

2017

Efficiency Engine vs. Entrepreneurial Innovation: A Conceptual Comparison

Debbie Bowman

The University of Sydney, dbow2005@uni.sydney.edu.au

Dirk Hovorka

The University of Sydney, dirk.hovorka@sydney.edu.au

Follow this and additional works at: <https://aisel.aisnet.org/acis2017>

Recommended Citation

Bowman, Debbie and Hovorka, Dirk, "Efficiency Engine vs. Entrepreneurial Innovation: A Conceptual Comparison" (2017). *ACIS 2017 Proceedings*. 108.

<https://aisel.aisnet.org/acis2017/108>

This material is brought to you by the Australasian (ACIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in ACIS 2017 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

Efficiency Engine vs. Entrepreneurial Innovation: A Conceptual Comparison

Debbie Bowman

Business Information Systems
The University of Sydney
Sydney, NSW
Email: dbow2005@uni.sydney.edu.au

Dirk S. Hovorka

Business Information Systems
The University of Sydney
Sydney, NSW
Email: dirk.hovorka@sydney.edu.au

Abstract

The challenges and opportunities presented by digital technologies are placing growing pressures on present-day businesses to be increasingly innovative. With these pressures, tensions become visible between organisations as *engines of efficiency* and organisations as *entrepreneurial innovators*. In this analysis, we look at how routine and stability as core requirements for business practice and competitive advantage in engines of efficiency may limit organisations' ability to innovate. It becomes apparent that these tensions are at the heart of how the corporation defines itself in terms of its worldview, culture, knowledge creation processes and practices: its *epistemic stance*. A conceptual analysis of the literature focuses on epistemic stance and innovation and the concept of the efficiency engine. The resulting framework is used to interpret the behaviour and practices of Tesla Inc; a company which epitomises entrepreneurial innovation to redefine and reconceptualise transformation of the automotive and energy markets. The differences in epistemic stance provide insights into the struggle of corporate innovation configurations in achieving high-impact innovation.

Keywords

Innovation, efficiency, epistemic stance, practices and routines

1 Introduction

For more than a century, organisations have focused on efficiency as a key goal for competitive success. This has, in part, been motivated by the great agricultural and industrial revolutions [Dean 2000]. Innovations in mechanical and technical production through inventions such as the assembly production line enabled process and productivity enhancements on a scale previously unknown. The information revolution again focused on enhancing efficiency and productivity. However the systems also imposed routines and processes that are highly restrictive and limit innovation. Process improvement frameworks such as Business Process Reengineering, Lean waste minimisation and Sigma Six reinforce efficiency-centric strategies in the quest of optimised processes.

But continued advances in information computer technologies are driving significant social and economic change and are profoundly affecting businesses and changing products, services and operations (Schwab 2017). The pace of change and impact of digital technologies are placing extraordinary pressures to innovate quickly. The disappearance of more than 50% of Fortune 500 companies since 2000 has been attributed, in part, to digital technologies and this churn is accelerating (Nanterme 2016). There is a new emphasis in organisations to provide history-making innovation (Spinosa et al 1997), not merely to incrementally improve existing processes and products.

Support for innovation as an enabler of business value in preparation for, or in response to, significant competitive challenges has varied over time (Kanter 2006). Today, innovation is broadly regarded as the holy grail for many companies and is considered foundational for organisational performance and competitive advantage (Crossan and Apaydin 2010). Innovations which focus on enhancing efficiency, however, only deliver incremental improvements (Govindarajan and Trimble 2010) and expose companies to disruption by innovative newcomers (Riemer and Johnston 2016). Success, and survival, is increasingly dependent on history-making innovations: new ways of understanding and being with each other that implicate new organisational models, markets, products and services. In this paper we refer to this as *entrepreneurial innovation*. Innovation itself has become a business strategy and is tied to entrepreneurial approaches and organisational configurations.

Most current business organisations however, are “not designed for innovation. Quite the contrary, they are designed for ongoing operations” (Govindarajan and Trimble 2010, p.10). As organisations grow, they focus increasingly on the efficiencies in measurable processes to reach specific business model goals (Blank 2014). Efficiency is enshrined in processes, practices and incentives. Repeatable, predictable and stable processes ensure scalability and quantification; the organisation becomes an *efficiency engine*, which is almost singularly focused on preserving the known successful day-to-day operations. Competence exploitation enables efficiency and productivity by calling on the existing, known suite of solutions within the organisation (Atuahene-Gima 2005). Many companies establish a range of ventures as vehicles for innovation but they are often, at their core, still about efficiency implemented through exploitative ventures which rely on convergent thinking and efficiency to harness current capabilities (Andriopolis and Lewis 2008). In this context, we are not referring to the tech leaders such as Facebook, Google, tech start-ups and fin-techs, but about the broader set of mainstream established companies.

This narrow focus on efficiency however, is often non-conducive or even hostile to innovation (Amabile 1996). The entrepreneurial innovation context is non-routine and uncertain, requires openness to ambiguity and tolerance for risk-taking. Innovation practices are orthogonal to the repeatable, static practices adopted in the name of efficiency, which may stifle Innovation. Innovation is not ‘unmanageable chaos’ (Govindarajan and Trimble 2010) but importantly, the barriers of business-as-usual need to be removed.

Efficiency gains achieved through technology inhibit Innovation because the platforms and systems that drive the business (and profitability) may instantiate the inflexible routines and business rules of the organisation. The routines frame the world-view and actions that provide the competitive efficiencies on which the company depends. We argue that it is this organisational worldview, culture, knowledge creation, processes, and practices, its *epistemic stance*, that plays a critical role in the success or otherwise of innovation ventures. Epistemic stance reflects beliefs about knowledge, reality and sources of novelty and in this way influences both the openness to new ideas and the way that such innovations are valued, resourced and supported (Fayard et al 2016).

The increasing pressure to Innovate creates a growing tension between the *efficiency engine* and cultivating a culture of innovation. This paper is an exploration of these tensions and the contrasting world views. Examination of a relatively recent entrant into an established large-scale industry (Tesla Inc.) illustrates how that company is achieving industry-sector impacts through an epistemic stance of

entrepreneurial innovation. Entrepreneurial innovation involves redefining and reconceptualising problems and shifting the paradigm through cultural innovation (Spinosa et al 1997).

1.1 Overview

This preliminary research undertakes a conceptual analysis based on literature selected to enable comparison of high-level distinctions in relation to organisational epistemic stance and receptivity to innovation. We first introduce innovation history and its common conception. Acknowledging that the study of innovation is broad and complex, we have included a brief discussion of these conceptions largely related to process and product innovation in order to introduce the underlying thesis of Innovation as a world-view and state of mind.

Secondly, organisational epistemic stance is discussed as an effective lens to enable a perspective of innovation as this corporate worldview. We acknowledge that there is a significant raft of theory and frameworks on organisational practice, routines and epistemic stance. For the purpose of this discussion however, we introduce terminology and concepts at a relatively high level as a means of providing a broader intellectual framework.

We introduce the concept of the “efficiency engine” as a label to describe the focus of some established organisations on productivity and efficiency under the guise of true innovation. We also draw on the works of Govindarajan and Trimble (2010) as the basis of a comparative study. Finally we draw conclusions through a case example of a company, which displays the hallmarks of an entrepreneurial innovator to illustrate the concept. We look at how the company’s practices are radically different to the common conceptions of the standard *efficiency engine* and how their epistemic stance is enabling ground-breaking Innovation advances. We conclude with suggestions regarding the importance of this distinction in the context of the changing industrial and commercial landscape and how the case study can provide the basis for further research to examine the generality of these ideas.

2 THEORETICAL BACKGROUND

2.1 Innovation: a brief introduction

‘Innovation defies definition’ (Godin 2014, p51)

Innovation has been a contested concept for centuries with a wide range of definitions (Godin 2014 and 2015). It is a derivative from the Greek word *kainos* (directly from *kainotomia*), meaning new (Schramm 2017, Godin 2015). It has variously been regarded as an accusation (e.g challenging established doctrine), the aide (and foe) of the people and, more recently, the holy grail of organisations, by enabling the discovery of novel things to commercialise (Godin 2008). Originally innovation, along with invention, carried pejorative connotations. Pre-20th century, invention and innovation were met with significant distrust in that their unnatural, subversive and unwanted “imitations” cut across the political and religious edicts of the natural order of things (Godin 2015). Invention and innovation became associated and shook connection with “imitation” when it was accepted that true invention required originality (Godin 2008).

Historically innovation has much broader etymological and sociological meaning, but in the 20th century, it became more closely associated with technological innovation. Innovation assumed a positive context when it facilitated the promotion of the “political, social and material progress of society” (Godin 2015 p6). It was defined as ‘useful’ and applied broadly to technological innovation on the basis of the institutionalisation of technological invention and imposed through research and development and patent laws (Godin 2008, Godin 2015). This has meant that ‘softer’ forms of innovation such as organisational and business model innovations, have received less attention (Autio et al 2014). The institutionalisation of invention also meant that innovation has been increasingly associated with commercialisation endeavours (Godin 2008). In the 1930’s, *innovation* was reframed by economist Schumpeter as “unceasing novelty and change and the foundation of capitalism” (Godin 2008, p.35). New goods, markets, and methods of production, were among key innovations to enable this.

While the focus for Schumpeterian technological innovation has been economic value and competitive advantage, the term is now applied to many domains and endeavours as governments, businesses and society look to achieve greater effectiveness and efficiency (Schramm 2017). In the services industries, ‘asset light’ (McKinsey 2017) companies like Alibaba and Airbnb are taking the lead in innovating

business models. Digital companies are able to achieve mass-market reach at little cost (Nanterme 2016) due to the ubiquity and utility of digital technologies.

A number of authors have examined the role of creativity in innovation and how organisational structure, culture and resourcing leverages or stifles that creativity (Amabile 1988). Such models have been focused on the importance of individuals and groups in stimulating successful organisational innovation. 'Creative energy fields' are places (usually physical) for groups of creatives to bring forward ideas to fuel the innovation processes (Johansen and Skaalsvic 2011). The emphasis on gathering of individuals in corralled physical spaces has promoted the notion that innovation requires a separation from the day-to-day established processes and the popularisation of innovation hubs and centres. This isolation of ventures in separate silos has very much shaped our understanding of innovation as being something, that is 'done over there' (Kanter 2006). Placing innovation ventures in isolated, physically separated and protected hubs has changed not only the perception of innovation, but also the very fabric of what it is: "containment unavoidably alters the very qualities of that which man sought to contain" (Hafermalz and Hovorka p10).

In contrast to incremental innovation conceived as a process or product (outcome) is the concept of entrepreneurial innovation as an orientation to knowledge creation processes and practices which involves a shift in the approach to what is done (Spinosa et al 1997).

2.2 Routines and Practices

One of the key enablers (or detractors) of innovation is an organisation's culture where characteristics such as clear and attainable shared vision, motivation, autonomy and risk appetite are important (Crossin and Apaydin 2014). Organisations can be characterised by the routinised and repeated activities which provide meaning and order and are often the basis for the organisational identity. In general organisational routines are "repetitive, recognisable patterns of interdependent actions, involving multiple actors" – routines are created through repetition and recognition (Feldman and Pentland 2003, p.96). Other authors describe these activities as practices which are durable, repetitive and self-reinforcing (Jarzabkowski P. 2004). Practices are often difficult to alter because they are a given, are frequently deeply entrenched in the fabric of the organisation and considered the "natural order of things" (Nicolini 2012, p3). Organisational routines may be viewed as playing a functional role, serving as both an efficiency (cognitive and process) and legitimacy framework for work processes and actions that institutions wish to encourage by conforming to behavioural norms (Feldman and Pentland 2003). To some extent organisations themselves represent collections of practices and their very existence depends on the performance of these material activities (Nicolini 2012, p2). Routines are generally conceived as sources of stability and the "antithesis of flexibility and change" (Feldman and Pentland 2003, p98).

Practices are malleable and are "an act of poiesis (to make), creation, invention and improvisation aimed at producing sameness" (Nicolini 2012, p223). They are bounded by existing conditions and accountability measures are in place. These boundaries are constantly tested and moved but are always there (Nicolini 2012). While the inertial qualities of routines have been the focus of many studies, it is the interplay of the ostensive (routine in principle) and the performative (routine in practice) that give routines a duality; in this way routines are a source of change as well as stability (Feldman and Pentland 2003). The drive to achieve the requirements of the practice and the complex interplay between the micro contexts (such as the limits set by accountability measures) and the macro context (such as external market pressures) creates tensions (Jarzabkowski, 2004). While on the one hand, this interplay can provide opportunity for adaptive change, routinized practices tied to such accountability measures present barriers to the change required for innovation ventures.

Organisational practices and routines can create efficiencies, but may concurrently stifle innovation efforts (Kanter 2006). Incentives within companies, measured through KPIs, maintain the *status quo* of driving towards agreed targets with known and historically successful processes. Routines may represent organisational memory and persist as its very identity (Jarzabkowski P. 2004). They may exist as valued resources for competitive advantage with established firms reticent to alter what has proved itself as successful in the past even when they demonstrate they are no longer a viable option (Jarzabkowski P. 2004). The business processes, routines and practices designed to enhance efficiency also enforce a rigidity in thinking and provide powerful extrinsic motivations to behaviour that orient organisational actors to certain attitudes regarding salient knowledge (Amabile 1988). To protect the routinized approach to knowledge, some organisations place Innovation ventures in separate units or in some way isolate them from the day-to-day activities (Cappgemini 2015, Govindarajan and Trimble 2010). This limits the ability to inculcate changes in the culture broadly through the company.

2.3 Epistemic Stance

Within organisational practices are assumptions which are obscured by a focus on routine action. An organisation's epistemic stance is "an attitude that organisational actors collectively enact in pursuing knowledge" (Fayard et al 2016 p.1). It encompasses the predispositions and subsequent behaviours and which underlie how one evaluates and positions oneself and approaches the status of knowledge in the world. This stance informs modes of research engagement, styles of reasoning, and propositional attitudes (Rowbottom and Bueno 2011) by which the organisation approaches its activities and practices.

An organisation's epistemic stance fundamentally shapes its approach to Innovation as it reflects beliefs about knowledge, reality and sources of novelty (Fayard et al 2016). It also affects ways of reasoning, problem creation and solution evaluation. Prior research has illustrated how the collective behaviour and view of the world by individuals as actors on the organisational stage had significant impact on the framing and evaluation of innovation ventures (Fayard et al 2016). Their research found that, although having similar organisational arrangements, companies enact their epistemic stance in the evaluation of the innovative practice opportunities - one company limited its engagement with the innovative practice (considered only a narrow domain consistent with past exposure) and the other embraced it (considered a wide range of models).

Epistemic stance also has important implications in relation to knowledge and authority. It is through knowledge regimes that "epistemic stance-taking establishes relative authority of interactants" (Jaffe 2009, p.7) and thereby plays an important role in codifying organisational practices which affect the success of Innovation. Epistemic stance is represented in the complex interactions between the individuals at the heart of the innovative process and their corporate environments. An organisational climate of support for exploration of new ideas versus overemphasis on maintaining the status quo represents a key determinant in innovation success (Amabile 1988). History-making Innovation requires organisational actors to shift values and recreate power structures (Francis and Bessant 2005) as well as develop practices that enable disclosure of unrealised states.

2.4 *The Efficiency Engine: Efficiency vs. Innovation*

Govindarajan and Trimble (2010) describe a model for organisations based on the premise that organisations evolve for performance and strive for productivity and efficiency (p.10). The fundamental proposition is that because organisations are built for ongoing operations rather than change, each innovation initiative needs a dedicated team and a dedicated plan. Through this model, predictable, repeatable ongoing operations are isolated from the uncertainty and non-routine nature of innovation.

In Innovation, on the other hand, ambiguity is seen as essential to motivate entrepreneurial endeavours (Saravathy and Dew, 2005). One of the important aspects of entrepreneurial innovation, is the ability to go beyond the ordinary, being sensitive to 'disharmonies and anomalies' in life and leveraging these in creating innovation (Spinosa et al 1997). The *efficiency engine* is blind to these disharmonies and creates the systems and reward structures to remove their influence and distraction on the smooth running of the machine. This antithetical orientation of innovation and ongoing operations demands separation. While there are a number of innovation models, a common approach is the establishment of separate dedicated teams and as Govindarajan and Trimble (2010) suggest, the need for these to work in a climate of 'mutual respect' with the 'performance engine'. Thus innovation is seen as "protecting" the performance engine and its ongoing operations.

From an innovation perspective, while Govindarajan and Trimble's thesis recognises the need for leaders to think differently about organising and planning, it emphasises enhancing the success of the single innovation initiative than reform of the organisation. The company continues to be focused on what they are built for- ie efficiency.

It is questionable how relevant the model of (or at least the focus on) corporate efficiency continues to be. The argument for the central role of efficiency is credible in a stable environment where a consistent approach is well aligned with the predictable state of play. But how can this be maintained in a rapidly changing digital landscape when terrain itself is becoming increasingly unpredictable? These tensions are placing extraordinary pressures, particularly on more established companies to reinvent themselves and explore different structures and models to achieve sustainable commercial advantage.

2.5 Pervasive Digital Technologies

While not a primary theme, it is pertinent to consider the role of digital technologies in the growing pressures to innovate as they also provide context and the toolset for innovation. The agricultural and technology revolutions disrupted markets and many centuries-old practices were replaced with modern processes as companies dramatically changed or disappeared (Beniger 2009, Godin 2008). There is increasing evidence that a digital revolution will be no less profound in its effects on businesses as the pace and scale of change is unprecedented (Schwab 2017).

Novel combinations of digital and physical elements are giving rise to new types of products and new service architectures and as a result, are blurring product and industry boundaries (Yoo et al 2010). Diffusion of innovation through the introduction of novel digital technologies creates multiple wakes of innovations across a diversity of industries (Boland et al 2007). Digital materiality (embedding digital elements into physical products) and convergence are changing conceptions of, and interactions with, previously static physical artefacts (Yoo et al 2012). These concepts of digital technology are extending into operations, communications, and beyond to enable creation of new 'experiences, relationships, processes and organisational forms' and where digital convergence and digital generativity are shifting traditional competitor landscapes (Yoo et al 2012, p.1399).

This is having impact on and being driven by changes in the social landscape: it is giving rise to new opportunities for the creation of networks between people. It is these 'uncoordinated audiences', (Zittrain 2006) which are also exerting pressure on traditional businesses to innovate as digital technologies become increasingly dynamic. As an example we now consider a case example, which draws together the notions of how Innovation can represent an act of cultural innovation (historical disclosing), implicating the epistemic stance in the core of practice, and the very style of the organisation.

3 A Case Example of Entrepreneurial Innovation

'Why does Tesla exist: it's really important to accelerate the transition to sustainable energy. This is really important for the future of the world.' (Elon Musk, March 2017)

The quote above reveals not merely a corporate vision or mission statement but a declaration of values regarding people, business, and a future society. As an example of entrepreneurial innovation it reconceptualises problems and solutions in a way that have been described as shifting cultural innovation with meaningful history-making impacts (Spinosa et al 1997). To illustrate this shift we look to a case analysis of Tesla, Inc., which seeks to innovate across energy storage, automotive and renewable energy sectors. The centrepiece of Tesla's reconceptualization was its challenge to the incumbent motor vehicle industry through the electric car. Until recently, electric vehicles had little profile and what there was, was decidedly negative. As the company was in its infancy it had to start small while entering a century-old manufacturing industry that presented significant challenges (Vance 2017). An example of Tesla's innovative approach was its release of a low-volume premium-priced roadster that drew public attention and questioned well-grounded conceptions of what an electric car represented (previously low design impact, poor power performance, low mileage). The subsequent Tesla Model S sedan (and Model X SUV) managed to shift public perception through the production of a high-end market electric vehicle that became a highly visible symbol of not only luxury and success but of forward-thinking and technological savvy. Winning many "best car" awards and recorded as the quickest accelerating production car in history (Lyon 2017) - have been central in shifting that mind-set (both public and the industry) of what an electric car could do and could be.

With electric car sales from the major motor vehicle manufactures representing less than 1% of total sales, Tesla took the unprecedented move to release its patent portfolio (Musk 2014). This was an innovative open-source approach designed to promote universal social and economic acceptance of electric car technology as a foundation of sustainable transport. It demonstrated a different epistemic stance regarding intellectual property that had enormous network effects, allowing for a "common, rapidly evolving technology platform" (Bessen 2014). This and the changes in consumer expectations and behaviour enabled by Tesla encouraged other car manufacturers to progress development of electric and hybrid vehicles. The release of the Tesla roadster is credited with having had a leverage effect on the car industry in prompting GM's release of the Chevy Volt hybrid (Ng and Wong 2010).

These steps have helped to shift electric vehicles from marginal toward mainstream adoption. Evidence of the success of Tesla has been its development of a mass-market affordable electric vehicle-Model 3 which enjoyed a pre-order release with demand on an historic scale. So highly anticipated was its release that there were almost 400,000 pre-orders in 2016 for deliveries in late 2017/2018 (Heisler

2016). The S and X models have played important roles in providing the capital to fund the production innovations required to release the Model 3 (Musk 2016).

At the same time, Tesla has made significant investment into construction of a giant lithium-ion battery manufacturing complex (Tesla Gigafactory) in Nevada to provide a seamless vertically-integrated production solution. The Gigafactory is of enormous scale (largest footprint of any building in the world (Thompson 2016)) and is producing the most advanced battery technologies in the world. This initiative makes the company unique in automobile manufacturing in owning the entire supply chain from production to distribution and with potential of providing key critical components (batteries) to competitors by leveraging vast economies of scale in their manufacture. It has also invested in a substantial network of supercharger stations across its distribution regions to ensure that its product represents a viable alternative to the fuel stations, which epitomise combustion motor vehicle transport (O'Marah 2016). Tesla has an unconventional distribution and sales model (no franchise dealerships) and spends virtually no money on advertising (\$6 per car compared to Honda and Toyota, at \$250 per standard car and beyond for premium brands (Hanley 2016)). The continuous improvements within each product line are also continuously provided to current owners through over-the-air software updates in a 'digital supply chain', which includes physical (braking and accelerating) as well as information enhancements (O'Marah 2016). Tesla's approach and accomplishments are unheard of in the industry (Hanley 2016).

This has occurred with parallel innovations and developments in the clean energy capture (solar) and in the storage market. Here, the company is exploring partnership ventures using innovative technologies for power aggregation (e.g. bundling batteries into a single portfolio) and grid services to help scale the adoption of renewable energy (Tesla 2017).

Tesla's venture into the motor vehicle market has led to numerous waves of innovations (Boland et al 2007). For example, advances in autonomous driving have required innovations across artificial intelligence, robotics, navigation, Internet of Things and sensor technologies. Innovations in lithium batteries similarly enable other waves while aligning with the need for autonomous vehicles for reliable and cost-effective refuelling. These advances have also been developed and applied in other domains but it is the "domino-effect" of entrepreneurial innovations that feed further innovations. At the same time entrepreneurial innovation has induced a social shift, which has enabled widespread adoption of previously unthought-of goods and services models.

Tesla is an entrepreneurial innovator- in its products, business models and in manufacturing operations. But it also represents a substantively different stance toward the creation and distribution of knowledge that is history-making. Tesla has shifted the beliefs about the efficacy of an electric vehicle and the reality of sustainable transport. It has helped society re-imagine from complete reliance on internal combustion engines to openness to adoption of electric vehicles. It illustrates an enterprise which has grown initially "not to produce and market already understood widgets but [rather] aid in the development of the market for an intuition or new conception" (Spinosa et al 1997, p.47)- worldwide sustainable transportation. Its processes are efficient- organisations need to be efficient- but we argue that efficiency represents table-stakes, and efficiency is not what drives the company. Tesla's achievement in earning market capitalisation values exceeding Ford and momentarily exceeding GM (Reuters 2017; Vance 2017) in just over a decade from establishment is nothing short of remarkable.

An important development for Tesla will be another step change in order to achieve high volume manufacturing- it is targeting scaling from current annual production of 100,000 cars to 1m units by 2020 which would again be unprecedented and rank among the fastest in the history of automobile manufacturing if achieved (Ohnsman 2016). Again Tesla is demonstrating innovative approaches to achievement of efficiencies by leading advanced automation and "machine-building-the-machine" vehicle production innovations; it recently acquired a German engineering and robotics company to help automate production facilities (Ohnsman 2016).

4 Discussion and Concluding Remarks

'Entrepreneurship encompasses acts of organizational creation or renewal, both of which involve innovation, that occur within or outside an existing organization' (Hartmann 2014, p.19)

Entrepreneurial innovation though is as much a mindset as a process or an outcome (Spinosa et al 1997). Entrepreneurial innovation does not necessarily solve a problem that people have or enhance

efficiency or current routines. Entrepreneurial innovation is about shifting the ground on what the market is about, changing relevant questions is and disclosing new ways of living in the world:

‘..an entrepreneurial enterprise grows at first not to produce and market an already understood widget but to aid the development of the market for an intuition of a new conception.’ (Spinosa et al 1997).

This is a stark contrast with notions of innovation for efficiency in delivering incremental improvements into well-specified and stable markets. The enterprise and its *style* or set of values and approaches ‘harmoniously manifests the embodiment’ (Spinosa et al 1997 p50) of the innovation. These notions of entrepreneurial innovation and successful enterprise can be seen in the rise of Tesla Inc.

A comparison table illustrates epistemic distinctions between the perspectives of organizations as *Efficiency Engine* versus *Entrepreneurial Innovation* (Table 1).

Dimensions	Organisation as Efficiency Engine	Organisation as Entrepreneurial Innovator	Reference
Business strategy/ domains of investigation <i>(considered candidates for generating new knowledge)</i>	Known domain, largely improving existing systems, driven by technology-developments, focus on delivering productivity and efficiency	Driven by mega trends- from here identifies industry trends. For example: Tesla’s innovations in worldwide sustainable transport	Fayard et al 2016, Govindarajan and Trimble 2010, Katsiki 2016
Onto-epistemological beliefs <i>(taken-for-granted assumptions about what the world is like)</i>	<i>The World:</i> Structured, disciplined, and stable, growth is largely the result of increases in productivity and efficiency	Pioneering world view and sensitive to disharmonies and anomalies, innovation as a state of mind For example: Tesla leading cultural innovation in mainstreaming electric vehicles	Fayard et al 2016, Govindarajan and Trimble 2010, Spinosa et al 1997
Innovation focus	Incremental and exploitative, core business and process matters, continuous process improvement, use of existing platforms and familiar initiatives	Radical, explorative, wicked problems, discovery process. For example: novel clean-energy solutions through Gigafactory and digital supply chains	Govindarajan and Trimble 2010, Katsiki 2016
Consideration of routines and practices	Routines are convergent, repetitive, represent organisational memory,	Divergent; routines as agents of change	Fayard et al 2016, Feldman and Pentland 2003
Learning	Learning based on current tried and tested solutions, refines existing knowledge	Learning builds new knowledge; exploratory approach: ‘Figure things out as you go along’. -standing industry	Gupta et al 2006, Vance 2015, p.155
Evaluating mode- <i>(how propositions and evidence are judged and expressed)</i>	Apply existing solutions, sceptical to certain types of epistemic proposition	Open to ambiguity; change	Fayard et al 2016, Sarasvathy and Dew, 2005
Reasoning style- <i>(how one thinks and reasons)</i>	Functions-based, approach to refining already tested solutions	Redefining and reconceptualising problems, visionary	Fayard et al 2016, Spinosa et al 1997

Table 1. Contrast Framework: comparison of epistemic stance (adapted from Fayard et al 2016)

The scale and reach of digital technologies is providing both opportunity and challenge to well-established organisations. The rapidly changing landscape is also placing new pressures on companies to become increasingly innovative. It is shifting the focus from operations innovation to market and business models. This brings into question the relevance of an efficiency-centric focus of some innovation efforts by established organisations.

We have looked at routines, practices and the underlying epistemic stance to articulate how they influence and at times limit organisations and their capacity to undertake entrepreneurial innovation. A view of Tesla illustrates that an entrepreneurial innovation epistemic stance provides a mode of evaluating problems and solutions in an alternative format to the establishment of innovation centres as the core of innovation ventures. It is through enactment of its practices, routines and culture that it can alternatively provide the tools to enable a corporation to radically innovate and capitalise on the changing landscape.

Through a case example we provide an illustration of a culture with a differentiated stance on knowledge which encourages awareness of disharmonies, which not only enables but provides a powerful alternative to the segregated cultures that many corporate innovation vehicles instantiate. As illustrated, Tesla has a distinctive approach to the pursuit of knowledge: identified through its stance on new knowledge generation (demonstrated through adoption of mega-trends as the basis for identification of industry trends for domains for investigation), through to the evaluation of new knowledge (demonstrated through openness to new ideas such as challenging the popular belief about the efficacy of mainstreaming electric vehicles). The efficiency engine's blindness to these disharmonies creates a self-reinforcing circle of efficiency-focus, systems and reward structures, which support incremental efficiency-centric innovation rather than market or society-focussed, entrepreneurial innovation. Incremental innovation falls short in addressing the significant challenges faced by organisations and society. By taking a broader view of knowledge and innovation and radically reimagining the worlds that are disclosed, the organisation may be able to initiate necessary change.

References

- Amabile T.M. 1988, 'A model of creativity and innovation in organizations', *Research in Organizational Behavior*, vol.10, pp.123-167.
- Andriopoulos C. and Lewis M. 2009, 'Exploitation-exploration tensions and organisational ambidexterity: managing paradoxes of innovation', *Organization Science*, vol.20, no.4, pp.696-717
- Atuahene-Gima K. 2005, 'Resolving the innovation-rigidity paradox in new product innovation', *Journal of Marketing*, vol.69, October 2005, pp.61-83
- Autio E., Kenney M., Mustar P., Siegel D. and Wright M. 2014, 'Entrepreneurial innovation-the importance of context', *Research Policy* vol.43, 2014, <http://dx.doi.org/10.1016/j.respol.2014.01.015>
- Beniger J. 2009, *The control revolution-technological and economic origins of the information-society*, Harvard University Press.
- Bessen J. 2014, 'History backs up Tesla's patent-sharing', *HBR online*, 14 June 2014, <https://hbr.org/2014/06/history-backs-up-teslas-patent-sharing>
- Blank S. 2014, 'Why companies are not start-ups', retrieved from <https://steveblank.com/2014/03/04/why-companies-are-not-startups/>
- Boland R.J., Lyytinen K. and Yoo Y., 2007, 'Wakes of innovation in project networks-case of digital 3-D representations in architecture, engineering, and construction', *Organization Science*, vol.18 no.4, pp.631-647, doi10.1287/orsc.1070.0304.
- Capgemini Consulting 2015, 'The innovation game: why and how businesses are investing in innovation centers' July 2015, <https://www.capgemini-consulting.com/the-innovation-game>
- Crossan M.M. and Apaydin M. 2010, 'A multi-dimensional framework of organizational innovation-a systematic review of literature', *Journal of Management Studies*, vol.47, pp.1154-1191. doi:10.1111/j.1467-6486.2009.00880.x.

- Fayard A.L., Gkeredakis E. and Levina N. 2016, 'Framing innovation opportunities while staying committed to an organizational epistemic-stance', *Information Systems Research*, vol.27 no.2, pp.302-323, <http://dx.doi.org/10.1287/isre.2016.0623>.
- Feldman M.S. and Pentland B.T. 2003, 'Reconceptualising organisational routines as a source of flexibility and change', *Administrative Science Quarterly*, vol.48, 2003, pp.94-118
- Francis D. and Bessant J. 2005, 'Targeting innovation and implications for capability development', *Technovation*, vol.25.no.3, pp.171-183, doi:10.1016/j.technovation.2004.03.004.
- Godin B. 2008, 'Innovation-history of a category', *Project on the Intellectual History of Innovation*, Working-paper no.1.
- Godin B. 2014, 'The vocabulary of innovation-a lexicon', *Project on the Intellectual History of Innovation*, Working-paper no.20.
- Godin B. 2015, 'Innovation-a conceptual history of an anonymous concept', *Project on the Intellectual History of Innovation*, Working-paper no.21.
- Govindarajan V. and Trimble C. 2010, *The other side of innovation-solving the execution-challenge*, HBR, Boston.
- Gray B. and Biber D. 2012, 'Current conceptions of stance', in *Stance and voice in written academic genres*, pp.15-33, Palgrave-Macmillan-UK.
- Hafermalz E. and Hovorka D.S. 2016, 'Where the wild things are-the ecological paradox of "innovation labs"', *8th International Symposium on Process Organization Studies*, 18 June 2016.
- Hanley S. 2016, 'Tesla spends just-\$6-per-car in advertising', *Telarati*, 09 July 2016, <http://www.teslarati.com/tesla-spends-just-6-per-car-advertising/>
- Hartmann P. 2014, *New business creation-systems for institutionalized radical innovation-management*, Springer, Berlin, doi:10.1007/978-3-658-06047-3.
- Heisler Y. 2016, 'Tesla's Model-3 is officially sold-out through mid-2018', *BGR*, 18 October 2016, <http://bgr.com/2016/10/18/tesla-model-3-reservations-delivery-mid-2018/>
- Jaffe A. 2009, *Stance-sociolinguistic perspectives*, Oxford University Press, New York.
- Jarzabkowski P. 2004, 'Strategy as practice: recursiveness, adaptation and practices-in-use', *Organization Studies*, vol.25, no.4, pp.529-560.
- Johannessen J.A, Skaalsvik H, and Kybernetes H. 2015, 'The development of innovation in organisations-the role of creative-energy fields', *Kybernetes*, vol.44 no.1, pp.89-106.
- Kanter R.M. 2006, 'Innovation-the classic traps', *HBR*, vol. 84 no. 11, pp.72-83.
- McKinsey 2017, 'The global-forces inspiring new-narrative', retrieved from <http://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/the-global-forces-inspiring-a-new-narrative-of-progress>
- Musk E. 2014, 'All our patents belong to you', Tesla website, <https://www.tesla.com/blog/all-our-patent-are-belong-you>
- Nanterme P. 2016, 'Digital disruption has only just begun', World-Economic-Forum <https://www.weforum.org/agenda/2016/01/digital-disruption-has-only-just-begun/>
- Ng E. and Wong M. 2010, 'Chevrolet-Volt shorting-out GMs recovery', *Ivey Business Review*, 14 December 2010, <http://iveybusinessreview.ca/cms/795/chevrolet-volt-shorting-out-gms-recovery-strategy/>
- Nicolini D. 2012, *Practice theory, work, and organization-an introduction*, Oxford University Press.
- Ohnsman A. 2016, 'Tesla buying Germany's Grohmann-Engineering', *Forbes*, 08 November 2016, <https://www.forbes.com/sites/alanohnsman/2016/11/08/tesla-buying-germanys-grohmann-engineering-to-automate-accelerate-production/#4d098b4a3354>
- O'Marah K. 2016, 'Tesla and the 21st Century supply chain' *Forbes*, 07 April 2016, <https://www.forbes.com/sites/kevinomarah/2016/04/07/tesla-and-the-21st-century-supply-chain/2/#20e56d4f62ab>

- Reimer K. and Johnston R.B. 2016, 'What makes technologies disruptive? A strong process view', *8th International Symposium on Process Organization*, Corfu, Greece, 18th June 2016
- Reuters, 2017, 'Tesla overtakes-GM as America's most valuable-automaker', *Fortune*, April 10 2017, <http://fortune.com/2017/04/10/tesla-gm-market-value-stock/>
- Rowbottom D.P. and Bueno O. 2011, 'How to change it-modes of engagement-rationality, and stance voluntarism', *Synthese*, vol.178, no.1, pp.7-17, doi:10.1007/s11229-009-9521-0.
- Sarasvathy S.D. and Dew N. 2005, 'New market-creation through transformation', *Journal of Evolutionary Economics*, vol.15, no.5, pp.533-565, Springer-Verlag 2005, doi: 10.1007/s00191-005-0264-x.
- Schramm L. L. 2017, *Innovation technology-a dictionary*, Walter de Gruyter.
- Schwab K. 2017, *The fourth industrial revolution*, Crown Publishing, New York.
- Spinosa C., Flores F. and Dreyfus H.L. 1997, *Disclosing new worlds-entrepreneurship, democratic action, and the cultivation of solidarity*, MIT Press.
- Tesla Team 2017, 'The next-step-in-energy-storage-aggregation', *Tesla website*, 12-May 2017, <https://www.tesla.com/blog/next-step-in-energy-storage-aggregation>
- Tushman M.L. 1997, 'Winning through innovation', *Strategy & Leadership*, vol.25, no.4, pp.14-19, doi:10.1108/eb054591.
- Vance A. 2017, *Elon Musk, Tesla, SpaceX and the quest for a fantastic future*, Harper Collins, New York.
- Yoo Y., Boland Jr R.J., Lyytinen K. and Majchrzak A. 2012, 'Organizing for innovation in the digitized world', *Organization Science*, vol.23,no.5, pp.1398-1408, <http://dx.doi.org/10.1287/orsc.1120.0771>
- Yoo Y., Henfridsson O. and Lyytinen K. 2010, 'Research commentary—the new organizing logic of digital innovation-an agenda for information systems research', *Information Systems Research*, vol.21,no.4, pp.724-735, doi:10.1287.
- Zittrai J.L. 2006, 'The generative internet', *Harvard Law Review*, pp.1974-2040, doi:10.1145/1435417.1435426.

Copyright

Copyright: © 2017 Bowman and Hovorka. This is an open-access article distributed under the terms of the [Creative Commons Attribution-NonCommercial 3.0 Australia License](https://creativecommons.org/licenses/by-nc/3.0/australia/), which permits non-commercial use, distribution, and reproduction in any medium, provided the original author and ACIS are credited.