Business Strategy Patterns for the Innovative Company

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1 Abstract

This paper presents three business patterns for the innovative company. The patterns describe several techniques for creating and market innovative products derived from *Corporate Imagination and Expeditionary Marketing* (Hamel and Prahalad, 1991).

The patterns are a deliberate attempt to mine patterns from existing literature in order to investigate the applicability of pattern techniques to the business domain.

This paper contains the patterns:

- Innovative Products

- Expeditionary Marketing

- Separate Imaginative Teams

2 Audience

These patterns have been written in an attempt to explore the application of pattern writing techniques to the domain of business strategy. As such, the initial audience is expected to be

- those from the pattern community who wish to understand business strategy,

- those from the business community who are interested in the application of pattern languages.

In the longer term, it is expected that most readers will be practising managers looking ways to stay competitive in business, and students interested in an alternative approach to well known concepts.

3 Business Patterns and objective

There is a small but growing literature applying the techniques of pattern writing to the business domain. For example, Kavanagh (2004), and Manns and Rising (2004). (Readers unfamiliar with patterns are advised to consult Coplien (1996).)

This paper is the second in a series that attempts to extend existing business ideas using the pattern form. The first paper (Kelly, 2004) presented Porter's work on *Generic Strategies* (1980) in pattern form.

In producing this paper the author is primarily concerned to understand what extra value the pattern technique can add to an existing body of literature and whether the pattern presentation makes these ideas more accessible.

The reader may be tempted to view these Patterns as strategic, tactical or operational. For example, a firm pursing a strategy of *Innovative Products* may use Expeditionary Marketing as a tactical device with operations arranged through *Separate Imaginative Teams*. However, as Mintzberg warns, the difference between these categories may be one of perspective:

> "In other words, mere details can eventually prove to be strategic. ... Care must be taken not to leap into labelling things intrinsically tactical or strategic. ... It also depends on when ... because what seemed tactical yesterday might prove strategic tomorrow." (Mintzberg, 1994, p.27)

The starting point for this work was Hamel and Prahalad's 1991 work however these patterns go beyond the 1991 in several ways. The pattern form emphasises the importance of understanding context, forces and consequences as well as problem and solution. In addition most of Hamel and Prahalad's examples have been updated.

4 The Patterns

4.1 Pattern Thumbnails

Innovative Products	The company derives its competitive advantage through a stream of continual innovations rather than a single product. Employees are encouraged to innovate at the horizon and develop new products even were these may cannibalise existing markets.
Expeditionary Marketing	It can be difficult to determine exactly what customers want from a new product. Therefore, the company brings a variety of new products to market and learns what the customer wants in the market place by refining the product features.
Separate Imaginative Teams	Companies, particularly larges ones, can stifle innovation. Sometimes it is better to take the innovative people and let them work at arms length from the company. However, skunkworks projects are no panacea and can cause their own problems.
Cross functional staff[*]	In order to innovate at the horizon employees need more than a cursory understanding of other aspects of the product and marketing mix. Therefore, cross train your employees and give them opportunities to work in other groups, e.g. Engineers in Marketing, Sales in Support, and encourage customer contact for all staff.
Same market, different solution[*]	Sometimes building a better mouse-trap isn't enough to succeed in the market. Changing the way you see the market may provide more opportunities, e.g. instead of selling mousetraps you provide vermin-eradication services.
Partner to create innovative products[*]	You can envision an innovative product but you don't have all the necessary capabilities to create the product. Therefore, find a partner who can fill the gaps in your capabilities and knowledge, you share the effort, you share the risks and share the rewards.

[*] Currently as thumbnails only.

4.2   Innovative Products

3M embraces the idea that continual innovation provides competitive advantage: divisions are required to generate 30% of revenue from products introduced in the last four years. The company's "15% rule" means that all researchers must spend 15% of their time working on their own projects (Nonaka and Takeuchi, 1995).

Context   Classic business strategy (Kelly, 2003, Porter, 1980) advises firms to become a *Cost Leader* themselves or to differentiate their products. Alternatively, the company may seek to create new products that can command higher prices (shown graphically in).
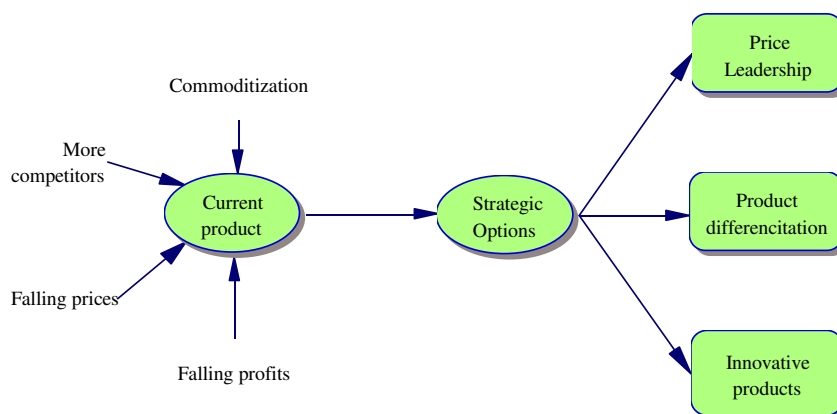
Figure 1 - Strategy options for a firm facing increased competition

Innovative products are not commodities and suffer from less competition and thus less downward pressure on price.

From time-to-time opportunities for new products arise spontaneously, apparently *out of the blue*. However, successful companies do not rely on chance happenings. In order to remain competitive, companies need to create such opportunities.

Problem   **How can a company create new products that support high profit margins?**

Forces   Increasing commoditisation of products leads customer to expect falling prices in many markets (e.g. personal computers) but this makes it difficult for firms to remain competitive.

A company may want to produce new innovative products or innovations, but it is not easy to come up with new ideas on demand. Innovative ideas come from people, they cannot be repeatedly produced by formalised process, e.g. a computer program or a planning exercise.

New product ideas may be attractive to individuals but not all of them are attractive business propositions. The company needs some means of deciding which ideas to pursue and which to discard.

Serving existing market segments well requires focus, but by focusing on existing segments and product the company may becme blind to new products in new segments.

Existing products cannot guarantee competitive advantage, but new products take time to create. A company needs to innovate while continuing to serve existing markets, it need to *do two things are once*.

Therefore...

Solution

Look beyond the current market boundaries and the existing environment (Figure 2). Produce new products, new services and delivering these in new ways even if cannibalises the existing market (see *Tyranny of the Served Market* sidebox).

Look to create new products that fill the "white space" between existing products and market segments. Such products lack direct competitors and can command a premium price.

Get to know your customers in depth to truly understand their needs and aspirations (use *Customer Understanding* and *Effective Listening* (Rising, 2002)). By understanding the customer we can understand the problems they face, how they use existing products, how existing products fail and were their are opportunities for innovation.

Concentrate on *core-competencies* (i.e. what the company can do well) rather than past products and markets. Core-competencies are used both for existing products and for new products.
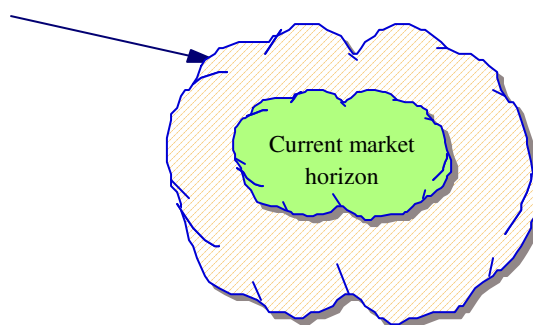
Expand horizon beyond
current market environment

Current market
horizon

Figure 2 - Look beyond the existing horizon

Encourage employees to generate new ideas for products, apply company technology and competencies to new domains. Do not reject ideas out of hand, give people time to develop ideas - even if one idea goes nowhere it may encourage employees to try again.

Don't penalise people for ideas that don't work. For every success there will be many failures, each of these is itself a learning

opportunity. If employees are made to feel ashamed of their failures learning will be inhibited and they will be less likely to try again.

Establish a company structure that encourages people to think and work beyond their existing products and segments. The structure may not be right on the first try; it may take several attempts before a suitable structure is found. Groups which were previously separate will need to work together, e.g. marketing and development. Use *Cross functional staff* and *Multi-disciplined Project Teams* which can work outside of existing definitions.

Were new products can be imagined but details are unclear then let the *Market Drive Product Refinement* as you map the market environment. If the company finds it difficult to develop new products *Separate imaginative teams* to overcome corporate restrictions.

Sometime the company can envisage a product but some aspect of development, distribution or marketing fall outside of the core competences. Consider using *Partner to create innovative products* rather than abandoning the idea.

Consequences Competitive advantage comes from the ability to innovate and the stream of new products rather than any single product. Follower companies may be able to copy individual innovations but they will be forced to play catch-up and compete on price while an innovative company moves on to newer, more innovative products and services that can command a premium.

Not all new products and markets may be viable; some efforts to establish new market space will fail. It can be hard to predict sales of radically different products ahead of time, demand may be slow to build and multiple iterations of the product cycle may be needed in order to understand the market and refine the product before a profitable configuration is determined (see *Expeditionary Marketing*).

Mechanical approaches to market evaluation - such as IRR (internal rate of return) and NPV (net present value) calculations - and traditional business plans may under value the opportunity because it is difficult to value new ideas. The more radical the idea or product the more difficult it will be to value it.

Innovative products may open new revenue streams but the new products may reduce revenue from existing products. Failure to launch new products - either consciously or sub-consciously - provides opportunities for competitors to launch such products. (See also *The innovator's dilemma* (Christensen, 1997).)

In order to achieve focus on new products the firm may need to leave some market segments, either because new products are available or to improve company focus. This may be done directly - through sale, closure or write-off - or indirectly through outsourcing.

When the company does manage to create a new market it will be

able to stake out a position ahead of customers and competitors. This provides the opportunity to define the market space and the criteria for competition.

The company can use its *core competencies* as a guide in deciding which markets to remain in, which to retreat from, which new ideas to follow and which to discard.

However, *core competencies* may become "core rigidities" (Leonard-Barton, 1992) and may themselves blind the company to new fields or drive away innovative people who are have valuable skills outside those declared as core competencies.

Examples   Companies that fail to innovate may provide more innovative competitors with opportunities to seize market share, e.g. Word Prefect and Lotus failed to innovate thereby ceding the office application market to Microsoft.

Related patterns   "Fearless" (Manns and Rising, 2004) describes how to introduce new ideas to an organization.

Customer Understanding and *Effective Listening* (Rising, 2002) describe how to improve understanding of customer problems.

Complementor, Not Competitor (Kelly, 2005) describes the need to leave one market to help the firm succeed in others.

Also known as

4.3 Expeditionary Marketing

The clothes chain Zara (part of Inditex) almost invented the idea of "fast fashion". In preparation for a new fashion season the company designs several "Platforms" but final design is delayed. Variations are test marketed in selected stores and those judged to be the most successful are rolled out across the international chain.

Context New product has been developed but the exact configuration of the product has yet to be determined. Customers are unfamiliar with the product, so it is difficult to determine what their exact requirements will be.

When you are creating new market space you do not know the boundaries yourself.

Problem With a new product concept it is difficult to determine exactly what the customer will want. **How can you determine which features will be most attractive to the customer when customers are not familiar with your product or how they use it?**

Forces Understanding of the market is incomplete; the exact configuration of a new product is unclear. But there is a vision of the new product and an understanding of the essential elements.

Development teams have a better understanding of what the technology can do than the customer can. The team knows what is technically possible, but customers cannot imagine the products because they lack the knowledge of the technology and its application. So, it is not possible to pin down the configuration because customers lack experience of the product.

Mainstream market research techniques (e.g. surveys and focus groups) are useful for improving existing products, but fail when the company is trying to come up with a truly innovative product.

Your basic product is easily reconfigured (e.g. different colours), each configuration may sell but which one will sell the most? Which particular colour will capture buyers' imaginations?

You do not know who your customers will be, the product may have applications in the home and in the office, but will it be domestic or business users. Who are the early adopters? the mass market?

Therefore...

Solution **Launch a product into the market at the first opportunity. Watch customers reaction and use closely. Use this feedback to develop the next version of the product.**

Maintaining a varied product line up in the market can enhance learning opportunities because customers have a greater choice. Developing several product variations simultaneously will provide for a diverse market offering and further enhance learning opportunities.

Once the product is in the market respond rapidly to market signals, launch variations on the initial product, withdraw unsuccessful variations, incorporate further innovations and new technology. Above all pay attention to what the customer is buying.

Products in the market place are not only sources of revenue but can provide valuable information to help with future products. Even products that fail financially can provide valuable lessons -provided failure does not bring financial ruin to the firm, or embarrassment and shame to individuals and teams.

The organization will need to adapt its development and product infrastructure to ensure lessons learnt from one product are quickly fed into the next version. Reducing product development cycles and retooling costs will help bring a new products to market quickly and economically thereby providing for frequent, low-risk market incursions.

To help reduce development cycles and maximise learning opportunities use *Multi-Disciplinary Project Teams* with team members drawn from across the company so as to leverage existing company resources and assets.

Consequences   Quickly feeding the learning back into new product launch ensures you can refine your products. As product developers become accustomed to working in this manor they improve their pace of learning and develop intuition to help them work better.

Simply because your company is creating a market does not mean your employees understand the market. Even when they are producing successful products they may not have developed the deeper knowledge of how the market works and how customers think.

It is possible to make profit without truly understanding the market. Over time you will come to know who is buying the product and what features they want, it is then time to start segmenting the market with different variations aimed at different customer groups.

Companies may make extensive use of existing off-the-shelf products in order to speed up development and reduce costs. However, use of existing products may constrain the designers into using existing solutions with little innovation.

Competitors will eventually follow into the market you have created. Some of these may be "fast followers" who are particularly able at copying designs and directly competitive products. While these firms may erode margins from products they will always be playing catch-up.

Sometimes the market you expect to reach will not exist. Even after a series of product launches the market may not develop or the market is developing more slowly than you expect - indeed, there is never any guarantee that it will appear.

Expeditionary Marketing complements *Innovative Products* because it helps company's experiment with innovative products in a piece-meal fashion. However, excessive use of *Expeditionary Marketing* is a form of incremental product development - products are developed a little at a time, each change builds on the previous one. This incremental development may hinder "out of the box" thinking and the creation of radical product development so *Expeditionary Marketing* may conflicts with *Innovative Products*.

Examples   Nokia produces a wide range of mobile phones yet much of the underlying technology is common. Many phones are tailored to particular a market both in technology and styling. New features may be tried out on one phone in one market and if successful rolled out across the range and markets.

Related patterns   *Simple Product Variations* (Kelly, 2005) describes one way of developing successor products.

Also known as   *Early and Regular Delivery* (Cockburn, 1998) described this pattern for software development.

4.4 Separate Imaginative Teams

Sun Microsystems set up a "black project" in 1990 to develop what later became the Java programming language and environment. The small team was located away from Sun's own offices, was secret, had lots of money and was free of Sun's usual development strategy and bureaucracy (Naughton, 1996).

Context   Large companies may stifle innovation. Development of new products (if any) tends to be incremental in nature. Company bureaucracy tends to restrict innovative products; people can become scared of failure.

The company is competing in an established market and has developed an infrastructure to support its existing products.

Existing products sell well and make a profit but the product line is ageing.

Problem   **How does a firm create a truly innovative product when corporate culture resists innovation?**

Forces   The company needs to introduce new products to replace existing ones and stay competitive.

Research and development may be able to create new, innovative, products but company bureaucracy stifles innovation.

Incremental development of existing products is cheap and can show a clear return because it builds on existing sales data but fails to produce real innovation. Competitors are able to undercut the established market through innovation.

Companies do not lack innovative people, most large companies will have researches and designers; but, such people find their ideas rejected at an early stage, or are perceived to rock the boat. Some may choose to leave the company to pursue their ideas if they cannot innovate within the company.

Therefore...

Solution   **Form a team of innovative employees and separate them from the organization that constrains them.** Physically separate them in a new location and provide them with the resources they need.

The team needs to be staffed by people who are both innovative and entrepreneurial. The team will be outside the company so it is no use staffing the team with people who prefer the big corporation.

Leadership and management of the team must be particularly entrepreneurial, as they will need to create a start-up environment and make many of the decisions traditionally made by start-up founders. Such people may be difficult to find in a large organization that, by its nature, contains managers and staff who are at home in a large company.

Teams need to be motivated and directed the team without overly

confining and controlling them.

The new team needs a "clean slate" - to be free of company bureaucracy, politics, existing assumptions and legacy systems.

Resources must be made available to the team, in some variations the team is given everything they need. Alternatively the team must operate on a shoestring or even obtain outside funding.

Consequences   There will be start up costs associated with creating such a s*kunkworks* project, e.g. leasing new office space.

Such teams may find it difficult to leverage company assets, knowledge and resources because they have been set up separately outside of the main processes and hierarchy. Attempting to leverage these resources may expose the team to the politics and bureaucracy it was trying to escape.

Existing employees may see the separate team as a threat to their jobs or a slight on their skills. Companies sometimes choose to keep the team secret but this can add to resentment when the team is made public.

Once the project is complete the team and product needs to be folded back into the original organization. Simply disbanding the team may be efficient but may miss opportunities and entails its own risks. Team members may have become accustomed to their independence and dislike returning to the big company. The ideas and values that surrounded the independent team and support creativity may be lost in the change.

Even if the skunkworks group create a great product the company has not actually improved its ability to create new innovative products. The very one off nature of the project makes it difficult to repeat.

Variations   Sometimes the skunkworks project is not completely approved of by management and seeks to hide itself away. Tracy Kidder's story of the Eclipse project at Data General describes a team with limited resources seeking to create a new computer in competition with a more well established effort in the same company (Kidder, 1981).

The ultimate separation of innovative teams occurs when corporation engage in *corporate venturing*. In these cases companies set up their own internal venture capital groups and seek proposals within the company. Entrepreneurs must produce business plans and finance requests to the corporate funders and possibly other outside financiers. Groups that receive funding may be required to resign from the parent company in order to create true start-up incentives.

Examples   One of the most famous example of a company separating an imaginative team was Xerox creation of the Palo Alto Research Centre (PARC) in California. While Xerox management and mainstream engineers were based in New York or Texas the PARC team were located far away with the remit to invent technologies to

sustain Xerox beyond photocopies. Although PARC developed much new technology Xerox itself was unable to capitalise on the developments and failed to fold any of the products back into the company or generate innovation elsewhere. Many of the PARC researches went on to found successful companies based on what they learnt at PARC (e.g. Adobe and 3Com) or helped other companies capitalise on the innovations (e.g. Microsoft and Apple.)

Mazda's Miata/MX-2 sports car was developed by as "guerrilla" project. The team was place in a different building to the main engineering organization and given a remit to develop a distinctive car outside of the usual multi-project strategy (Cusumano and Nobeoka, 1998).

Related patterns	While similar to *Skunkworks* (Coplien and Harrison, 2004) this pattern differs in two important aspects. Firstly, Coplien and Harrison believe that "the very existence of a Skunkworks team should be a secret." Secondly, this patterns places more emphasis on the difficulties of re-integrating products and teams into the corporate structure.
Also known as	Corporate venturing, Skunkworks (Coplien and Harrison, 2004)

Tyranny of the Served Market

In the early 1990's Encyclopaedia Britannica ignored the rise and power of CD-ROM until Microsoft Encarta entered the market. Although Britannica responded with its own CD-ROM product this further undermined the business.

Britannica's problem was that CD-ROM encyclopaedia changed the nature of the market. Traditional encyclopaedias were expensive to produce and distribute, so Britannica had developed a door-to-door selling system, this itself was expensive to operate. The retail price of a CD-ROM would not support this business model. Britannica was not the first company to become trapped by its own market and business model.

In order to serve a particular market efficiently companies focus on particular market segments and optimise their structure and activities to maximise their returns. However, in doing this a company can become beholden to market it serves, the company may fail to see opportunities or fail to act for fear of cannibalising existing sales - other reasons are shown in Figure 3.
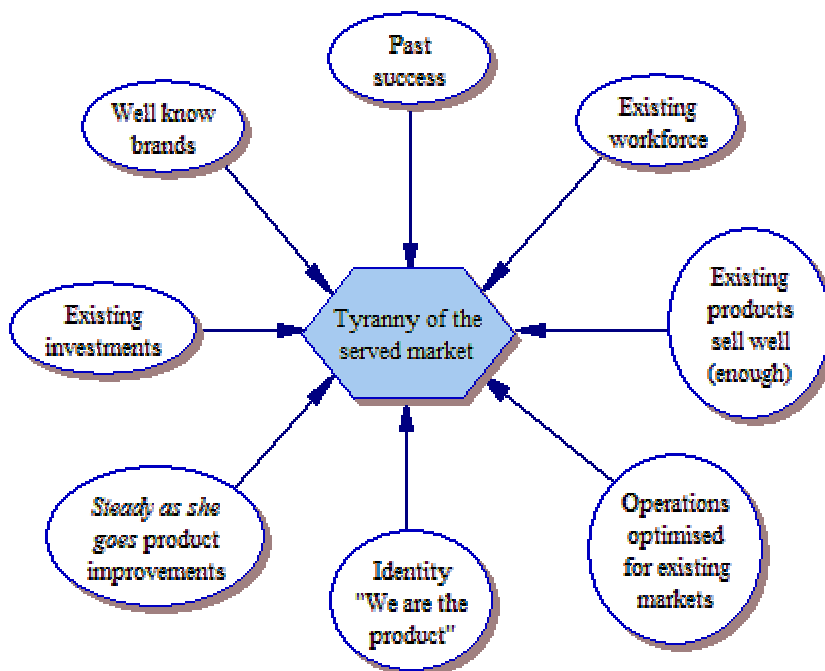

Figure 3 - Good reasons to continue with the served market

Kodak had an early lead in digital photography, but the company realised the new technology would diminish sales of its film and processing chemicals. To protect the existing market the company retreated from digital.

This didn't stop the advance of digital photography but it did make it easier for companies new to photography, such as Sony and Hewlett-Packard, to enter the market.

Hamel and Prahalad use the term *Tyranny of the served market* while others discuss *cannibalising existing markets* and *the innovators dilemma (Christensen, 1997).*

5   Acknowledgements

I would like to thank Daniel May for his work and time in shepherding this paper in preparation for the VikingPLoP 2004 conference. I would also like to thank the members of my workshop at VikingPLoP 2004 - Linda Rising, Pavel Hruby, Herman Koppleman, Rebecca Riker, Cecila Haskins and in particular to Jim Coplien.

6   Epilogue - 1 year after VikingPLoP

These patterns have had a difficult birth. They were written, they were shepherded, they were accepted for a patterns conference. And at the conference some workshop pointed out that the these patterns had already been documented elsewhere and that they were not original.

The VikingPLoP workshop experience was unusual. Rather than producing lots of suggestions for improvement the workshop spent much of its time debating the prior-art. The whole experience was personally quite hurtful but I now see it as an even more powerful learning experience than I appreciated at the time.

This led to some soul searching on my part: *Why didn't I know about the earlier patterns? Did my patterns add anything new? What was my future as a pattern writer?* While I considered the future of the patterns they remained on my website with a note about their status.

As a result of this experience I thought long and hard about the origins of patterns and what was trying to accomplish with my "business design patterns." You can see the results of this thinking in my "A few more business patterns" from EuroPLoP 2005 (http://www.allankelly.net/patterns/FewMoreBusPatterns.pdf).

After VikingPLoP I read Stephen Denning's book *The Springboard* (Denning, 2001). This book discusses the role of story telling in knowledge management. With this understanding I started to view patterns as a story.

This idea was reinforced when by reading Dick Gabriel's *Patterns of Software* (Gabriel, 1996). Gabriel (http://www.dreamsongs.com/) is a long standing member of the patterns community and one of its more noteworthy "thinkers." He is also a poet and compares writing software and patterns to poetry. A poem too is a form of story, albeit a structured story.

With Denning and Gabriel in mind I started to reform my view of patterns. By the time I dead Denning's later book *Storytelling in Organizations* (Brown et al., 2005) my view was confirmed. I now consider patterns to be a form of storytelling, I hope to expand on this idea in a later work.

At EuroPLoP 2005 two people gave me additional bits of the jigsaw that was emerging. Klaus Marquardt suggested that it may be the pattern writer, not the pattern reader who gets the most out of a pattern. In effect, by writing the pattern we are forcing ourselves to understand it in depth. Writing the pattern is a sense making process itself.

Next Jorge L. Ortega Arjona pointed out that in most forms of art and literature (novels, films, music) it was acceptable to repeat the story. So, why should pattern writing be any better?

I now see patterns as a form of structured story in the same way as poems are structured - you may choose the follow an existing structure but you may also devise a new structure as long as it is recognisable and embraces the essential elements of the form.

This, we write the story to make sense of the world around us and sometimes that means we duplicate work. Therefore, there is nothing untoward about these patterns repeating earlier works. Indeed, I now see that these patterns do not simply repeat the earlier work, in making sense of the world these stories see matters differently, e.g. Coplien and Harrisons Skunkworks does not highlight the difficulties of returning the team to the corporation in the same way that *Separate Imaginative Teams* does.

These patterns were never "original" - they say up front that they are based on other work. I readily acknowledge they are not even original in pattern literature but then, why should they be? They communicate a different understanding and different values.

Like all patterns they are unfinished. Patterns, are living entities in their own right, they change over time as we continue to make sense of the world. It may well be that I undertake further work on these patterns in future. The content of this paper is just a snapshot of these patterns at a moment in time.

I present these patterns here as part of a growing body of patterns for businesses. I hope that readers will be able to gain some useful insights into the ideas behind patterns, business strategy and the original work of Hamel and Prahalad.

Revision history

Date	Version
June 2004	First draft - initial submission to Viking PLoP 2004
August 2004	Shepherded version submitted to VikingPLoP 2004
November 2004	Post VikingPLoP changes, see also *Lessons Learnt from "Patterns for the innovative company"* written in place of major modification.
August 2005	Added new prologue to replace opening *authors note*. (Lessons Learnt was written but is not published, the authors own thinking has moved on beyond the paper and is best summarised in the new prologue.)
November 2005	Re-edited paper and many changes to patterns incorporating feedback from later papers.

Bibliography

Brown, J. S., Denning, S., Katalina, G. and Prusak, L. 2005 *Storytelling in Organizations,* Elsevier Butterworth-Heinemann.

Christensen, C. M. 1997 *The innovator's dilemma : when new technologies cause great firms to fail,* Harvard Business School Press, Boston, Mass.

Cockburn, A. 1998 *Surviving Object-Oriented Projects,* Addison-Wesley.

Coplien, J. 1996 *Software patterns management briefing*, SIGS Books & Multimedia, http://www.bell-labs.com/user/cope/Patterns/WhitePaper/,

Coplien, J. O. and Harrison, N. B. 2004 *Organizational Patterns of Agile Software Development,* Pearson Prentice Hall, Upper Saddle River, NJ.

Cusumano, M. A. and Nobeoka, K. 1998 *Thinking Beyond Lean,* Free Press.

Denning, S. 2001 *The Springboard: How storystelling Ignites Action in Knowledge-Era Organizations,* Butterworth-Heinmann.

Gabriel, R. P. 1996 *Patterns of Software: Tales from the Software Community,* Oxford University Press.

Hamel, G. and Prahalad, C. K. 1991 Corporate Imagination and Expeditionary Marketing, *Harvard Business Review*, 81.

Kavanagh, M., 2004, *Towards a Pattern Language For Business Process Modelling*, EuroPLoP, Irsee, Germany,

Kelly, A. 2003 The original Conways Law, *Overload*.

Kelly, A., 2004, *Business Strategy Design Patterns*, EuroPLoP 2003, Irsee, Germany,

Kelly, A., 2005, *A few more business patterns*, EuroPLoP 2005, Irsee, Germany,

Kidder, T. 1981 *The Soul of the New Machine,* Avon Books, New York.

Leonard-Barton, D. 1992 Core capabilities and core rigidities: A paradox in managing new product development, *Strategic Management Journal,* 13, 111-125.

Manns, M. K. and Rising, L. 2004 *Fear Less - And Other Patterns for Introducing New Ideas into Organizations*, Addison-Wesley, http://www.cs.unca.edu/~manns/intropatterns.html,

Mintzberg, H. 1994 *The Rise and Fall of Strategic Planning,* FT Prentice Hall.

Naughton, P. 1996 *The Java Handbook,* McGraw-Hill.

Nonaka, I. and Takeuchi, H. 1995 *The Knowledge Creating Company,* Oxford University Press, Oxford.

Porter, M. 1980 *Competitive strategy,* Free Press, New York.

Rising, L. 2002 *Customer Interaction Patterns*, http://members.cox.net/risingl1/articles/customer.doc, See also Pattern Languages of Program Design 4, Harrison, N.B., B. Foote, H. Rohnert, eds., Addison-Wesley, 2000.