Innovation Comes of Age

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Abstract

Innovation is frequently advocated as the premier pathway for progress. However, it is not the only tactic available. Agility is also a significant driver of organisational change. This paper investigates two cases to examine how action was taken to mitigate the consequences of the coronavirus pandemic in the UK. One pressing need was to construct a specialist emergency hospital and another to develop an effective vaccine for Covid 19. The relative significance of innovation and agility varied greatly but, in both cases, there was a beneficial symbiotic relationship between these intertwined practices of action.

It can be concluded that innovation alone could neither have delivered the emergency hospital nor could it have provided an effective vaccine. The story ends with a hope that agility and innovation will recognise that they can be like partners in a good marriage, with each gaining from the other's distinctive capabilities. By recognising its true strengths, interdependencies and limitations, we can conclude that 'innovation has come of age'.

Key Words

Agility; Innovation; Coronavirus Pandemic; Nightingale Hospital; Vaccine Development; Concept Maturity; Symbiotic Relationship

ARTICLE

Innovation is celebrating a special year. In 2020 it became, metaphorically, an adult. No longer was there an adolescent bravado when innovation saw itself as the sole pathway for progress. Rather innovation recognised that it was sometimes a contributor rather than the heroic change leader. Perhaps oddly, innovation became stronger, as it became, in effect, 'married'.

Who was innovation's partner? It was agility. Their 'marriage' can be said to have been made early in 2020, during a time of crisis, as it became clear that the Coronavirus pandemic could destroy much of the fabric of society. Governments across the world adopted a war-

time modus operandi to strive to mitigate the worst effects of an insidious invasion by a cunning enemy. Many streams of action were initiated and, as they were implemented, it so happened that innovation and agility discovered that they were stronger together than either could be apart.

This paper adopts a somewhat unconventional view of the constructs of Innovation and Agility. We will consider each to be a 'social fact' (Durkheim, 1982) or, to use a more current term, a configuration of memes that Schlaile et al (2019, p. 1) describe as being elements "of a culture or system of behaviour passed from one individual to another by imitation or other non-genetic means". Configurations of memes possess social agency (Heylighen and Chielens, 2008) and shape how people with power in institutions or enterprises think and act. Memes evolve into paradigms (Kuhn, 1996) that provide definitions of desirable and undesirable ends and means. These shape managerial theories of change, have quasi-organic qualities (Huaxia, 2007) and are capable of evolution.

Innovation and Agility are paradigms that are prized by governments, institutions and/or enterprises as they function as meta-level change instruments that are driven by a common intent (to facilitate beneficial development) but they are different *practices of action*. What is the essence of the difference? It is clarified by an example. Imagine that thousands of new medical ventilators are needed urgently for patients with respiratory illnesses. 'Agility' would provide direction and ample resources, motivate enterprises to engage in design and manufacture and reward those that produced effective products. 'Innovation' would pull together top scientists and engineers, establish a development centre and use skunk-works methods to create new designs and state-of-the-art manufacturing processes. What do learn from this comparison? It is that the Agility's modality is 'do whatever it takes to get things done' and Innovation's modality is 'do the work to create something new and valuable'. Briefly, agility's essence is 'prudent opportunism' and innovation's essence is 'beneficial novelty'.

The Iacocca Report
Agility and innovation could have tied the knot in the early 1990s. This was a time when America's leaders were deeply engaged in a desperate search to reimagine their country's industrial future. It had become apparent that manufacturing in Asian countries was, to be honest, superior to American enterprises on almost every dimension. America's industry was in rapid decline and something big needed to be done. A government-funded, but industry-led, think-tank organisation was created and located in the Iacocca Institute in Bethlehem, Pennsylvania (Dove, 1992). It happened that Bethlehem was the best possible backdrop for a huge effort to reset America's industrial trajectory, as the city had been one of the world's great steel making centres but was now scarred by rusting and silent furnaces and acres of decaying machinery (Carolan, 2017). High-powered working groups, with top managers from America's industrial giants, took about six months to prepare a report that

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provided their remedy for addressing the woes of the West. Their key recommendation was that American manufacturers needed to adopt wholeheartedly the Agile Paradigm that Dove (1992, p. 2) defined as "that characteristic which allows an organization to thrive in an environment of constant and unpredictable change". The think-tank's final report asserted that (Nagel and Dove, 1991, p. 7) "The agile enterprise is the natural next development of industry". But innovation was not forgotten. The same report stated that: "in the agile manufacturing era, constant innovation in the creation and evolution of products and services, and in the improvement of manufacturing processes, is synonymous with competitive advantage" (p. 10).

Innovation became the Star: Agility lost its way
It seemed that those in the Iacocca thinktank had recognised that agility and innovation needed to act as symbiotic partners in progress but, as time went by, the relationship between these two constructs failed to flourish. In later decades, Innovation rose to become a star and Agility lost its way and became something of a sideshow, as is demonstrated by the discrepancy in the numbers of relevant academic citations (in 2015 'Innovation' had approximately 1.1 million citations and Agility had just 6,770 in Google Scholar). Why did innovation and agility fail to recognise their shared destiny? There are at least two significant reasons.

First, they came from different worlds. Innovation gained strength from the magic of imagineering melded with the questing rigour of science and the disciplined orientation of engineering (Brown and Martin, 2015). Agility drew from a Schumpeterian heritage, as it embraced the wiliness of a hunter, the action orientation of a (good) politician, the pragmatism of an army commander and the unreasonable dedication of a serial entrepreneur (Tahmasebifard, Zangoueinezhad and Jafari, 2017). To use analogy drawn from gestalt psychology (Gundlach, 2020), innovation is a figure (element) that structures focused endeavours to find new answers, thereby changing the game: agility is the ground (context) and strives to create, capture and exploit multiple opportunities by mobilising and reconfiguring resources effectively on an as-needed basis.

Second, if agility had a life force, we could say that it had acquired a personality disorder, as its identity had become conflicted and confused. The Iacocca Report, described above, was unequivocal in its view that the solution to America's industrial decline was to reconfigure industry in the USA so that it would be capable of delivering timely and highly customised products, that met customers' unique needs better than rivals. In the years that followed, this assertion proved to be incorrect, as leading manufacturing countries adopted the same stratagem. As a result, the value of the Iacocca Report became tarnished, thereby diminishing the integrity of the construct of agility. Another event further blurred the construct. In 2001, a group of friends gathered in a lodge in Utah to enjoy skiing and discuss organisational solutions to the problem-ridden process of developing large software

solutions. Collectively they produced a brilliant set of guidelines that advocated a radically different managerial approach that they called the Manifesto for Agile Software Development (Highsmith, 2001). This approach, often described as Scrum, is used so extensively today that, for many, it is the Agile Paradigm incarnate. The confusion between earlier definitions and Scrum, as well as multiple variations in the use of the construct, meant that no one could be sure what 'organisational agility' actually meant (paconsulting.com, 2019).

Agility was reinvented by Practitioners

Fortunately for agility, some outstanding leaders reconceptualised the Agile Paradigm, and implemented it, with spectacular success. They saw agility as providing route maps to enable an organisation to become situationally responsive, prudently opportunistic, threat resilient and future ready (Francis, 2020). Examples included the New York Police Department that was seemingly powerless against an ever-rising tide of crime but was rendered effective by adopting agility as a core operating principle, resulting in crime-rates dropping dramatically (Bratton, 1995). The woes of the once mighty IBM, that seemed headed for bankruptcy in the 1990s, were transformed when it was restructured around agile principles (Gerstner Jr., 2002). Increasingly dominant 21st century enterprises, like Google, Microsoft, Amazon and Spotify, won races to monetise digital opportunities and all were thought-leaders doing something that many considered impossible: they created vast and inherently agile commercial organisations (Rao and Purkayastha, 2014). Despite such persuasive case examples, and the development of agile management processes like the Lean Startup (Blank, 2013), a McKinsey & Company survey (2017, p. 1) found that the construct of organisational agility was "elusive for many". It seemed that managers had recognised that their organisations needed to be capable of exploiting agility for advantage but were unsure how to turn this insight into action.

From Strength to Strength

Innovation was far more successful. Economic analyses, such as that by the distinguished economist William Baumol (2002, p. 13), had concluded that "virtually all of the economic growth that has occurred since the 18th century is ultimately attributable to innovation". Many governments, institutions and commercial companies sought to harness the power of innovation to create wealth and facilitate other forms of progress, such as environmental improvement. In the 21st century innovation became widely seen as *the* premier instrument for creating, capturing and exploiting novel products, processes, positions and paradigms (Francis and Bessant, 2005) that could create value faster than adding cost. For example, the European Union committed very substantial funds for innovation (the Horizon 2020 programme alone spent approximately €75 billion) (Gouardères, 2020); South Korea adopted a policy that defines "research and innovation as the driver of national economic and social advance" (Dayton, 2020, p. S55) and New Zealand has "set an ambitious vision:

by 2027, New Zealand will be a global innovation hub" (*New Zealand's Research, Science and Innovation Strategy: Draft for Consultation*, 2019, p. 6).

Interdependent Constructs

How did agility and innovation finally come together in 2020? It was because they had to work hand-in-hand to fight Coronavirus. Their union was forged in the UK, as dire warnings predicted more than a million premature deaths, with ice-rinks being commandeered as temporary mortuaries. Many initiatives took place and we will briefly examine just two. First, the development of a new emergency hospital in London (named after the pioneering nurse, Florence Nightingale) and, second, the race to produce an effective vaccine to protect populations against Covid 19.

The Nightingale Hospital

 In March 2020 it was decided that an emergency hospital was needed in London, as it had been predicted that the existing hospitals could be overwhelmed by the numbers of seriously ill patients with Covid 19. This decision had a precedent. Some years earlier, during a SARS epidemic, the Chinese authorities had built the entirely new Xiaotangshan Hospital in Beijing to accommodate patients showing symptoms. It was reportedly constructed in seven days, with X-ray and CT rooms, an intensive-care unit and a clinical laboratory. About 4,000 people built this 1,000-bed hospital, working day and night. The instruction from the top was: 'get it done fast, no matter what it costs!' (Zhao-hong, 2003).

London's new Nightingale Hospital was to be housed in the Excel Centre, an existing convention venue in East London. Many actions were implemented within days of the government decision to go ahead: the Excel Centre was leased, funds were allocated, specialist architects told to design a new 4000 bed hospital, military planners tasked to act as project integrators, construction companies with proven competences were hired and hundreds of specialist workers were recruited. This required multiple rapid, decisive, integrated, funded and aligned actions that worked to fulfil a design brief that (BDP, 2020, p. 3) would "repurpose, with minimal new construction techniques, an exhibition centre into a hospital". Notice that '*minimal new* construction techniques' were specified. It was considered that there would not be time to embark on innovation initiatives. Those defining how the constructors of the Nightingale Hospital should operate had taken a decision similar to that already adopted by NASA, which was to strive to avoid undertaking any innovative endeavours during an actual space mission (Fong, 2020), although, of course, innovation was greatly prized in earlier developmental processes.

The Cfes construction company had been selected as a principal contractor in the Nightingale Hospital project. Rob Doubtfire, Managing Director of Cfes, described the hectic pace of being a key actor in this agility-orientated endeavour (CFES, 2020). Doubtfire received a phone call on Friday evening the 20th March and he attended a briefing at Excel

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Centre the next day. One day later, on Sunday, Cfes designers gathered to plan the transformation of the conference centre into specialist hospital and employees started work, on site, on the next day. From then on teams from the UK's National Health Service (NHS), the military, specialist architects and many subcontractors worked 16 to 18-hour shifts for nine days until the new hospital was ready to be handed over. In addition, one of London's entertainment venues (the O2 arena) was converted into a temporary training centre to prepare hundreds of people to work in this new environment (Rogers, 2020).

Within this great agile endeavour there were pockets of 'do better', rather than 'do different', innovation (Francis and Bessant, 2005). For example, it was observed that (Bushell, Thomas and Combes, 2020, p. 2) the "education programme continually evolved and adapted to the clinical need and… responded to ideas and feedback. This fostered an exciting, fast-paced, rapidly evolving and responsive environment facilitated by daily interprofessional huddles across all sites". But agility, not innovation, was the dominant modality of action. Key factors included: there was a resolute political will to get this done; millions of £s were made available; the military provided the organisational expertise to coordinate this complex and urgent project, only experienced professionals were hired, total dedication was expected, workers were empowered, innovation was only sanctioned if existing capabilities were unavailable and there was a 'wartime spirit'. The conclusion? it was agility that got the job done, not innovation.

Creating a Vaccine
Although emergency hospitals provide an essential resource, they only mitigate the effects of a virus pandemic. An effective solution is a safe and effective vaccine and, when faced with a pandemic, the time taken to develop one is of the essence. Conventionally, pharmaceutical development uses highly structured innovation management processes and new drugs or vaccines can be in discovery or development for up to a decade before they are ready to be licenced as medicines. For a Covid 19 vaccine multiple steps were taken to condense the development cycle time dramatically. An early (agile) step in the UK was to establish the Government's Vaccine Taskforce, which was announced on the 17th April (HM Government, 2020, p. 1), with the mission to "drive forward, expedite and co-ordinate efforts to research and then produce a coronavirus vaccine and make sure one is made available to the public as quickly as possible". This well-funded taskforce accelerated, resourced and integrated an innovation strategy that can be described as 'backing many horses in the race'. Multiple forms of innovation were needed in processes, scientific discovery routines, intergroup-cooperation, trials management practices and preparation for constructing or upscaling vast, and largely robotic, production facilities. These required 'do different' and 'do better' innovation in product, process, positioning and paradigm (Francis and Bessant, 2005). Thanh et al (2020, p. 305) provided deep insight into the scientific and technological innovation challenges of this work programme when they observed that: "A striking feature of the vaccine development landscape for COVID-19 is the

range of technology platforms being evaluated, including nucleic acid (DNA and RNA), virus-like particle, peptide, viral vector (replicating and non-replicating), recombinant protein, live attenuated virus and inactivated virus approaches… Many of these platforms are not currently the basis for licensed vaccines, but experience in fields such as oncology is encouraging developers to exploit the opportunities that next-generation approaches offer for increased speed of development and manufacture". We can conclude that the role of agility in the Covid 19 vaccine development process was mission-critical but, fundamentally, it was facilitative of innovation. If innovation was a bit-part player in the construction of the Nightingale Hospital then it was the star of the show as novel vaccines were being conceptualised, developed, tested and, if found to be safe and efficacious, they would be upscaled and made available to billions of people.

Agility and Innovation: A Far-From-Easy Symbiotic Relationship
Francis (2020, pp. 20–21) summarised the essence of the symbiotic relationship this way: "Agility and innovation have a close, but complex relationship, rather like that sometimes seen between brother and sister… Is there a difference between agility and innovation? The answer is 'yes', as the nature of work, the driving force and the associated risk profiles, are different for each… Agility and innovation have different clock-speeds. Innovation requires finding and exploiting new ideas and is frequently time-consuming, uncertain, expensive and difficult… Agility has a rapid heartbeat. It is rapid, lean and acquisitive… Why is the relationship between agility and innovation complex? Many organisations, like the ancient Roman God Janus, must face two ways and be both agile and innovative".

A review (Triggle, Schraer and Kemp, 2020) of the competence of early initiatives in the UK to mitigate the effects of the pandemic revealed an undesirable truth. That is easy to become dysfunctionally agile and that a functional symbiotic relationship is hard to achieve, or to maintain. Triggle et al provide a historical description of an initiative that provides fruitful, if painful, lessons. Early in the pandemic the UK government invested in a programme to test people to find whether they had been infected by the Covid 19 virus, then trace others who had been in contact and, lastly, initiate actions to require potentially infected people be isolated. This became known as 'Test and Trace' but was described in November 2020, as "a system performing worst in the areas where it is needed the most and still struggling with the legacy of decisions that were made at the outset" (p.1). Triggle et al found that an early meeting, in March 2020, had been highly significant in shaping how the national Test and Trace organisation was to be designed. At this meeting "no representatives speaking for the existing NHS labs sector were involved" and "very quickly the direction of travel became clear - the government turned to its commercial partners to set up large, centralised labs that sat outside any existing healthcare or research structures" (p. 2). This decision was a 'do-different' organisational innovation (Arranz *et al.*, 2019) as there were no comparable examples in the UK of a novel public health nation-wide system of this complexity being attempted previously.

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It is important to note that the UK had proven capacity to deal with infectious illnesses that had developing since the early 19th century (Gorsky, Lock and Hogarth, 2014). Those taking key decisions about how to structure the UK's Test and Trace organisation had a choice to make. They could either establish a novel national and technologically-enabled system, somewhat similar to Apple's customer service infrastructure, or provide additional resources that would enable hundreds of local public health teams to take responsibility for city-by-city Track and Trace (a 'do better' innovation). They choose the centralised organisational model, believing that it could be driven ahead rapidly by using recently developed big-data, and related, analytical capabilities. It is easy, with the benefit of hindsight, to criticise this decision but the importance of the Track and Trace system was so great that it is understandable that decision-makers in government could be persuaded that newly available technological solutions would be superior to earlier infection control processes and the record of the NHS in managing large-scale digital projects was patchy at best, with Asthana, Jones and Sheaff (2019, p. 1) having noted that "the fragmentation of the NHS is the most significant factor limiting adoption and diffusion (of e-health innovations)".

In the event, the selected centralised organisation model for Track and Trace proved to be dysfunctional and, some months later, local teams were increasingly being empowered to implement local systems. What can we learn about the relationship between agility and innovation from this experience? It is that agility requires that key people must take decisions about issues that they may not understand in depth, can receive contradictory advice about what should be done, and decisions made often have difficult to reverse consequences. This is especially true when decisions need to be taken as to what innovation initiatives should be commissioned, especially those that are 'do-different' as these innovations contain, by definition, uncertainties. Francis (2020, p. 21) put it this way: "It is necessary to be prudent as well as quick. Some decisions will have big consequences. Managers in requisitely agile organisations know that big bets need to be based on the best possible analysis. The founder of Amazon, Jeff Bezos, once described himself as the 'chief slowdown officer' as he knew that sometimes it is more important to be right than fast (Denning, 2018)". We can expect that some people in key decision-making roles will be unprepared to operate effectively in volatile and demanding environments, partly because agile leadership and management is relatively under-researched, underdeveloped conceptually, not taught comprehensively and effective processes for agility-orientated organisation development are only just being developed.

Although there is much to be done from an academic and educational perspective to explore organisational agility in greater depth, especially its relationship with innovation, those involved in decision-making during the pandemic could not wait. They found that

agility and innovation are inextricably intertwined and, like partners in a good marriage, they gain from the other's distinctive capabilities.

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