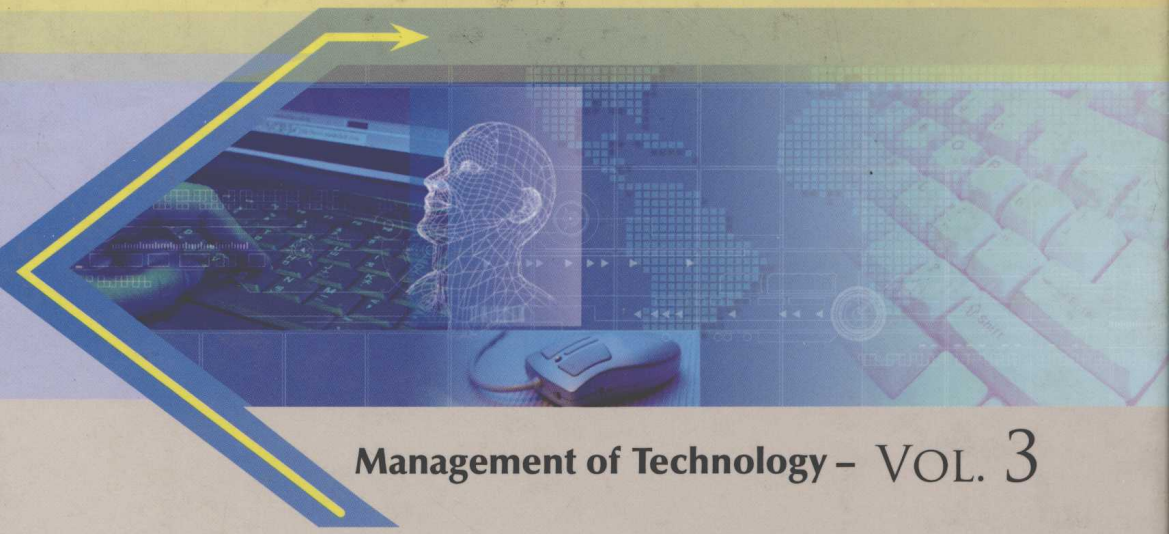

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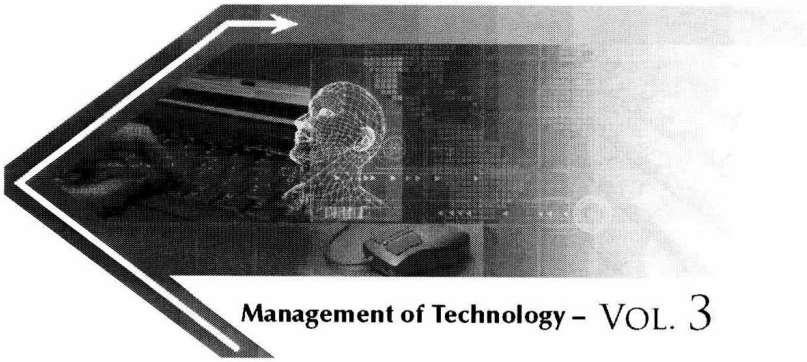

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Introduction

The IAMOT conference in Dubai in 2008 was interesting in two ways, the content of the presented papers and the context of country. Of the about three hundred papers presented, we have selected seventeen for publication. These papers all presented interesting theoretical issues along with empirical cases to provide evidence about the theory.

We have classified the papers into related categories. In these, one can see an emphasis on the emerging MOT issues concerning services and information technology. Also one can still see some continuing emphasis on manufacturing technology issues. But what is in light of subsequent and recent events about global economic development and global financial crises, one can identify a subject which MOT has not deeply addressed in this and previous conferences. This is an issue about technology and capital.

And this issue about technology and capital was vividly suggested by the context of the conference in Dubai. On arriving in Dubai, for the conference, a visitor was struck by the fact that this bit of desert of the Dubai Emirate was planning its primarily as a financial and trading center for the Arabian Gulf area. Its sister Emirate Abu Dubai had oil, and Dubai had none. But Dubai had embarked upon a rapid and vast construction project building hundreds of office towers and residential towers. The contrast between construction and urban spread and the desert and ocean was amazing.

Then a year later, as this book was going to press, Dubai was in the international news — in a big way. On 27 November 2009, Jennifer Hughes, David Oakley, Simeon Kerr reported: "Stock markets around the world were convulsed yesterday as investors scramble to understand the implications of Dubai World's restructuring and unexpected debt standstill." (Hughes, et al, 2009).

Dubai World was a holding company owned by the Dubai Emirate government: "Banks were scrambling to quantify potential losses in Dubai after Dubai World, the state's holding company, shocked creditors by asking to halt debt repayments... Three years ago, demand was ... strong for the Nakheel bond at the centre of the Dubai's troubles... Yesterday (26 November) those bonds were trading just above 70 cents on the dollar..." (Hughes and Oakley, 2009).

The seriousness for Dubai's future as a financial center due to this bond payment default was emphasized: "It came in a short statement about the restructuring of Dubai World; one of the emirates biggest and best-known companies ... the decision to ask bondholders of the company ... to extend maturities from December to May 2010 was a bombshell. And the Middle East's most glamorous and creative emirate will pay the price of its decision for a long time to come." (Khalaf, 2009).

At the time of IAMOT's Dubai conference, a year earlier, we had been struck by the enormous amounts of construction going on and also the apparent emptiness of most of the buildings. We wondered (1) where the finance for such major expansion was coming from (since one knew that Dubai did not have oil) and (2) what was the economic development strategy? A year later, we were learning that the money was borrowed and to an amount beyond having sufficient revenue to meet the debt obligations.

In this context of Dubai's plan for economic growth, one can now ask an important question for future research in MOT. This is whether a purely financial strategy for economic development — without a complementary technology strategy — was really a viable strategy for long-time economic development in the global world?

We think this is an important issue which MOT needs to address more deeply. What are the proper interactions between

financial strategy and technology strategy for long-term economic development of a nation? MOT has long addressed this issue at a company level but not seriously at a national and global level.

Hughes, Jennifer, David Oakley, and Simeon Kerr. 2009. "Dubai sends markets into turmoil", Financial Times, November 27, p. 1.
Hughes, Jennifer and David Oakely. 2009. "Jitters spread through Middle East", Financial Tims, November 27, p. 2.
Khalaf, Roula. 2009. "Emirate will pay dealy for a long time to come", Financial Times, November 27, p. 2.

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PART 1

“ Innovation ”

- *Honda's predisposition towards radical and disruptive innovations.*
- *Innovation capability reconfiguration in business transition: A case study of Taiwanese PC firm.*
- *Shaping organizational legitimacy: the emergency of wireless networks.*

HONDA'S PREDISPOSITION TOWARDS RADICAL AND DISRUPTIVE INNOVATIONS

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ABSTRACT:

Honda's long term view to R&D does not seem to hamper its 'nimbleness' to provide innovative products that are not only new to its historical business markets, but offer significant differentiating product attributes. Honda's recognized innovative prowess in most industries that it focuses upon leads us to ask the following two research questions: 1) What type of innovation approach (e.g. sustaining, radical or disruptive) differentiates Honda as being an innovative firm; and 2) What type of organizational approach supports the type of innovation that Honda generates?

A critical hermeneutical analysis of key R&D reports and second-hand interviews related to the HondaJet and Ridgeline product development initiatives followed by a review of past organizational research conducted on Honda as well as certain management literature on innovation generated the following results:

Product development programs showed clear patterns of coherency with technologies and design themes developed in preceding product development projects. Certain pertinent analogies were induced by these 'coherent innovation' patterns: namely, 'living' mythologies and societies, 'healthy doubt' or ambivalence in regards to retained knowledge, and creative routines. These analogies are a first indication of dialectics, whether as co-existence or synthesis of contradictions. A further

examination of the management literature on Honda clearly indicates Honda's dialectical approach within the organization. Our own cross reference to technical reports and second-hand verbatim in relation to both the HondaJet and the Honda Ridgeline product development programs, as well as to their respective precursor development programs, revealed that the organizational approach can best be described as a dialectical holographic metaphor. There is also a clear relationship between Honda's dialectical holograph, especially in regards to knowledge creation as seen across the HondaJet and Honda Ridgeline development programs, and a general predisposition towards producing radical and disruptive innovations. A conceptual framework is proposed with the aim of providing further insights as to how an organization can achieve the dialectic holographic metaphor; and in turn, a general predisposition towards generating either radical or disruptive innovations.

Conclusions:

1) *Both the HondaJet and the Honda Ridgeline are viewed as being both radical and disruptive innovations. Furthermore, both product development programs showed clear patterns of coherency with technologies and design themes developed in preceding product development projects (hence, 'coherent innovation'). Hence, Honda's resulting innovations are simultaneously characterized by both continuity and novelty.*
2) *Honda's organizational approach in support of this type of innovation can best be described as a dialectical holographic metaphor.*
3) *Honda's approach is also in marked contrast to certain established literature as to how to attain disruptive innovations.*

***Keywords**: Radical innovation, disruptive innovation, dialectics, knowledge creation, knowledge sharing*

1.0 Introduction

Historically, the Honda Motor Co. has been somewhat of an enigma to various researchers in management – many contradictory positions seemed apparently justified when looking at various aspects in isolation. Its pursuit of R&D activities appears to pose the same paradox. Honda's long term view to R&D does not seem to hamper its 'nimbleness' to provide innovative products that are not only new to its historical business markets, but offer significant differentiating product attributes. For example, Honda's first experience and resounding success in the North American motorcycle market in the 1970's is described by Christensen (1997) as an example of having developed a disruptive technology across its 50 cc motorbike; while Honda's first pick-up truck (the Ridgeline) unveiled in 2005, won the NAIAS North American Truck of the Year Award in early 2006 with better than expected sales. And finally, its recent announcements to enter the microjet market across the commercialisation of its HondaJet aircraft appear to be consistent with Honda's history of never entering new markets with a "me-too" approach.

This conceptual paper first examines the evolution of the technical aspects and technologies that led to the differentiating attributes of the HondaJet and the Honda Ridgeline pick-up truck by conducting a critical hermeneutic analysis of public documents related to Honda's aerospace and automotive/pick-up truck R&D. Honda's R&D 'strategy' and activities are indeed coherent, but within a 'holographic' dialectical movement. We will also show that this movement provides a predisposition towards generating disruptive innovations as defined by Christensen (1997). We then propose a conceptual framework which identifies the enabling conditions and organisational dynamics that are required towards attaining Honda's 'holographic' dialectical movement.

2.0 The HondaJet

The HondaJet was first unveiled in December of 2003 and is described as being able to seat up to 6 people with a maximum

speed of 420 knots and service ceiling of 41,000 ft. The engines, being optimally positioned on the upper surface of the main wing in a unique configuration, reduce drag at high speeds and increase cruising efficiency. This also eliminates the need for structural engine mounts in the fuselage, which according to Honda, creates "30% more cabin space than in conventional aircraft" such as the Cessna Citation 550, the Gulfstream 100 and the Learjet 55 (Honda Worldwide, 2003). The main wing features aluminium skin panels formed from single sheets of aluminium to provide a smoother than conventional surface. This, combined with Honda's proprietary low-drag laminar flow wing (SMH-1) and fuselage nose sections work together to significantly improve aerodynamic performance. The fuselage's compact and lightweight carbon composite and honeycomb sandwich structure also provides added gains in interior space. All these features allow the aircraft to achieve fuel efficiencies up to 40% higher than conventional aircraft. In this regard, the HondaJet, with its radical improvement in existing product attributes of cabin space and fuel efficiency over other conventional aircraft, appears to represent a radical (as opposed to a disruptive) innovation in the spirit of Christensen's (1997) definition (disruptive innovations involve the introduction of new product attributes, while radical innovations involve step-change improvements in existing product attributes).

The evolution of these specific technologies can be traced back over three sequential aircraft research programs over the past 20 years. In 1986, a joint research agreement was first initiated between the Mississippi State University (MSU) and Honda R&D involving a Beech A-36 aircraft that was to be modified with a composite structure (Nakayama and Bennett, 1994). This was followed in 1989, with the MH-02 joint research aircraft project between MSU and Honda R&D, resulting in a prototype 6-passenger jet aircraft in 1992 (Nakayama and Bennett, 1994). It was described as being "the first all-composite small business jet, using lightweight carbon fibre reinforced epoxy resins in all the structural elements" (Honda Worldwide, 1997). As for the HondaJet itself, development began in the late 1990's.

2.1 Coherencies with precursor programs

A certain temporal coherency and continuity between the three aircraft development programs was discerned in terms of technology and design themes to the point that we can present it as being a series of 'coherent innovations'. Firstly, from a technology aspect, the converted Beech A-36 research program involved the learning and gaining of experience of composite material design, fabrication and testing (Nakayama and Bennett, 1994). Past rudimentary knowledge from the automotive sector, along with new trials and experimentation on the Beech A-36, allowed the MSU/Honda team to further learn "the basics of composite material technology and the basics of aircraft design, fabrication, and testing" (Nakayama and Bennett, 1994). This newly attained composites material knowledge, along with further advances in automotive experience in composite materials (resin mould fabrication), was subsequently used within the new context of the MH-02 forward swept-wing aircraft development program (Nakayama and Bennett, 1994; Sullivan et al, 1994). Hence, new composite materials knowledge was created in regards to all the structural elements of the aircraft ranging from main and tail wing cross beams and ribs, to fuselage frame and other outer panels of the aircraft. In a similar manner, composite materials knowledge acquired was subsequently carried forward into the context of the HondaJet program to thereby produce new knowledge with respect to the fuselage (Fujino, 2003; Black, 2006).

Secondly, the above-wing engine mounts were first seen on the MH-02 and were carried forward onto the HondaJet. Furthermore, the MH-02/HondaJet teams use of above wing engine mounts was inspired from decades-old technology found on such planes as the Fokker VFW-614. Yet, this technology, originally chosen for increasing cabin space, could not be used without synthesising it to new ideas, since in its original form presented poor drag characteristics. Across optimal engine nacelle and pylon positioning and design, what was originally a disadvantage eventually became a strong point, whereby drag characteristics were rendered *superior* to conventional under-the-wing designs (Fujino, 1994 and 2003).

Thirdly, an automobile design theme was discerned in both the MH-02 and the HondaJet: Fujino (1994) describes how one of the design requirements of the MH-02 was that crew and passengers could easily get on and off the aircraft without any steps, "just like an automobile"; and the chief test pilot mentioned "the crew seating is very low to the ground and provides a 'sports car' view and feel" (Wilson, 1995). As for the HondaJet, Honda's president Fukui explained "We have created a business jet with high performance, high fuel efficiency, low emissions and a spacious cabin. Sounds like a Honda, right?" (Phelps, 2004a).

The manner in which radical improvements in existing product attributes were achieved helped produce a new product attribute (relative to other competitors): namely, the car-like comfort and handling to the aircraft. Aircraft manoeuvrability coupled with other technologies and design themes already described also contributed towards producing this new and therefore disruptive product attribute. In this sense, the HondaJet can be viewed as being both a radical and a disruptive innovation in the spirit of Christensen's (1997) definition (Figure 1).

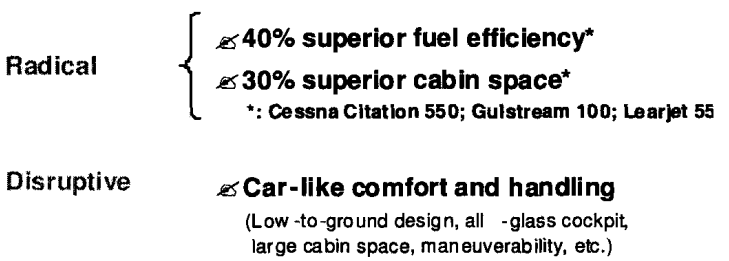

Figure 1. Radical and disruptive product attributes of the HondaJet

3.0 The Honda Ridgeline

Between its first launch (2005) and having won the NAIAS 2006 North American Truck of the Year Award, Honda's first pick-up truck was described by numerous automotive reviews as a vehicle