes externally imposed. Lower neuroticism and more openness to experience facilitate relational strategies needed for effectual cocreation.

Additional psychological variables that have been shown to be of particular interest to entrepreneurship include personal initiative (Glaub et al., 2014) and passion (Cardon et al., 2009, 2013). Moreover, passion is related to self-efficacy and persistence (Cardon & Kirk, 2015). All of these are related to a visionary approach (top right-hand quadrant in Figure 2b) to entrepreneurial action and leadership (Baum & Locke, 2004; Breugst et al., 2012). Resilience shows up at the other end of the spectrum (bottom left-hand quadrant of Figure 2b), allowing entrepreneurs to adapt to changing external forces that thwart a visionary approach (Bullough et al., 2014; Williams & Vorley, 2014). Another variable of interest in the literature related to this quadrant is help seeking, especially useful in adaptive contexts such as those involving user entrepreneurship (Shah & Tripsas, 2007).

The top-left (causal) quadrant in Figure 2b coheres with a large body of work on the role of planning in entrepreneurship, ranging from the theory of planned behavior (Ajzen, 2002) for predicting intentions and actions (Kautonen et al., 2015) to the usefulness of business plans (Delmar & Shane, 2003; Shane & Delmar, 2004). This quadrant can also incorporate contextual and other nuances to planning (Brinckmann et al., 2010; Honig, 2004). It is important to note that planning can be useful not only in terms of predicted changes in demographics, regulations, and technology regimes (Shane, 2003), but also in terms of negotiating and contracting with potential stakeholders from whom entrepreneurs seek resources. In spite of a large and well-developed literature on negotiations, there are surprisingly few publications on negotiations in entrepreneurship (Bazerman et al., 2000). Notable exceptions include Hudson and McArthur (1994) and Artinger et al. (2015) who found that entrepreneurs' (as opposed to non-entrepreneurs') assertive behavior led to fewer agreements—but when they did close a deal, it led to higher profits. Assertive behavior is also associated with optimism and planning—for example, in the evaluation of opportunities under risky conditions (Keh et al., 2002).

In addition to mostly individual-level psychological variables and action behaviors targeting resource acquisition, entrepreneurship research has also examined relational variables that highlight the role of networking behaviors. Although vast, the literature on social networks in entrepreneurship has mostly focused on the structural characteristics of the networks themselves rather than how entrepreneurs form and use networks (Aldrich & Kim, 2007; Di Domenico et al., 2010; Hite & Hesterly, 2001; Leung et al., 2006). However, a small but rising stream of work is beginning to examine agentic and interactional aspects of networking such as tie formation (Elfring & Hulsink, 2007) and relational matching (Vissa, 2011). Scholars have also studied networking from an effectual perspective (Coviello & Joseph, 2012; Galkina & Chetty, 2015). For a recent review of this stream, see Kerr and Coviello (2019). This stream maps well onto the bottom-right quadrant of Figure 2b.

Figure 2c: Development of Ventures

While it appears that all extant entrepreneurship educational content can be placed within the PC space, Figure 2c maps only a few exemplars used in entrepreneurship courses in universities. Except for bricolage, effectuation (Fisher, 2012), and training for psychological attitudes, contents of educational and training programs are not sourced from entrepreneurship research. Instead, tools such as Lean Startup come from best sellers based on impressionistic and

anecdotal observations from Silicon Valley not subjected to peer review (Blank, 2013; Osterwalder & Pigneur, 2010; Ries, 2011). Nevertheless, these are widely used in current entrepreneurship curricula. Hence, it is a useful exercise to fit them within the PC framework to show its generalizability. Figure 2c shows that the framework is adequate to incorporate all of these and more. Given the generalizability of the PC framework to the entrepreneurial method, it might be time to dive deeper into the question: Why do all of these fit into the framework?

Dimensions of the PC Framework

The generality and comprehensiveness of the PC framework is directly related to the context of entrepreneurship within the history of ideas. Starting with the seminal work of Frank Knight, scholars have increasingly noticed and embraced the centrality of uncertainty as the pervasive and defining characteristic of the entrepreneurial setting (Knight, 2012 [1921]). In fact, this centrality has recently come to characterize the very zeitgeist of the 21st century, propelled by the fast pace of changing technology (Boettke, 2010; Jones, 2005). Even management scholars are beginning to acknowledge the power of this dimension (Alvarez et al., 2018). The horizontal axis of control is equally central to entrepreneurship (Mueller & Thomas, 2001; Peterson et al., 1993; Sarasvathy, 2009; Seligman, 2006).

The two dimensions of the PC framework also offer an interesting and inverse link of the entrepreneurial method to the scientific method. Prediction is the touchstone of science. The ability of science to predict is rooted in invariable “laws” of nature in the physical universe (Mirowski, 1991). And the aspiration for better predictions is related to the aspiration to gain control over our future (Tetlock & Gardner, 2016). The entrepreneurial method suggests equally strong links in the reverse direction (Sarasvathy & Venkataraman, 2011). Entrepreneurial expertise is rooted in action and interaction resulting in additional toolboxes for tackling uncertainty beyond predictive strategies based on a scientific approach (Alsos et al., 2020; Sarasvathy, 2009). Note that the point here is not to diminish the role and efficacy of predictive approaches but to expand possibilities through nonpredictive control-based (effectual) action. In sum, the PC space is simply the interface between human agency and Knightian uncertainty—hence its ability to incorporate all of entrepreneurship research as well as practical toolboxes.

It is necessary to acknowledge that Figure 2b and c may not be complete or comprehensive. However, it is also easy to see that the PC space can accommodate an even wider variety of entrepreneurial phenomena than can be elaborated within the scope of this article. For example, the framework can account for extant literature on opportunities. The recognition and discovery of opportunities relate to prediction and the creation and cocreation of opportunities to control (Alvarez & Barney, 2007). Similarly, the framework can explain the development of expertise over time.

Figure 2d: Development of Expertise

The PC space need not be a static framework. We can also consider moving through the space over time. For example, we could map life cycles of ventures and careers of entrepreneurs starting in one or another quadrant and moving toward or away from the others. Exploring the dynamics of the space can capture entrepreneurial learning (Minniti & Bygrave, 2001), learning through experience (Politis, 2005) as well as the development of expertise through deliberate practice (Dew et al., 2018). Exploring and extending the space dynamically will be necessary in formulating modular advances in entrepreneurship curricula from elementary schools to graduate programs and beyond. In fact, expertise in entrepreneurship consists of developing nuanced judgment about matching different parts of the space to strategies that fit each part (Jiang &

Tornikoski, 2019; Reymen et al., 2015; Smolka et al., 2018). Such judgment would be learned through better calibration of the objective spatial contexts of predictability and controllability at any given point in time while also learning to match subjective perceptions, actions, and inter-subjective interactions and reactions to shape those contexts over time. This notion of better calibration leading to better matching is illustrated in Figure 2c through the curved arrow moving through all four quadrants.

However, given pervasive uncertainty in entrepreneurship, even an expert entrepreneur may not always be able to accurately calibrate which part of the space they find themselves in. In those cases, experts can still exert control through a proactive precommitment to a Type I (perceiving the context as predictable when it is not) or Type II (treating the context as unpredictable when it is actually predictable) error. Similar errors can occur with regard to what entrepreneurs deem to be within or outside their control. It has been argued that when in doubt, expert entrepreneurs choose Type II errors, proceeding as though the context is unpredictable (Forster & Sarasvathy, 2020; Sarasvathy, 2012). This choice of errors leads them to a strong preference for the bottom-right quadrant of the PC space.

One of the simplest yet most ubiquitous behaviors in entrepreneurship can be used to illustrate how this works in practice. The behavior I am referring to is the “ask.” On a daily basis, entrepreneurs have to ask others for everything from advice and help and feedback to a variety of resources such as money, time, knowledge, and networks. “Others” includes not only investors but all actual and potential stakeholders, such as employees, suppliers, customers, and even family and friends. Dew et al. (2018) have shown that the ask is a fundamental unit of deliberate practice in the development of entrepreneurial expertise. Figure 2d illustrates how the ask could be mapped onto the PC space. The top quadrants can be addressed through two variations on the pitch. Note that a pitch is a specific kind of ask, usually targeting specific stakeholders for specific resources. The simple pitch consists of reasons why someone should invest in the venture or provide resources to the venture. A deal structure consisting of a quid pro quo such as “\$2 million for 30% of the company” could also be added to the simple pitch. The bottom two quadrants may be approached through more general conversations involving asks to anyone and everyone, not only to specific stakeholders. Asks can be relatively simple, as in normal conversational requests such as, “Please, would you be willing to...?” Expert entrepreneurs learn to use a more open-ended and cocreative version of the ask that invites people to self-select. Their asks usually take the format of “What would it take...?” Note that this format allows the other person to tell entrepreneurs what their pitch should be, thereby both relieving them of the need to predict it as well as allowing others to self-select into the venturing process on cocreative terms. For a detailed development of asks within a larger study of entrepreneurial interactions, see Sarasvathy (2021).

How the Entrepreneurial Method Can Build the Middle Class of Business

As a last step in the development of the PC framework, we can integrate it into the basic argument for the middle class of business as laid out in Figure 1. Simply combining the bottom half of Figure 2d into Figure 1 gives us Figure 3 that depicts how entrepreneurship education can move the current frontier of the size distribution of firms to the building of a middle class of business. Note that the aim here is not to change regulatory incentives or competitive dynamics. Simply adding widespread education based on the entrepreneurial method can help grow a small percentage of employer firms in ways that enable them to endure a lot longer.

As we saw earlier, history showed at least three mechanisms connecting the scientific method to the rise of the middle class. First, it severed the link between divine revelation and the creation

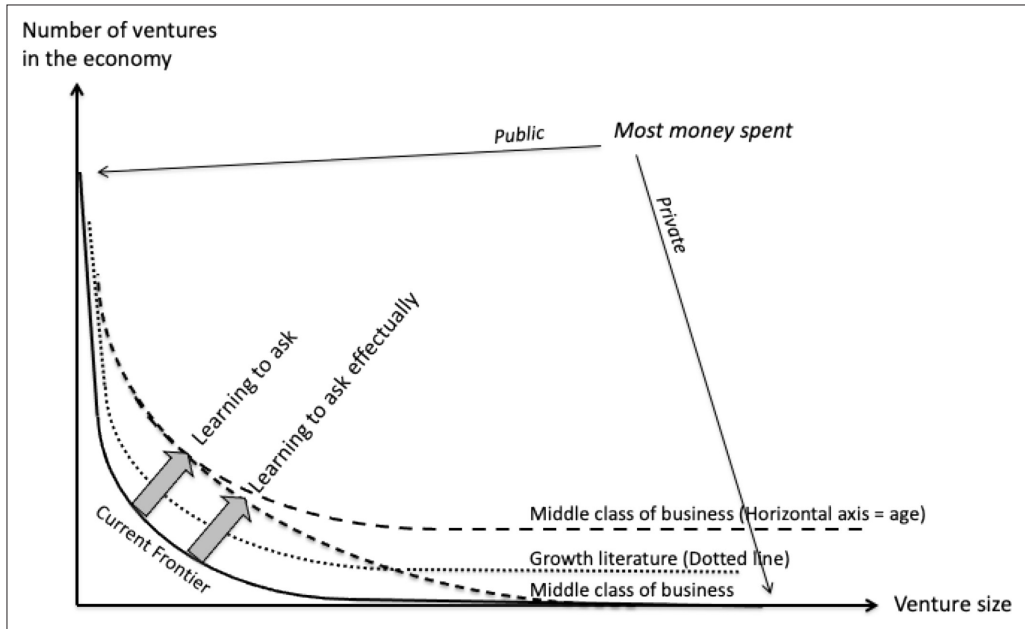


Figure 3. Application of elements of the prediction-control framework to building the middle class of business.

of new knowledge, offering instead a “method” that could be taught to and learned by all. Second, it facilitated social mobility. And third, it set in motion a virtuous cycle of consumption and production that, together with a virtual cycle of education and technological progress, led to the modern middle class.

Based on the PC framework, a similar set of mechanisms can move out the current frontier curve in Figure 1 to form a middle class of business. First, as we see in Figure 2c, the entrepreneurial method conceptualized in terms of the PC space offers a variety of techniques and content that can and are actually being taught to a variety of different people in a variety of different educational and training programs. Second, the effectual quadrant of the PC space challenges the assumption that communities are at the mercy of market forces beyond their control. Reconceptualizing markets as artifacts that can be shaped and cocreated through human action suggests that market mechanisms can be put to work to cocreate new ends worth achieving and even tackle large problems such as climate change. Finally, the entrepreneurial method can set in motion virtuous cycles capable of reinforcing both growth through innovation and stability through endurance, instead of allowing one to eclipse, or worse still, destroy the other. To see how this could occur, let us examine well-documented cases where it has already occurred.

The history of 18th-century entrepreneur Josiah Wedgwood offers a compelling example of how these three mechanisms might work in reality. Just as most scientists’ learning of science came from “tinkering” in the early years, Wedgwood’s entrepreneurship education came from his daily experiences within the PC space. Here are the three relevant lessons Wedgwood learned:

1. People put their money not only where their current needs are, but where their aspirations for the future are. Furthermore, these aspirations can be given shape in the form of products through branding, thereby creating the market rather than looking for extant demand (McCraw, 1998).

2. Sometimes the most important ingredients in successful venturing come from unexpected events leading to chance encounters. Wedgwood was introduced to his partner, Thomas Bentley, through his physician while he was laid up in bed in Liverpool for many weeks from a knee injury. As a historian describes it, “This meeting was a fortuitous one for both men. It inaugurated a long friendship of great depth and intimacy, as well as one of the most important business partnerships of the eighteenth century” (Koehn, 1997, p. 47).
3. Wedgwood learned that human beings themselves can also be shaped and cocreated. He wrote to Bentley in 1773 that they must make artists of “mere men” since “...few hands can be got to paint flowers in the style we want them. I may add, nor any other work. We must make them. There is no other way” (Koehn, 1997, p. 59).

Wedgwood also learned that it was not enough just to produce good-quality pottery or even to shape them into a brand that embodied people’s aspirations for social mobility. Together with Bentley, he brought on board politicians and public officials to literally coconstruct roads and canals and reshape entire communities and the English countryside to grow a venture and a brand that endured for centuries, appearing as an option in today’s wedding registries. Moreover, the Wedgwood fortune enabled one of the greatest scientific achievements of human history. It funded the voyage of *The Beagle*, enabling Wedgwood’s grandson, Charles Darwin, to work out the theory of evolution.

The history of entrepreneurship is strewn with stories of enduring ventures that have shaped the worlds we currently live in. Consider a contemporary example from Jacqueline Novogratz, cofounder of Acumen Fund, who explains in a video about the unanticipated consequences of funding microenterprises in Rwanda:

...if you would’ve asked me in 1986 or any of my co-founders when women had just gotten the right to open a bank account without their husband’s signature, if you had said to us that in 30 years we wouldn’t just be improving women’s economic condition which was our mission but that a young woman in the next generation would be running the financial system and that Rwanda would have more women parliamentarians than any country on the planet I’m not sure we would have believed you.

The power of the entrepreneurial method is not limited to for-profit ventures. We find evidence for it in the cocreation of institutions such as polycentric governance systems (Ostrom, 2010) that help tackle very large societal problems such as the allocation of water rights in the Los Angeles (LA) basin (Sarasvathy & Ramesh, 2019). Each of these three ventures, Wedgwood Pottery, Acumen Fund, and water rights in LA, have endured for a long time and provided opportunities for growth and innovation in communities they cocreated. We need to bring these stories of endurance and well-being into classrooms everywhere and teach the entrepreneurial method to everyone.

Future Research on Building the Middle Class of Business

I conceive three pastures for future research based on the PC framework: (1) endurance as a dependent variable; (2) intersubjectivity in entrepreneurial phenomena; and (3) educational policy and content, including teacher training.

1. Endurance

In the earlier discussion of endurance, we considered it in terms of age and size. And in the operational definition I offered, I suggested tentative boundaries for the variable in terms of age and size—namely, 16 years and between five and 300 employees. The 16 years was derived from Hathaway and Litan (2014), who showed how an increase in older firms that endured for 16 years or more was tied up with increases in employment. The top end of the size was meant to be something smaller than 500, since that number is widely used to define large businesses. And the lower end was derived from Birch (1987), who highlighted the empirical observation that firms that grew to at least four employees doubled their chances for survival. In future research, we need to think more carefully about an operational definition of endurance as a dependent variable. One way to arrive at that could be through a more detailed look at empirical patterns within survival. For example, consider a hazard model relating different measures of size and age combinations to the probability of survival as well as the propensity to grow and sustain employment. In this connection, it is interesting to remember the method used in Henderson (1999) in examining the liabilities of newness, adolescence, and obsolescence in a single industry with a focus on technology strategy. We could apply similar approaches to the population of all firms in order to arrive at a better operational definition of endurance.

Note that just as it is necessary to distinguish between increase in startup rates as opposed to unproductive churn, as well growth due to innovation and efficiency rather than growth through predatory acquisitions, we also need to distinguish between endurance and stagnation as we develop the former as a dependent variable.

2. Intersubjectivity

A number of phenomena in entrepreneurship could be studied at the intersubjective level of analysis. A quick review of studies involving relationships highlights a focus either on structural and evolutionary aspects of networks (Greve & Salaff, 2003; Hite, 2005) or transactional aspects of interactions between entrepreneurs and resource providers, primarily investors (Huang & Knight, 2017). A recent review of entrepreneurial team formation, for example, does not even contain the words “cofounder” or “cofounding” (Lazar et al., 2020). Yet a small trickle of studies is beginning to examine phenomena such as networking (Vissa & Chacar, 2009). In addition to networking, some studies examine phenomena related to social interactions with and without new technologies (Fischer & Reuber, 2011; Lechler, 2001).

It would be interesting to examine how these interactions, whether within social networks or through chance encounters in the course of ordinary life work within the PC framework. It would also be important to theorize about and empirically study patterns of intersubjective interactions in communities capable of tackling larger social issues. On the flip side, we could and should study communities suffering from the downside effects of creative destruction due to market churn (Komlos, 2016) and their impact on intersubjective interactions. Such interactions, whether on the positive or negative side of human and societal well-being, are a neglected area within entrepreneurship research. A typological approach to the entrepreneurial method highlights these missing spaces in our work, inviting future scholars to traverse these open frontiers (Neck & Greene, 2011).

3. Education

Perhaps the most promising avenue for the use of the PC framework consists in more rigorous research that can feed into entrepreneurship curricula at every level of education and for a wide variety of different contexts and audiences. Current curricula incorporate a hodgepodge of basic

business concepts, research findings, war stories, and fads from best sellers of the moment (Bécharde & Grégoire, 2005). In particular, this content-analytic review of 103 articles in entrepreneurship education found a lack of attention to sociocognitive, psychocognitive, and spiritual/ethical aspects. This is especially troubling in light of the findings from Rahm (2019) discussed earlier.

While all extant content in entrepreneurship education could still be useful, without a rigorous organizing framework such as the one described here, content could be counterproductive. Consider, for example, the empirically unsupported intuitions such as “entrepreneurs are risk takers” and even disconfirmed myths such as the importance of venture capital funding for venture creation and success that permeate our syllabi today. Moreover, without a rigorous organizing framework, we will not know what is missing from our curricula—intersubjectivity, for example. I would like to see a much more theory-driven agenda for content development that is derived through evidence-based methods from the field and then whetted through pretest—posttest research designs in classroom settings.

Hand in hand with the development of more rigorous content should be the development of teacher training (Blimpo & Pugatch, 2021; Seikkula-Leino et al., 2012). Given asymmetries between the massive demand for entrepreneurship education and the scarce supply of trained educators, the sparsity of programs and content for certified educators continues to be a real bottleneck. Ways to use technology to gather and disseminate data on this front with a view to building out the entrepreneurial method ought to be a priority for policymakers and educational institutions.

Synergistic ways to collect research data from classrooms that can then feed into teacher training programs should become a routine ingredient of entrepreneurship research training as well as teacher training for entrepreneurship educators. This is especially true given the centrality of growing not only entrepreneurs but also employees who can work in and grow entrepreneurial ventures. Consider the fact that, according to indeed.com (one of the top job sites today), 48% of jobs in Silicon Valley are unfilled. Similar shortages abound in Bangalore, Shanghai, and Stockholm. This is not only a problem for technology-based ventures. All ventures today require tech-savvy employees with an entrepreneurial attitude toward their jobs. On the flip side, young people today will probably have more than one career spanning wage employment, self-employment in and out of the sharing economy, social venturing, even political and public enterprise. With better development and dissemination of entrepreneurship education, their careers could and should include the development of job-creating enterprises of various kinds.

This suggests that we should put the entrepreneurial method to work for us in the very process of creating more rigorous content for entrepreneurship curricula and teacher training, for example, actively designing technology and methods for data collection in the classroom. Demand for entrepreneurship education is so strong that thousands of new programs are mushrooming all over the world each year. At the same time, education technologies are evolving to allow us to cocreate curricula with these educators on an ongoing basis. These offer possibilities not only for building more rigorous content for entrepreneurship education within existing norms of education, but also for radically reformulating education as a whole. Consider the dominant paradigm in education today: 12 years of schooling, followed by 4 years in college for a bachelor’s degree, and 2 more at a university for a master’s degree. It may be time to ask whether 16 to 18 years of education is a prerequisite for working careers, be it in paid employment or entrepreneurship. Bringing entrepreneurship earlier into education may allow us to break this linear track and reconfigure how education, entrepreneurship and employment may be stitched together in new ways to build better worlds that we cannot even imagine today.

Conclusion

Francis Bacon never dreamt we would land the rover on Mars. Even more undreamt was the naming of the landing in honor of Octavia Butler, a black female science fiction writer. Who knows what worlds the entrepreneurial method taught to all will help make beyond the reach of our wildest dreams?

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Notes

1. In Silicon Valley and more broadly in the domain of venture finance, the word “unicorn” means a company valued at over \$1 billion.
2. Investopedia defines a gazelle as a young, fast-growing enterprise with base revenues of at least \$1 million and 4 years of sustained revenue growth.
3. Translation: To sail is necessary; to live is not.

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