Article

Why understanding national culture is necessary in order to understand innovation performance

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New Zealanders (Kiwis) appear to be highly inventive, operate within sound institutional arrangements (McCann 2009) and best practice policy settings (OECD 2003). We work amongst the longest hours in the developed world, have the number one 'entrepreneurial framework' (World Bank 2013), and have an environment almost free of corruption and with low bureaucratic barriers (Schwab 2013). Despite that apparent ideal, New Zealand's GDP per capita has declined from 130% of OECD average to 80% in the past 70 years (Figure 1) and, on a longer time frame, from number one in the world in circa 1900 to 32nd (IMF 2011).

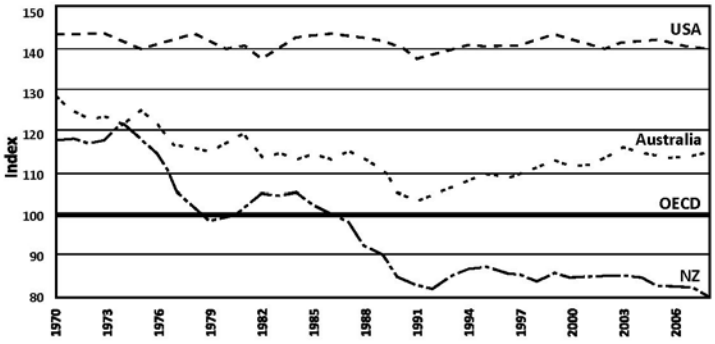

Figure 1. New Zealand economic performance compared to Australia, USA and OECD average 1970 to 2009, based on relative levels of GDP per capita .

There are significant correlations between economic development as measured by GDP per capita and innovative activity (Hull, 2003; Pohlmann, 2005; Lundvall, 2006). NESTA (2007) suggests that the only true indicator of the performance of a national innovation system is the wealth created. On that basis, it is reasonable to conclude that, despite a variety of positive deconstructed indicators, the performance of New Zealand's national innovation system is, as a whole, poor. If, as Kiwis believe, New Zealand is a highly innovative country, then all things being equal, New Zealand should be very prosperous. That it is not defies ready explanation.

Economists refer to the 'New Zealand paradox'. Forward or leading indicators (those that suggest what should happen) consistently rank New Zealand well for innovativeness and entrepreneurship, and always ahead of Australia (e.g. World Bank 2012). Yet following indicators – those that show what did happen – economic or social – generally rate us very poorly indeed (e.g. New Zealand Institute 2011). Our science outputs skew to global good (*see* Figure 2). We spend less on research, science and technology, for example, than most of the nations that we compare ourselves with. Yet we publish science at twice the OECD average, but patents at one-quarter the OECD rate. For whatever reason, the net effect is that we do not generate the yield from our investments in innovation that we should. The former Ministry of Economic Development (MED 2007) once described this as a 'wedge' or 'barrier' that impedes accumulation of capital, resulting in most EU countries better capturing innovation benefits than does New Zealand.

Our competitive profile is generally in line with the peer countries that are outperforming us (Schwab 2013). It is reasonable to conclude, therefore, that these usual measures of economic performance, including innovation, in isolation or collectively provide at best a partial explanation of our mediocre performance, as do such analyses as economic geography (e.g. McCann 2009).

The performance of the New Zealand National Innovation System's construct and performance has been subject to rigorous analysis, largely from a macro-economic perspective with a particular focus on institutional arrangements (e.g. Smith 2006, New Zealand Treasury 2010) and an economic geography angle (e.g. McCann 2009, Hendy & Sissons 2011). There is no suggestion that this macroeconomic analysis is wrong, but it is incomplete. It will not resolve the paradox. Accepting that analysis, this paper is limited, in the interests of brevity, to a largely overlooked perspective, the impact of national culture and the resultant mental models on innovation outcomes.

I will deviate here to consider some definitions. Despite falling into two reasonably distinct schools (economics and sociology), definition of innovation remains ambiguous, even within and across the same school (INNOCULT 2006), and key

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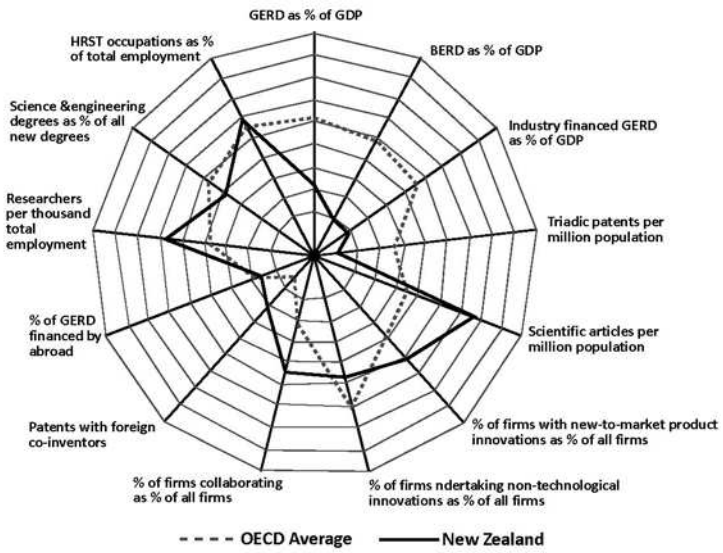

Figure 2: Innovation Indicators for New Zealand compared withthe OECD average, 2010. (Source: OECD Science, Technology and Industry Outlook 2010.

words are variable and always problematic (Gartner 1985). Definitions vary from Theodore Levitt's (1963) pragmatic *Creativity is thinking up new things. Innovation is doing new things.* to Cook & Memedovic's (2003: 4) comprehensive definition: ... *all activities of the process of technological change: problems of awareness and definition, the development of new ideas and new solutions for existing problems, the realization of new solutions and technological options, as well as the broader diffusion of new technologies.* There are of course numerous definitions, but this one makes particular sense to us.

Clearly, innovation is a much-misunderstood term and *invention*, *creativity*, *discovery*, and *innovation* are used interchangeably, even in the academic literature. That confuses the subject because they are not the same thing. Innovation is a broad concept and we prefer to use the term *innovation process*. It extends from idea generation right through to the end users' purchases and experiences. If innovation is to be measured by the wealth it creates (NESTA 2007), its boundaries must extend out to where that wealth is created and harvested, i.e. market entry and development. Market entry and development is entrepreneurship as defined by Lumpkin & Dess (1996: 136): '… new entry. New entry can be accomplished by entering new or established markets with new or existing goods or services.' This is in contrast to the more common but less useful definition of entrepreneurship, *new venture creation* (e.g. Drucker 1985; Baumol 2004; Frederick *et al*. 2007). The weakness of this definition is shown in New Zealand's start-up rate being reported as the second highest in the world, but for high growth business rankings it was 26th out of 36 countries surveyed in the GEM study (Frederick & Chittock 2006).

This all leads us to pose the question: *Is innovation part of entrepreneurship or is entrepreneurship part of innovation? Are they simply different words for the same thing? Is the often referred to entrepreneurial trait of innovativeness really inventiveness?* We think that it is. This might seem like pure semantics, but without some clarity around definitions, as so many of us have discovered, having a meaningful discussion on innovation and entrepreneurship is almost impossible.

Stages of the innovation process

As we seek clarity, it is extremely helpful to recognise that innovation is not a homogenous linear whole as much of the literature is inclined to imply. Failure to do so is unsustainable, according to Damanpour (1991), and, claim Nakata & Sivakumar (1996), explains much of the reported ambiguity when it comes to considering the impact of national culture.

The literature establishes as many as 13 stages of the innovation process but two in particular are of paramount importance in this discussion and definition – initiation and implementation. *Initiation* is the process of engaging in and supporting new ideas, novelty, experimentation, and creative processes that may result in new products, services or technological processes (after Lumpkin & Dess (1996:142). *Implementation* is the development, sale and adoption of those new products, services and processes to achieve entry to new or existing markets with new or existing products or services with the aim, in this context, of creating new value and wealth/prosperity.

Innovation is a psychological and social process

That economics is a social science is often forgotten. Even Adam Smith made his fortune as a 'moral philosopher' (proposing that concern for the welfare of others is inherent in human nature – a stark contrast to the current economics ideology of 'rational self-interest'), publishing the wildly popular *The Theory of Moral Sentiments* (1759). It was this that allowed him to popularise *An Inquiry into the Nature and Causes of the Wealth of Nations* (1776), usually abbreviated as *The Wealth of Nations.*

That *Creativity, innovation, and initiative are psychological processes* (Rank *et al*. (2004: 518) (and social processes) is even more frequently ignored in favour of a research, science and technology perspective. The innovation process is a function of how individuals and groups of people think (and behave) across the entire business process. It should therefore be analysed, planned and managed from a series of perspectives – science, management, marketing, behavioural economics, psychology, sociology (Razeghi 2008) and even anthropology. How the individuals within national groups function, and how they think and behave, has a material impact on innovation outcomes.

National culture

Culture refers to a learned, socially transmitted set of behavioural standards. It is held, expressed, and shared by individuals through their personal values, norms, activities, attitudes, cognitive processes, interpretation of symbols, feelings, ideas, reactions and morals (Morris *et al*. 1994:5). Culture is acquired and acts in a very specific way. It means that people from different cultures interpret and respond to the same information and/or environmental signals differently. There have been four major international studies that included New Zealand (Hofstede 2001; Javidan & House 2001; Schwartz 1999; Trompenaars & Hampden-Turner 1998). Each used different samples, methodologies and typologies and the research spanned forty years. Despite the potential variables, the findings and conclusions regarding New Zealand culture were, with the exception of one solitary 'dimension' (differences in male and female roles) remarkably consistent.

Given that the innovation process is a function of individual and group thinking, and given that the way in which people think and behave is a function of their national culture, any consideration of innovation and national innovation system performance is incomplete without a thorough consideration of the mental models attributable to practitioners' individual and collective national culture.

The impact of national culture on how individuals and groups think and behave is not trivial. *The culture a person grows up in strongly influences his or her brain wirings, or neural pathways, in the early years of life.* (Zaltman 2003). National culture is more important in forming the paradigms by which we process data, draw conclusions and decide upon our actions than age, race, gender, religion, education, or occupation (Trompenaars & Hampden-Turner 1998).

National culture functions by influencing the formation of mental models. *Mental models are deeply held internal images of how the world works, images that limit us to familiar ways of thinking and acting. Very often, we are not consciously aware of our mental models or the effects they have on our behaviour. The inertia of deeply entrenched mental models can overwhelm even the best systemic insights… We observe selectively. This is no less true for supposedly 'objective' observers such as scientists* (Senge 1990, emphasis added).

Correlations between national culture and innovation

There is a substantial literature providing correlations between various national culture 'dimensions' and either initiation or implementation and it is best summarised in Smale (2008). Figure 3 provides a demonstration of New Zealand's national culture dimension rankings shown as a compatibility score for both initiation and implementation. The plot is arranged in such a way that, for each dimension, the pole most favourable to initiation or implementation, respectively, is shown to the perimeter. Thus an ideal fit for either initiation or implementation would lie around the perimeter. This clearly demonstrates New Zealand culture's closer fit with the traits associated with initiation than implementation.

What that means for New Zealand

We have surrounded ourselves with innovation and entrepreneurship myths but *Our myths comfort but imprison us* (Callaghan 2009)**.** Kiwi culture is distinct – distinct in its own right and distinct from the national cultures that we often think we are similar to or the same as. This is important, as we behave according to our actual resident models as opposed to what we consciously think about ourselves. For example, we describe ourselves as 'straight shooting' yet in practice we are one of the least likely cultures on earth to give a direct answer. We have interviewed immigrants who found it so difficult to get a straight answer that they thought Kiwis were evasive and deceptive.

From an innovation and economic development perspective, national culture provides two utterly critical insights. First, the combination of our national cultural traits makes us much more predisposed towards the adventure and discovery of initiation than the detail and discipline of implementation (Smale 2008). That is, Kiwis err towards being initiators rather than implementors or, in more conventional terms, inventors rather than innovators or even entrepreneurs. Covin & Slevin's (e.g.

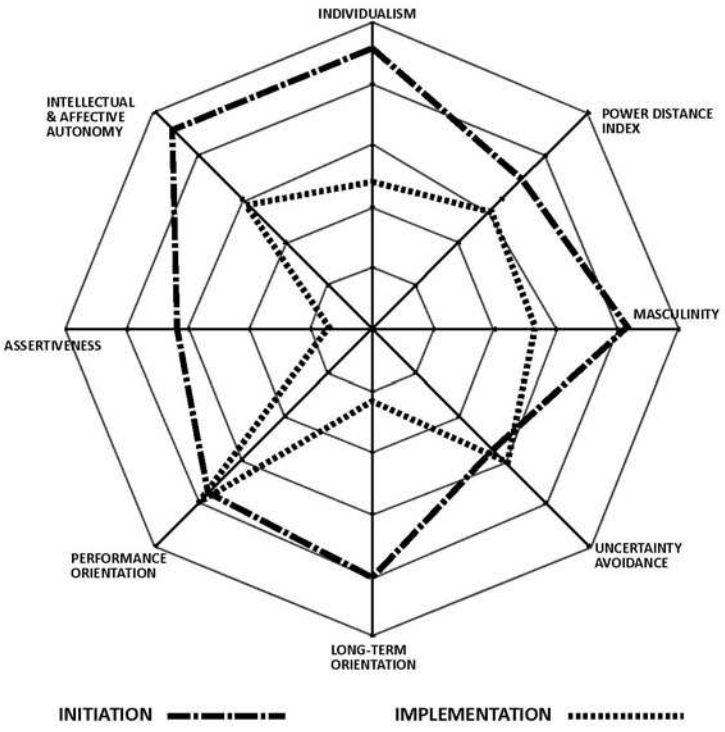

Figure 3. New Zealand cultural dimension ratings mapped against association with initiation and implementation.

1991), Lumpkin & Dess's (e.g. 1996) and Lee & Peterson's (2000) work on Entrepreneurial Orientation provides, in this context, one of the more useful frameworks, and Kiwis do not on average rate as having strong entrepreneurial orientation. Timmons & Spinelli's 2004 matrix (Figure 4) is perhaps even more illuminating, as it clearly categorises Kiwis as 'inventors' rather than 'entrepreneurs' (based on our poor management performance ratings, e.g. Green 2010, KEA 2010). Remember that entrepreneurship is the mechanism through which 'inventions' are converted into wealth and/or prosperity. That is a powerful clue and aligns with Hull's (2003) work for MED in which she concluded that *'New Zealand does not have an enterprise culture*.

Unfortunately, in an almost perfect storm, Kiwis are also satisficers, i.e. we set comparatively modest commercial goals and achieving them becomes a constraint rather than a minimum level of achievement. This was pointed out to us in the early 1990s as part of a study into New Zealand's competitiveness by a team including Professor Michael Porter (Crocombe *et al.*

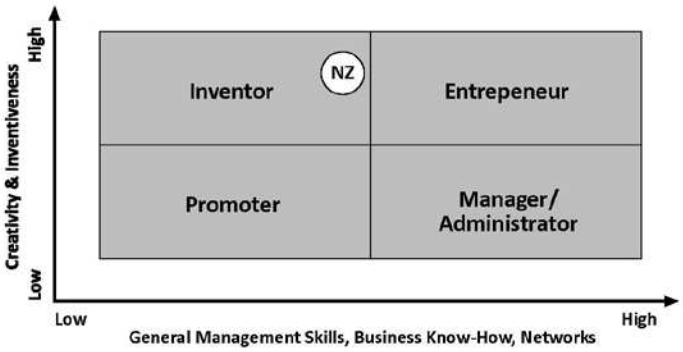

Figure 4. Entrepreneurial Orientation Matrix (Timmons & Spinelli 2004), locating New Zealand in the 'Inventor' rather than 'Entrepreneur' quadrant.

1991). That means that we set the threshold for what we consider to be sufficient effort directed towards a particular activity at a lower threshold than the people that we engage with expect (e.g. Boven & Smale 2010), that we are 'satiated' when we reach the threshold and switch our attention and effort into our next 'adventure'. This can be product quality, customisation, understanding other people's culture, conventions, engagement, or any manner of things. Of course it is not that we cannot do attention to detail and reach for and achieve high thresholds – we have many examples of doing so – it's just that we do not think it is as necessary as many of the people we aim to trade with do, or that it is not sufficiently exciting and adventurous to hold our attention.

As a people, Kiwis find this (and other economic topics such as productivity) extremely difficult to confront, not the least because of being amongst the most contented people in the world. Who wants to rock the boat when we are so happy? Ironically satisficers are likely to be happier than maximisers (Schwartz *et al*. 2002) because they set lower standards against which to judge their circumstances. (There is abundant evidence of our satisficing in the form of setting low aspirations: e.g. Dutta (2010) and KEA (2010) research: *By far, the biggest challenges to attracting investment to New Zealand businesses are the level of commercial skills and the perceived low-ambition culture of New Zealand entrepreneurs.*)

Distinction vitally important

It would be easy to dismiss what we have presented so far as semantics, but it is vital in our consideration of innovation for three key reasons:

1. Different resources, skills, cognition & behaviours and even 'eco-systems' are needed to optimise each of the stages. (e.g. Shane 1992; Jaumotte & Pain 2005; Pisano & Teece 2007).
2. There is no automatic progression from initiation (or creativity/invention) to implementation whereby that initiation turns into economic development or wealth creation, yet most of the literature focuses on fostering creativity and policy on driving invention. An implicit assumption is made that in a market economy, firms will, in some sort of equilibrium, maximise value created and captured from any given 'invention'. That is, an assumption is made that initiation will slide automatically on into implementation. Despite the appeal of the argument, for New Zealand, the market does not organise itself to optimise the conversion of our national inventiveness into profit, wealth and prosperity. That this does not happen, in New Zealand at least, and that we can attribute this in part to our preference for initiation rather than implementation is the key point of this paper. The implication of course is that we need to tackle the whole innovation process from a different perspective, one where there is a great deal more emphasis on ensuring that our undoubted capabilities in initiation are implemented and the created value captured by New Zealand rather than the global market place.
3. It is quite possible to be highly inventive and not turn that into profit, wealth and prosperity. For example, in the Industrial Revolution, most of the inventions occurred in France while the implementation and value appropriation occurred in the UK because of '*culture and attitudes'* and capital markets underpinned by the '*scientific spirit pervading the national culture'* (Freeman 2002:199).

Drawing on the social capital literature, I offer the following hypothesis. There are correlations between social capital and economic development (Woodhouse 2006). (This is probably the mechanism through which agglomeration works.) The literature further claims that moderate levels of both bonding and bridging capital produce superior economic development performance than exceptionally high levels of one or the other. In a similar curvilinear relationship, I hypothesise that a moderate level of inclination towards both initiation and implementation will produce superior performance compared to high levels of one or the other. I further hypothesise that initiation is substitutable, i.e. an economy with high implementation can prosper by acquiring its initiation from elsewhere (e.g. China), but implementation is not substitutable. A nation like New Zealand cannot prosper on high initiation alone. My case therefore is that as China's emphasis seems to currently be on building its initiative capacity, similarly New Zealand's focus needs to be on implementation, that is, building mechanisms to convert the initiation that we are without doubt good at, into positive economic and social outcomes (Figure 5).

The importance of cultural impacts

The effect of mindsets is utterly pervasive and universal and it is difficult to imagine any cognitive activity that is not affected by national culture (Trompenaars & Hampden-Turner 1998). No factor – be it distance from market, market size, availability of capital, transition from start-up to high growth, even agglomeration – is exempt from the impact of the population's mindsets. The materiality of the cultural impact is a question that we have often been confronted with. This paper makes clear that it is not only material but that proper understanding of the function of a national economy cannot be achieved without its consideration. I cite at some length below an important meta-study from the US National Bureau of Economic Research (NBER) 2012.

Referring to correlations with economic success, NBER (2012) says: *There is mounting evidence that much of the correlation operates through indirect mechanisms, i.e. through the historic effects of initial geographic conditions on the spatial distribution of human characteristics, such as institutions, human capital, social capital and cultural traits.* (p. 11, emphasis added). The paper goes on to say: *Recent work casts doubt on the view that national institutions are paramount* (p. 11), and: *Overall, their findings suggest that long-term features of populations, rather than institutions in isolation, play a central role in explaining comparative economic success.* I would not be quite so quick to dismiss the importance of institutions but suggest that we need to view institutions within which actors engage, create knowledge, exchange it and sometimes retain it because *…culturally transmitted traits, such as beliefs and norms, play a key role in determining which formal rules are followed and what is the actual economic impact of an institutional organization* (p. 32). *A population's long familiarity with certain types of institutions, human capital, norms of behaviour or more broadly culture seems important to account for comparative development* (p. 15).

NBER offers some insight to the quantitative impact of national culture when they note: *They [also] show that a variable capturing the extent of European ancestry accounts for 41% of the variation in per capita income…* (p. 15).

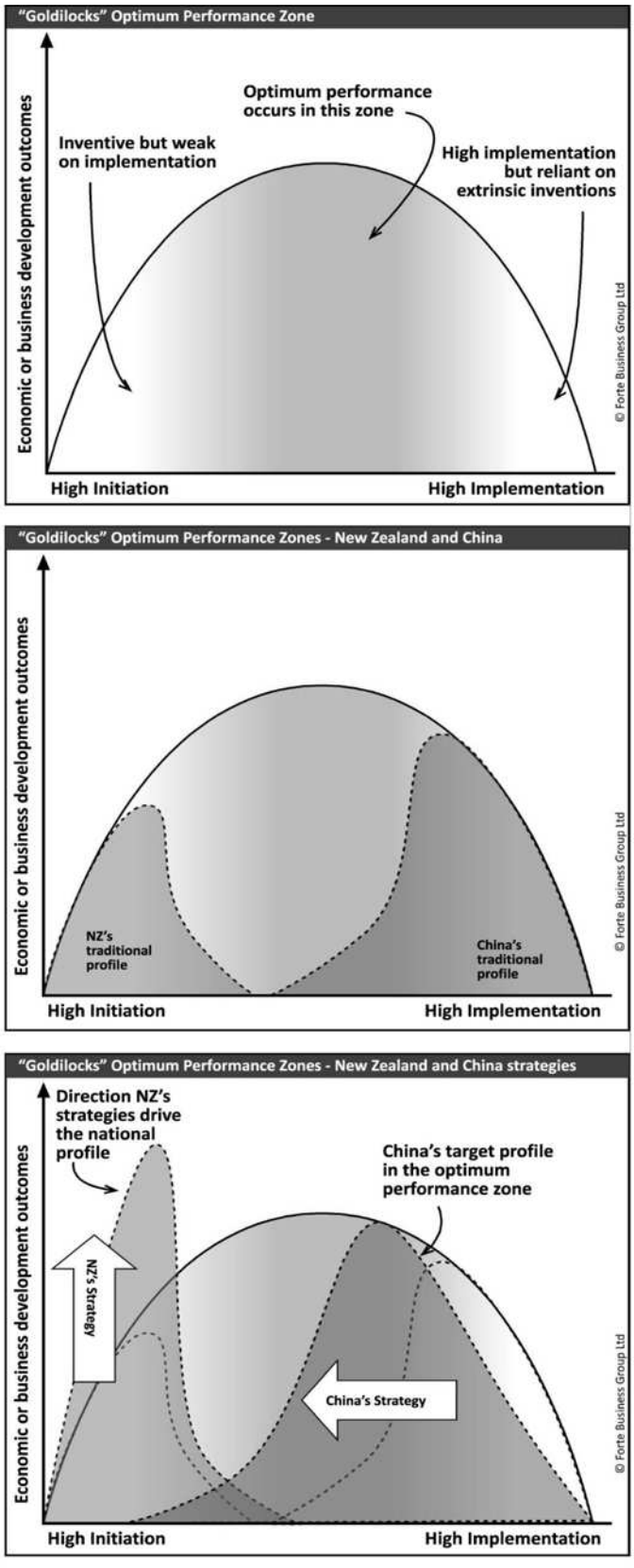

Figure 5. The curvilinear relationship between initiation and innovation showing the optimum performance sweet spot or 'Goldilocks Zone'.

National cultures emerged as groups of people developed solutions to their particular problems and reconciled dilemmas. Because the issues varied from group to group, different cultures developed. The Kiwi national culture is quite unusual and special – even unique. Rather than having evolved over millennia, it is a product of our quite recent European settlement. First arrived the whalers and sealers – uneducated but tough, resourceful and seeking adventure. Then as the stations were settled and developed we saw a large wave of people arrive, not from right across British society but predominantly uneducated, 'in-service', hardworking and resourceful agricultural workers from a small number of counties in the south of England (Phillips 1987) – practical, hardworking people who knew their 'station' in society but who had the independence and sense of adventure to leave behind the world they knew in pursuit of a new classless (egalitarian) utopia. Then, through to the 1960s and 1970s, New Zealand's immigration policies focused on people with trade skills – again practical people who won their living with their hands. Migrants to the New World brought with them mental models and behaviours passed down through the mechanism of national culture that *carried the seeds of their economic performance* (NBER 2012, p. 15). Little wonder then that our national culture, that continues to be passed down long after the problems it was designed to solve have disappeared, continues to reflect its very recent origins. Anthropologists will argue that New Zealand culture by definition does not exist, that ours is just a transplanted British culture. In strict academic terms that is a valid argument, but the nature of our immigration is such that British culture was far from transplanted in its entirety. We 'inherited' but a small subsection of the culture of a highly stratified British culture and then amalgamated that to greater or lesser degrees with the indigenous Māori culture to produce what we argue is a distinct 'Kiwi' culture. Academic arguments aside, the correlations between the dimensions of Kiwi and British culture and innovation are different and that is the salient point for this argument.

The following then is particularly pertinent:

> *... middle-class families worked in occupations that required effort, skills and experience, and developed patience and work ethic, whereas landowning aristocratic families relied on rents, and cultivated a taste for leisure. Those class-specific attitudes, rooted in preindustrial professions, became determinants of economic success after the British Industrial Revolution transformed the economic environment.* Now extrapolate that to our own origins: our ancestors had all the traits associated with *'getting by'* and few of those necessary to *'get ahead'* (Phillips 1987), and those traits continue to play out today.

Conclusion

We struggle to find a superior conclusion to this paper than to quote one last time from the NBER paper (2012, p. 40: *In general, a fuller understanding of the process of economic development will emerge from the study of the interactions between persistent traits, transmitted from one generation to the next over the long run, and contingent shocks and changes, whose affects across societies may partly depend on persistent traits – for example, when the diffusion of brand-new technological and institutional innovations in modern time depends on long-term genealogical relatedness.* In other words, there is sound evidence that the real aetiology of New Zealand's economic mediocrity can only be fully understood when viewed through a cultural lens alongside the ubiquitous economic lens.

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