

Managing Knowledge, Managing Innovation – IFKAD Keynote

JC Spender, Leeds University Business School

It is polite to say one is honored and delighted to be invited to speak at an event like this. I am honored and delighted, of course, and I thank you for letting me address you. But I want to go beyond this formality and say how excited I was to visit such an amazing and historic place as Matera and share some real Italian hospitality – especially the food and wine. We eat a lot of Italian food in New York and I am never sure if it is REAL Italian food, or just another New York innovation. Having spent time in China, for instance, I know New York Chinese food owes more to American innovation than it does to Chinese tradition. It is obviously a reflection of the need for fast food in the city that never sleeps and where time is money - an innovation in the New York context. Real Chinese food, as some of you may know, is something only enjoyed at leisure.

This lets me segue to my talk. Our topic is intellectual capital, knowledge assets, and their dynamics, and innovation is about generating new knowledge assets. Before we can have new products and services we must acquire or create new knowledge assets. Things are changing fast, we say, so the only thing we know for certain is we cannot survive without innovative products or services. The airport bookracks shout ‘innovate or die’. So my talk is about innovation and its management.

Much of the innovation discussion takes off from managing R&D, and we often see this as the most powerful metaphor or set of ideas about innovation and its management. I shall step back and explore the issues central to our conference using some ideas from the knowledge management literature. I see innovation as raising questions about entrepreneurship and leadership that interested writers such as Schumpeter, von Mises, and Kirzner. It is about translating goal-oriented innovation into intellectual capital and then into profit and competitive advantage, and so about something new that cannot be completely planned. This is my first point. You cannot know the outcome of the innovation process, and you cannot plan for what you do not know.

Innovation is also contextualized and operationalized, like Chinese food in New York, it is novel operations in a particular market situation, not just a new idea. Invention or discovery is at the level of ideas and concepts, but innovation means new operations and value-adding processes in the real world, grounded internally in the organization rather than externally in the concepts of science. Innovation is a managed outcome embedded in the firm's activities. In the same way, the adjective 'capital' in 'intellectual capital' engages the operational level and presupposes a specific socio-economic system in which the firm is embedded and is creating value. Intellectual capital is knowledge operationalized.

Can this be managed? What is the significance of the difference between innovating, as in generating context specific intellectual capital, and generating new ideas, as in science broadly? I am sure most of you accept we cannot plan the progress of science. But my comment about the impossibility of planning innovation does not mean that managers cannot impact it at all. Clearly they can facilitate it or inhibit the process of innovation by supplying or denying innovators the resources or time they need. Does the market direct and so manage innovation? We can do market research and use the findings to guide new product development based on the needs revealed. But to me this is not innovation. In particular it cannot be a source of competitive advantage since all suppliers can engage in the same market research process.

So, in the spirit of the conference as a conversation about intellectual capital and value-creation, my talk is about how innovation fits into management and organization. What I say reflects my own recent theorizing and critique of the rational approach to managing, but I will try to avoid being too academic. To repeat my first point, I want to query the idea of a rational programmatic approach to the innovation process. Of course much innovation consulting is based on the idea you can plan, organize, or structure the innovation process more rationally and so improve performance. This is a complete denial of innovation's essence, its unexpectedness, and so is of no help to managers who carry responsibility for the innovation process and the resources it consumes.

An unspoken truth of management theorizing is that we have little idea of what managers really do. Mintzberg is one of the few who really looked into this, and his work¹ is mostly ignored though his findings set him on a lifetime of criticizing what goes on in business schools². There we say management is ‘making decisions’, by which we probably mean rational decision making. This is unfortunate, for such rationality is not all that evident to those engaged in organizations. Politics, power, personalities, jealousies, and so forth seem more present - Machiavelli still rules.

Aside from whether rational decision making is relevant to what managers really know and do, our attachment to rationality also makes our theorizing inherently static. The best we can do is to define change in terms of a forecast based on our knowledge of the present, the transformation implicit in a deterministic causal model of the situation. We can forecast the tides or the next solar eclipse. But such forecasting has little to do with business for we have no workable model of the real economy in which managers are embedded. For example, we have no idea of what Apple is going to do next, or of how Microsoft will respond.

By definition innovation is about something new, unexpected, and un-forecast-able, which is not to say that we should not try to model and forecast the situation. But the result is only as relevant as our ability to keep things under control, to shut the unexpected out of the situation, whether it be our competitors’ innovations, new expectations in our customers, or new politics and government regulations.

In this talk I shall argue that even though we cannot know the new, and so cannot plan its production, we are still able to say something useful about managing innovation. The key is that innovation is about using our imagination rather than our ability to reason. We can manage imagining because we experience it everyday as part of life integrated into our ordinary experience. So my argument is that we know a lot about managing our imagining, and this has much to tell us about managing innovation as the imagining of the organization.

¹ Mintzberg, H. (1973). *The Nature of Managerial Work*. New York: Harper & Row.

² Mintzberg, H. (2004). *Managers not MBAs: A Hard Look at the Soft Practice of Managing and Management Development*. San Francisco CA: Berrett-Koehler Publishers.

My second point, therefore, is that managing innovation may be less about managing reasoning than about managing the imaginings of others.

It is important to stop thinking of innovation as something unusual, difficult because organizations are so rigid. The reality is that real organizations only cope with each new day's unexpected crises, and so create their sense of relative order and constancy, by generating a steady stream of innovations. Computer folk call these 'work-arounds', managers often call it 'fire-fighting', and whatever it is it takes up most of their time. The notion of change-resisting organizations making innovation so necessary and difficult is mostly a myth derived from our attachment to rationality. In fact the persistence of the firm, its sense of order and continuity in the real highly dynamic world of unexpected happenings is an astonishing managerial achievement.

How can we think about this sort of everyday innovation? Again I want to avoid the idea we find in much of the creativity literature that the employees' imagination is something managers need to stimulate. DeBono suggests we stimulate or release the imagination with tricks and exercises³. With a whack on the side of the head we can get our people to think out of the box, and so forth. I believe this misses the core issue. We are always using our imagination. We could not negotiate everyday living without it, for the circumstances of life are always the conditions of incomplete information which brings reasoning to its knees. The unplanned is normal - except, apparently, in business schools when they think about management. In practice the unspoken managerial challenge is to get people - and managers - to direct their imagining towards organizational problems and objectives rather than elsewhere, to their personal goals perhaps, to their political struggles against others in the organization.

To manage innovation is to direct, channel, and harness the imagining everyone does all of the time. So, for those interested in the theory of the firm, I am suggesting a dialectical theory. On the one hand we have the firm as a system of distributed reasoning, of bureaucratic or economic rules directed towards the organization's goals. On the other we

³ De Bono, E. (1973). *Lateral Thinking: Creativity Step by Step*. New York: Harper Collins.

have a directed system of distributed imagining. This is an innovating firm, but one that is managed nonetheless.

OK, this is all rather vague - are there more specifics? The idea that innovation is mostly about new products denies the complexity and dynamism of today's business models. Apart from innovative products, we must consider innovations in marketing channels, sources of funding, networks of relationships with suppliers, sub-contractors, and alliance partners, managerial styles, the business structure itself, the adoption of new information technology capabilities, the introduction of new materials, systems, and manufacturing techniques, and so forth and so on. In the automobile business, for example, innovation in the supply chain's structure and management, more or less what we mean by lean production and globalization, is strategically more significant than any new product shown in Turin.

I have been mixed up with autos for many years and recently did a report on the US auto industry for the Finnish government. The world knows the Big Three (Ford, GM and DCX) are in bad shape - even if their senior managers do not. In spite of their ability to produce exquisitely ugly and inappropriate machines, with proper deference to those here associated with Ducati and Lamborghini, I have to tell you that their engineering and production is as good as their competitor's. It is other aspects of their business model that are broken, especially the management of their business's innovation processes. Aside from more effective senior management, these firms do not need anything they do not already have. Yet they are surely going to disappear, as illustrated in Gerardo Patriotta's fine book about the changes at Fiat⁴.

How does knowledge management help us get to grips with innovation? Knowledge itself is a puzzle and rather than arrive here in the midpoint between Rome and Athens and suggest we can settle thousands of years of discussion about what knowledge is or is not, we can show some humility and look for notions of knowledge that help us get to grips with its contemporary managerial implications. We want KM to help us see things about

⁴ Patriotta, G. (2003). *Organizational Knowledge in the Making: How Firms Create, Use, and Institutionalize Knowledge*. Oxford: Oxford University Press.

organizations and management that are not immediately obvious from the rationalist position which has become the business school convention.

I believe the KM discourse is innovative primarily because it draws attention to practice and to the notion of implicit resources. We might say KM's basic idea or axiom is the distinction between explicit and tacit knowledge. Nonaka & Takeuchi⁵ used this to great effect to put KM before the public. The idea, in Polanyi's famous phrase, is that we know more than we can tell, we can do things without being able to explain how we do them. The most-quoted example is of riding a bicycle. This attention to practice suggests we actually have three categories of knowledge:

- Knowledge as Data
- Knowledge as Meaning
- Knowledge as Practice

We can innovate and create intellectual capital of all three types. The distinction between data and meaning is already familiar. Meaning is the frame or lens we impose on the data. Data is only informative when we know its meaning. Information is data infused with meaning. Having to 'connect the dots' is having data without meaning. This also splits learning from others or innovating ourselves into three categories. We can acquire more data, more facts within a stable frame or meaning system. For example, we can learn how many road-traffic deaths there were in 2005 compared with 1995. The frame is constant. But we might also find a new meaning system and see things in a different way. We might include accidents to pedestrians, not just people in vehicles. Data oriented learning is not the same as the meaning-oriented new frame kind, so the two must be managed in different ways. We can put in new information systems and so bring new data to our decision making, but this is useless if we do not know what to make of the data, what kinds of decision to make with it. Mission and vision are important to organizations; they are the touchstone that gives data its meaning, transforming it into organizational information. Changing the organization's meaning system, which is its strategy, is a complex task of

⁵ Nonaka, I., & Takeuchi, H. (1995). *The Knowledge-Creating Company: How Japanese Companies Create the Dynamics of Innovation*. New York: Oxford University Press.

communication and implementation. It cannot be accomplished with an email or treated as a matter of data alone.

The knowledge management literature brings little new to the data and meaning discussion for we already have communication and decision-making theory. However, KM does give us something new when we consider learning a new practice, acquiring a new intangible asset. I started out making the point that innovation is operational, a matter of real practice in a real context. Referring especially to the work of Jean Lave we can use the term 'situated'⁶. Practice is not simply a matter of data or meaning, abstract mentalist stuff going on in our heads, practice is in-the-world and this is the clue to getting a better handle on the management of innovation.

There is a growing interest in theorizing practice as something that goes beyond the rational implementation of instructions or rules. Rules appeal to a person's reasoning. You use a logical language to say do this and subordinates implement your instructions because they know what the language means. Driving instructions are like this; turn right at the gas station, left at the supermarket, and so forth. The purpose of the activity is clear, plan-able and we have what writers like Argyris call purposive action. Most management theorists treat practice this way, as what follows from rational goal-driven thought and communication about such rules and instructions. For them administration means creating instructions and measuring to see if people followed them. But you cannot instruct people to innovate, for you are calling forth their imagination, and that cannot be instructed. Some other kind of management is implied.

Something beyond reason is involved in the shift from the instruction to ride the bicycle and its achievement, actually doing it. The easy way to avoid analyzing this to argue that successful practice is a sort of 'natural' effect that needs neither explanation nor examination. Give a man a bicycle and sooner or later he will ride it, just as in Kubrick's film 2001 the ape uses the bone as a tool. But how, why, and when - only when a black slab arrives from

⁶ Lave, J. (1988). *Cognition in Practice: Mind, Mathematics and Culture in Everyday Life*. Cambridge: Cambridge University Press.

space? We need to look at the domain between pure reason and the purely natural and see us as able to influence it. There is something important here. As Huizinga suggests⁷, innovative practice comes from letting people try something out, play around. But the main point is that innovation comes from within people not from space, and though you can suppress it, you cannot determine it.

So is managing innovation just about encouraging the employees' imagining? I am sure many of you are interested in motivation and debate whether intrinsic motivation is more likely to lead to innovation than extrinsic motivation, or vice versa. Many consultants feel managing innovation is really about aligning the real incentives, those that determine employees' behavior, with the organization's goals. But they are thinking like economists, for their presumption is that people act in their own interest. But they also have to assume employees can forecast the outcome of their action before they act. This is not a useful explanation when the outcome is not known i.e. when dealing with innovation.

In the background here is our Model of Man or basic notion of what we mean by a person. The rationalist position is that the human being has three defining capabilities, sensing, reasoning, and memory. In this framework innovation, like learning, can only be about gathering more data, using the senses, memory, and reasoning, teasing out and recalling the conclusions implied by the new data. The other kinds of learning, such as coming up with new models of the world, force us to introduce the imagination as a fourth human-defining capability. This is the capability we deploy whenever reasoning and memory fail to make comprehensible and actionable what we are sensing.

Unfortunately, even though imagination clearly stands behind coming up with new ideas or practices, it threatens the entire analysis. If we lose the ability to explain what determines the particular outcome in terms of a rational model i.e. the application of reason, what are we left with? Those who enthuse about motivation or the encouragement of employee creativity normally ignore the basic question managers must face as soon as they admit the

⁷ Huizinga, J. (1955). *Homo Ludens: A Study of the Play-Element in Culture* (R. F. C. Hull, Trans.). Boston MA: Beacon Press.

imagination; the question ‘How do I ensure the result is in the firm’s interest?’ The last thing real responsibility-bearing managers need is a bunch of innovative ideas or practices that run counter to the organization’s goals, which is why they are not inclined to let subordinates use their imagination, and prefer clear instructions and tight controls. I don’t know enough of the Parmalat case to comment, but Enron Chairman Ken Lay’s defense is that Fastow abused the permission he was given to use his imagination. So managing innovation is not about letting people imagine whatever they want. Encouraging the imagination is OK, but only if it is channeled towards the firm’s needs.

How to do this? This is the key point of my talk. Managing the imagination once we let it into the discussion, means being able to shape it in others towards the organization-defining goals. If we simply assume the imagination, bringing it into the discussion as a human-defining capability, we can only theorize its application, not its nature or encouragement. So we must theorize by attending to the situated constraints on the imagination’s application. This is something to do with the context and with managers’ ability to shape it, making sure those whose imagination is being brought into play are aware of the specific situated-nesses and constraints that express the firm’s strategy and direction. When you employ someone the first task is to help this person internalize the way things are done in the firm, the workplace practices and attitudes that institutionalize the firm’s goals. In Nelson and Winter’s terms⁸, they must learn the organizational routines that have survived the ongoing evolutionary selection process and now carry the firm’s genetic identity. The new hire has to familiarize her/him-self with these as the real constraints over their everyday workplace imagining.

In short I am suggesting managing innovation is about redirecting the employees’ imaginings towards the firm’s objectives, as operational constraints over what can be imagined. Broad abstractions like Vision and Mission are typically irrelevant to the operational level. Who knows what such frequent mission-statement components as ‘people centered’ or ‘seeking

⁸ Nelson, R. R., & Winter, S. G. (1982). *An Evolutionary Theory of Economic Change*. Cambridge MA: Belknap Press.

excellence' might mean to the Ducati engineer tasked with redesigning the bike's exhaust system to make more effective use of its resonant frequency?

Management's task, therefore, is to translate the firm's objectives into a set of strategic constraints over the imaginings of the employees, and communicate them to those whose imagination is to be harnessed to the firm's objectives. Bear in mind these constraints normally differ for each individual because of the extensive division of labor characteristic of the modern firm in which everyone is a professional. The exhaust engineers' imaginings need to be constrained in ways that differ from those of the chassis engineer's, or the marketing folk and the firm's accountants.

We can probe into this by thinking about the term 'business model'. The attraction of this term is that it can cover intangible resources such as practices and culture in addition to the easily known facts of the business. Economists treat the firm as a 'black box', an unexplored place into which you feed factors of production and out of which come the products and services that go into the market. Organization theorists treat the firm as a machine-like system in which the factors of production flow through processes that transform them into final products. These models are hyper-rational and presume explicit rules and instructions, either those of the market or those of the administration.

When we probe the business model as an ongoing set of practices, KM draws attention to the implicit and unarticulated practices that complement the explicit dimensions of the economic and organization theorists' models. Competent managers handle routinely both. On the one hand they deal with the practices of their less than perfect markets, and on the other with their less than completely rational organization. Their firm's intellectual capital comprises knowledge-as-practice as well as explicit knowledge-as-data and knowledge-as-meaning. So I am arguing the tacit components of the firm's intellectual capital or business model are the outputs from the employees' imagination as they confront the unplanned and unexpected, internally or externally. It is the body of work-arounds necessary to keep the business working and orderly in the face of the ongoing unexpected disturbances. Managing these means selecting out those resulting innovations that support the organization's objectives and reshape the business model, the Nelson & Winter approach I just mentioned.

But I am also suggesting managers must set up and communicate appropriate constraints over the employees' imaginings, so actively directing them rather than passively merely selecting them.

When managers use the term 'business model' they encompass the institutionalized practices of the firm along with its explicit structures and processes. They are what make the firm's abstract and explicit plans and ideas function in the uncertain circumstances of their implementation. The term business model embraces the firm's tacit components, culture, norms and values, what enables the employees to distinguish acceptable innovative practice from the unacceptable. So my first conclusion is that managers shape the firm's innovative practices by clarifying the business model, both the firm's existing model and that desired if the firm is to change. The Big Three auto companies seem unable to comprehend the intangible dimensions of difference between their current business model and that deployed by Toyota, particularly the difference between the essentially domestic nature of the US one and the more global one evolved by Toyota and Honda. Hence these senior managers are unable to do the most fundamental part of their job, which is to help their employees and collaborating alliance network comprehend how to change and so deal with the competition that is clearly heading to annihilate them.

When communicated effectively at the level of day-to-day practice the business model is embedded in the organization's practices⁹. It is the touchstone against which every employee tests the innovative practice implied by his or her imagining, no matter how minor a move this may be. Institutionalization means moving from the abstractions of organizational goal and mission statement to the situated-ness of everyday practice. For instance, after-sales call center agents must decide how to respond to customer complaints. They are given rules and training, of course, but these are never sufficient to determine their everyday practice. Is the caller a victim of the firm's mistakes, to be given some help, or a boring complainant who needs to be gotten off the line as quickly as possible? These distinctions, whose meaning lies in the agent's subsequent practice, can never be established

⁹ Rhenman, E., Strömberg, L., & Westerlund, G. (1970). *Conflict and Co-operation in Business Organizations*. New York: John Wiley & Sons.

unequivocally, so the agent's imagination is drawn into play. When the agent has internalized the firm's business model, it indicates to him or her which imagining is acceptable and which not. So the business model, covering also the pattern of constraints over the employees' imaginings, complements the firm's body or system of rules, routines, and practices. It becomes the firm's intellectual capital - that which reaches beyond what it knows explicitly and has articulated into its rules as data and meaning. It covers not only what is known but also the guided imagining brought into play when the firm experiences its lack of knowledge.

My final point is about how such business models are constructed. Are they profoundly holistic, like a culture, or can they be teased apart enough to help managers see the different dimensions of constraint over the employees' imaginings? The economists' notion of the firm derives from Adam Smith's business model. You remember this comprised land, labor, and capital as factors of production, and goods and services as outputs. So perhaps there are five dimensions of possible innovation.

The stakeholder model of the firm is an attempt to explore the larger number of dimensions whose intersection comprises the firm¹⁰. But it may be more useful to think in terms suggested by Chester Barnard's work on executive work¹¹, supported by theorists like Giddens and Luhmann. First there are physical constraints over the imagination. Materials have properties which cannot be denied. For instance you can do stuff with carbon fiber you cannot do with steel. Ratan's Voyager and SpaceShipOne are strange monuments to pushing the physical limits. Likewise we cannot operationalize or build the perpetual motion machines which we can quite easily imagine because the laws of physics continue to apply. The universe of physical constraints is explored by natural science, and can be understood as a picture of Nature, or as the discovered constraints over the implementation of what we can imagine.

¹⁰ Freeman, R. E. (1984). *Strategic Management: A Stakeholder Approach*. Marshfield MA: Pitman Publishing Co.

¹¹ Barnard, C. I. (1938). *The Functions of the Executive*. Cambridge MA: Harvard University Press.

Managers are also conscious of social and economic constraints over their imagination. Corporate laws exist and vary significantly in different countries and markets. Customers have ideas and behaviors which firms cannot ignore. Thus CocaCola's business model does not explain why its syrup needs to be reformulated in different places around the world; it is about knowing how that tastes vary and must be accommodated. Likewise there are moral and psychological universes of constraints. These cannot be escaped no matter how universal and objective we think managers might wish to be. The Enron cases, and last week's case against Murakami, the Japanese corporate raider, illustrate the conflict between these mens' personal views and those of their contexts.

In conclusion then I make the following points. Innovation and the need to think in ways that embrace change force us onwards from the familiar reason-based models and towards engaging the human imagination. We move towards complementing the theory of the firm as a system of directed rationality with a notion of the firm as also a system of directed imagining. Instead of managing by instruction and rule making alone, effective managers tease out the constraints implicit in their business model's tacit dimensions. Once surfaced and known parts of the firm's intellectual capital, these constraints to the employees' imaginings are opened up to managerial manipulation through communication, budgetary control, instruction and so forth.

Thinking about innovation shifts our attention away from managers as designers and controllers of rational systems, or even as passive victims of determining market forces, and towards managers as active participants in construction of their technology-penetrated socio-economic contexts. These contexts are populated by other imaginative people, such as customers, employees, and collaborators, not just the managers themselves. This calls for a dimension of humility and collaboration absent from the economic and organization literature. So managing innovation is about engaging these others on their own terms, respecting them and their imaginations, rather than denying them such choices as disturb our business model.

Thus the firm's intellectual capital, the focus of our conference, extends beyond what it can know as prior to and articulated into its processes. This is the static rational view. In

contrast, intellectual capital is in the world, alive, engaged, and so must embrace the organization's capability to respond to the unexpected and unplanned. But it is not the organization's intellectual capital until it can be distinguished from the personal capital of those involved. Thus the firm's intellectual capital reflects and implements its strategic direction. This brings up ICs dynamic innovative and situated dimensions. In conclusion, then, managing innovation is about combining the rational goal-oriented and the situated post-imaginative dimensions into the on-going dynamic system of practices that some call a community.

Thank you for giving me the opportunity to talk over these important issues with you.