A new substantive theory of sustainable creativity and innovation through the integration of cultures

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Abstract

The research is intended to make a contribution to knowledge by proposing a new conceptual model that extends established theories of creativity and theories of innovation. It seeks to provide a generalisable framework that shows how to develop more creative people and how organizations can create a culture of innovation that can harness this creativity. In the increasingly oligopolistic world of business, in which old ideas can be copied and replicated at lower and lower costs, it is the constant renewal of creative solutions that is the ultimate differentiator of survivors.

The core philosophy of this new theoretical framework is the connection between the development of people first as individuals, then as teams and then across the organization (which contributes to the long-term sustainability of the organization) and the constant renewal of talent and motivation of its workforce.

To undertake this research required a change in mindset away from more simplistic linear and bi-modal ideas, characteristic of western cultures and methodologies. Weighing the relative merits of 'this or that' action along a linear scale where you can only have more of one at the expense of the other, or assuming that action is limited in choosing between 'this or that', too often results from the consumer idea of choice and suffering from (Cartesian-based) western education. Do you want tea or coffee?

The research reveals that to become more creative and to harness the talent of being creative requires us to think in terms of asking 'Can we have our cake and eat it?' or, more succinctly, as developed from this research, 'How can we combine and not simply choose between options to open up new avenues to deal with today's fast changing world?' So it is not about choosing between a beer or a whisky, but asking if we can combine the two (as in a 'chaser') to create something more. This new construct for 'making connections' is the core of the new theory base.

Organizations often focus on systems and process changes. But the key message from this research is the importance of behaviors and actions by leaders and managers that can lead to a supportive climate that respects and reinforces creativity and innovation essential to the longer term sustainability of the organization. When creativity is put in the context of realizing business objectives and solving business issues, its results are greatly enhanced.

The research makes a contribution to professional practice as it seeks to help business leaders and managers understand how their behaviors have consequences for the working context of their employees and thereby how they can synergize the needs of the organization with the needs of the individual employee and secure the best for all. It will also be of value to individual employees and students of business and management who need to learn and understand the increasing importance of these 'soft issues' of work and organizations, over and above functional disciplines and business economics.

This monograph is in part a summary of the author's new book 'Riding the Whirlwind' (to be published by 'Infinite Ideas Limited'[1] 22 Oct 2007 ISBN-10: 190594036X) which includes a comprehensive exploration of creativity and innovation from this new perspective with a business focus. From October 22nd readers of this research can explore some of the profiling instruments described herein and access interactive cases studies and further content at *www.ridingthewhirlwind.com*.

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[1] Also available as a Dutch language edition

> **'Life is a bursting unity of opposition barely held.'**
> **'A nation should be just as full of conflict as it can contain … but of course, it must contain.'**
>
> *Robert Frost*

Introduction

The research quest

My current research focus is seeking to provide a contribution to knowledge by proposing a new conceptual framework that extends established theories of creativity and theories of innovation.

Much theory has been researched, developed and published about creativity and innovation *separately*. And much has also been investigated about corporate culture and mechanistic and structural approaches to innovation in organizations. What is severely lacking is a single conceptual framework that brings these separate domains together and integrates the separate topic areas.

The core philosophy of this research is a new substantive theory that connects the development of people as individuals, then as teams and then across the organization that contributes to both the long term sustainability of the organization combined through the constant renewal of talent and motivation of its workforce.

The research imperative and drivers

In an ever oligopolistic world of business in which old ideas can be copied and replicated at lower and lower costs, it is the constant renewal of creative solutions that is the ultimate differentiator for survival of organizations.

In their study of Global CEOs, *Expanding the Innovation Horizon* (2006)[2], IBM concluded that leaders in every industry and in every part of the world are emerging from a period of retrenchment and cost cutting and moving toward a vision of sustained growth. The study indicated a growing recognition that new innovation is the preferred path to achieving organic growth and brand value. After interviewing 765 CEOs around the world, IBM asserted that the CEOs' view of innovation is evolving beyond the traditional focus on pure invention and new product or process development, and that they are placing increasing emphasis on differentiation through innovation in the basics of their business models. In short, innovation has regained its central place in corporate life. So it should. However, the innovation of today is of another shape and reveals itself in different types of processes than traditionally conceived.

Limitations of professional practice and the theory base

There are many counterproductive forces related to the process of innovation. First, we find that the commodification of education – a prime killer of creativity – has not helped to make our graduates become more innovative. In fact, to the contrary. Second, current practices in organizations, from Sarbanes Oxley to the Hay system of job evaluation, have not been an effective framework for the creative person that supports or enables breakthrough services. In contrast, there seems to be an increasing drive for us to control our processes as much as we can and avoid mistakes at all costs. But, despite the fact that we seem to have tried to numb our creative processes more and more, the countervailing powers are at least as big. With the globalization of the world's business, we are increasing the diversity of our business partners. And through mergers and acquisitions, and less formal co-operations like joint

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[2] *Expanding the Innovation Horizon*, the Global CEO study 2006, IBM Global Services, New York, USA, 2006

ventures (JVs) and partnerships, we have also added diversity to the gene pool.

So in business practice we see two trends occurring together: on the one hand, an increasing standardization of the world; and on the other hand, an ever-growing diversity. When we connect the two, we have the essence of what the new innovation is all about. The joining of things we share, as well as the things that differ, is the essential task of leadership. And it is perhaps, this mode of leadership that we are currently missing the most.

Theory hasn't caught up with the changing world and has little to offer and provide a general framework to advise practitioners. The theory base has suffered from (scientific) reductionism and is not surprisingly highly segmented in to the separate and unconnected domains of creativity, invention, and business development. There is no generalisable theory that informs professional practice (nothing to help leaders, HR professionals or team leaders) for today's world.

My research seeks to build an integrative theory. Whilst there is 'nothing as practical as good theory', said Kurt Lewin, I would add that is nothing like contemporary professional practice to build good theory.

Problems of education and classical paradigms of inquiry

Education stifling creativity

One of the key factors that inhibits the development of an innovative culture is embedded in our education system. Many academics from Glickman[3] through Mintzberg[4] to Russell Ackoff[5] make it clear that what schools want is children who think the way their parents want them to think: conservatively, not creatively. They argue that often teachers unconsciously assume that the objective of learning is not to find the solution, but to find *the solution the teacher knows.* There is no interest in any other solution.

So creativity can be described as the process of breaking the assumptions one has accumulated unconsciously through one's collective programming through education, upbringing and/or culture. The teaching of creativity has a lot to do with revealing the common property of solutions, and breaking the assumption that the solver imposed on the problem.

As Ackoff[6] observes:
> 'A puzzle is a problem that one cannot solve because of a *self-imposed constraint*. Creativity is shackled by self-imposed constraints. Therefore the key to freeing it lies in developing an ability to identify such constraints and deliberately removing them.'

Our traditional Western education might not help us to remove self-imposed constraints. On the contrary, it might even add some more. And very often, this doesn't stop simply in the academic educational environment: in business too, we have to focus on what MBA education and in-service training has done to our creativity.

"Conventional MBA programs train the wrong people in the wrong ways with the wrong consequences," states Mintzberg, who proposes drastic changes in our traditional form of management education. He discovered a profound "disconnect between the practice of management... and what went on in classrooms." Using words like "arrogance," "mindless"

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[3] Carl D. Glickman (Editor), *Letters to the Next President: What We Can Do About the Real Crisis in Public Education*, Teachers College Press (February 2004)
 crisis of education
[4] Henry Mintzberg, Managers Not MBAs: A Hard Look at the Soft Practice of Managing and Management Development, Berrett-Koehler Publishers (January 1, 2004)
[5] Russell L. Ackoff, *The Art of Problem Solving*, p.5,Wiley Inter-Science, 1978
[6] Russell L. Ackoff, *The Art of Problem Solving*, p.9, Wiley Inter-Science, 1978

and "exploitation," Mintzberg outlines just what is wrong with MBAs (the people and the degrees) and why the model he has developed is rooted in the real world and, as such, is far more relevant and valuable to students, companies and the business world at large.

Innovative economies are based on good management, not on good business schools, Mintzberg believes, and because the top companies employ the top MBAs and the top MBAs (not to mention the mediocre and bottom-level degree-holders) are, or so he says, the products of an out-of-touch and unrealistic graduate program, then the effects of this miseducation can be felt far beyond the classroom walls.

There are three 'serial killers' of the creative mind of the MBA student. One is the assumption that there is *one best way* to solve almost any business challenge. The second is the assumption that the best way to model the complex business world is *linear*, where one side excludes the other. Just look at how students are graded. You make a mistake and it is deducted from the total number of points you can get. And what about 'the one-day MBA' that is so popular in many parts of the world? Finally, education is very often geared towards the *control* of the business environment and the avoidance and elimination of mistakes. All these components are creativity killers.

Limitations of conventional investigative approaches

More complex are various methodological issues that surround issues of research design that can lead to new generalisable theory that transcends the different subject domains. Conventional wisdom dictates that a finite choice has to be made between positivistic or interpretivistic inquiry whether qualitative or quantitative. Mixed methodologies are only a compromise solution and limit the ways in which we can think and thus model reality. This is discussed further in the body of this paper. Not only do we have to develop new theory for innovation, but develop an entirely new paradigm of inquiry and associated methodological approach to be able to research and describe it!

In proposing our new conceptual framework in which we proffer that creativity and innovation are the result of reconciling standardization with diversity through leadership, then there are hopeful developments. The internationalization of business and the increased number of inter-organizational activities give an enormous boost to creative energy. Even American culture is becoming increasingly aware that pushing harder to have the world follow one standardized logic (forgetting to add that it happens to be theirs) hasn't worked; not in business, and neither in politics. The world might become flat in some ways, as Friedman[7] assumes, but it is quite spiky as well, as Richard Florida[8] demonstrates.

We have to deal with three crucial levels of the innovative culture: the individual, the team and the organization. An organization cannot be innovative if there are no creative individuals working to fulfill their personal dreams. Yet you can put creative individuals together and end up with a team that is actually very *un*creative. Creative people need to have people with complementary competences around them to make the team inventive. And haven't we all seen organizations where the Research and Development (R&D) and marketing teams are (separately) excellent, but the organization is dysfunctional because they can't work together? Indeed, an innovative organization needs to develop a pattern of interactions where individuals and teams work effectively together for the larger objective of the organization.

[7] Thomas L. Friedman, *The World Is Flat: A Brief History of the Twenty-first Century*, Farrar, Straus and Giroux; expanded and updated edition, 18 April 2006
[8] Richard Florida, *The World is Spiky*, The Atlantic Monthly, October 2005

Research Questions

Given the disparate absence of a clear generalisable theory base to inform professional practice and the limitations of extant knowledge in several discrete disciplines when seeking to assemble a holistic conceptual framework, we are lead to the following research questions:

1. what limitations can be identified of traditional paradigms of inquiry (positivistic, interpretivistic, etc) in researching creativity and innovation?
2. what new insights can be elicited by seeking to integrate theories of creativity and theories of innovation by a new approach to research inquiry based on non-bi-polar 'through-through' thinking ?
3. can we apply and extend and improve existing models to make them transferable across cultures?
4. can we build an integrative approach that is generalisable and informs professional practice?

Research Design

As explained in the body of this monograph, we have been anxious to explore the limitations of models developed from classical paradigms of inquiry and associated methodologies. Thus we sought to free ourselves from the classic choices between positivistic or interpretative methodologies, deductive or inductive, and quantitative or qualitative approaches. Our earlier work on culture has revealed the requirement to think about opposite points of view. Our published research on 'dilemmaism' offers a way of transcending such extreme choices. The fundamental notion for this research was and is to force oneself to always consider the opposite of any perspective and how they can be combined. The paradigm of inquiry is therefore to frame all questions and incidents and tensions or problems or challenges as dilemmas.   As revealed in this research, the dilemma can then be mapped and extended and explored from which reconciliation provides solutions.

Primary research data

We have made extensive use of face-to-face interviews with innovators and business leaders and managers in a wide range of organizations from different industry segments and functional disciplines. We have made extensive use of web technology for both open and closed online instruments and thereby capturing some 8000 dilemmas, value and cultural orientations of 80,000 plus respondents world-wide.

The data has been subject to rigorous data mining and analysis ranging from classical factor analysis and clustering, through to linguistic analysis of textual responses.

Triangulation of interviews, soft data and hard data provides evidence for high reliability and validity of the findings.

Critical Discussion: Individual Creativity

Implicit and explicit theories

The creation of a culture of innovation often starts with the individual, the entrepreneur, the whiz kid. There are few innovative organizations that don't have some unusually creative individuals. They are constantly challenging the organization's routines, irritating their more conservative colleagues and making many mistakes on their way, from which they constantly learn.

People like actors and sculptors sometimes think that they all have creativity. But not everybody who has new ideas is creative. In the past it was a luxury; now, in the global economy, it is a necessity for survival. If you are not creative, you are dead. It is nonsense to say that you are either creative or not - anybody can become creative, but this is counter-cultural. Researchers have had to overcome the prevailing wisdom that creativity is possessed by only a gifted few.

What kind of special competence(s) does the creative person possess? And is it innate or can you teach it? A great deal of effort has been made to try and define creativity. Early Greek philosophers thought it was a mystical inspiration from the seven muses and later Freud viewed creativity as resulting from the tension between conscious reality and unconscious.

One of the problems is the enormous range of implicit theory, that is, what people think creativity is implicitly, rather what has been explored systematically and rigorously through critical research. Many of us have various ideas about creativity often based on 'great man' theories (such as Leonardo da Vinci or Einstein) but cannot explicitly state what this is. Most of the explicit theories generated in the field of creativity have focused on identifying how much creativity a person possesses rather than what it is. This approach is interested in measuring the capacity or ability to create, evaluating the "correctness" of responses. Ability or level of creativity might be measured by fluency, flexibility, originality and elaboration; it is specific to the situation being examined. This is called the *level approach*. Thus we might contrive an instrument that 'measures' how much creativity a person has based on the following dimensions:[9]

> **Connections**: the capacity to make connections between things that don't initially appear to have connections
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> **Perspective:** the capacity to shift one's perspective on a situation in terms of space and time and other people
>
> **Curiosity**: the desire to change or improve things that everyone else accepts as the norm
>
> **Boldness**: the confidence to push boundaries beyond accepted conventions and the ability to eliminate fear of what others think of you
>
> **Complexity:** the capacity to carry large quantities of data and to be able to manage and manipulate the relationships between information
>
> **Persistence:** the capacity to force oneself to keep trying and derive more and stronger solutions even when good ones have already been generated
>
> **Abstraction:** the capacity to abstract concepts from ideas

Since the 1950s, researchers have focused on understanding how people manifest their creativity. This so-called *style approach* recognizes that people express their creativity in different ways or cognitive styles. The style approach aims to answer the question "How are you creative?"

The need for identifying highly creative individuals generated an impressive amount of

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[9] As used by CREAX NV, Belgium, in their 'Creativity' Profiling tool

research that focused on the level approach. This situation reinforced a commonly held belief that creativity is limited to a minority capable of generating creative thinking. A corollary of this argument is that geniuses use cognitive processes that are radically different from those employed by most individuals. Most researchers conclude that we are all, or can be, creative to a lesser or greater degree if we are given the opportunity.

In summary, the spectrum of components that various authors come to include when defining creativity comprises four characteristics:

1.   they always involve thinking or behaving imaginatively.
2.   overall this imaginative activity is purposeful: that is, it is directed to achieving an objective.
3.   these processes must generate something original.
4.   the outcome must be of value in relation to the objective.

Once the *level* of creativity could be identified[10]. consistently and reliably, the next wave of research examined whether or not those levels of creativity could be enhanced. Torrance[11] and Presbury[12] identified a total of 384 studies that examined the effectiveness of creativity training. The majority of these studies concluded that creativity can be enhanced through formal training. Perhaps one of the most extensive studies on the effects of creativity training was conducted by Parnes and Noller [13].

However most suffer from the fundamental flaw that they are based ***only*** on linear scales, where one orientation excludes the other. Let's try it:

Creative people are more...	Creative people are less...
Intuitive	Sensing
Perceiving	Judging
Thinking	Feeling
Extrovert	Introvert
Tortoise brain	Hare brain
Lateral	Focused
Risk-taking	Securing
Hunting	Gathering
Individualistic	Consensus seeking
Right brain	Left brain
Etc.	Etc.

There might indeed be relationships between certain dominant orientations and the creative competence of an individual, but an important point has been missed. 'Stop!' some would say. Many have done solid research that shows a correlation between certain of the above preferences and creativity. Take the work of Kirton, the renowned British psychologist, who developed the well-regarded instrument, the KAI Inventory[14]. This measures individual styles of problem definition and solving. Kirton conducted a study showing the relationship between the KAI and the MBTI. The primary correlations of the KAI were with the MBTI's Sensing-Intuiting (S-N) and Judging-Perceiving (J-P) scales (Thinking-Feeling and Introvert-Extrovert

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[10] Guilford, J.P., *Way beyond the IQ*, Buffalo, NY: Beady Limited, 1977
Torrance, E. P., *Torrance tests of creative thinking: Norms and technical manual*, Bensenville, IL: Scholastic Testing Service, 1974
[11] Torrance, E. P., 'Can we teach children to think creatively?', *Journal of Creative Behavior 6*, pp.236-262, 1972
[12] Torrance, E. P. and Presbury, J., 'Criteria of success of 242 recent experimental studies of creativity', *Creative Child Quarterly 30*, pp.15-19, 1984
[13] Parnes, S. J. and Noller, R. B. 'Applied creativity: The creative studies project Part 11', *Journal of Creative Behavior 6*, pp 164-186, 1972
[14] Kirton, M. J., *Journal of Applied Psychology 61*, pp.622–629, 1980

were not highly correlated)[15]. Other studies went further, and one claimed that all four MBTI preferences correlate with creativity. Creative individuals tend to be more intuitive (N) than sensory (S), more perceiving (P) than judging (J), more extroverted (E) than introverted (I) and more thinking (T) than feeling (F)[16].

We don't dispute the relationship (statistically reliable) between these characteristics and preferences. (Recall that reliability does not mean validity!) But our new findings reveal that the essence of the creative process is not in one or other position of a continuum, but in how the opposites of the scale interact. How are the faculties of imagination, holism, emotions and connectedness of our right brain interacting through our *corpus callosum* with the preferences of our left brain to be realistic, analytic and rational? Creative people integrate *all* those faculties and, in the process discover new ideas and solutions.

Let's see what this limitation means for some of the commonly cited models of distinctive orientations:
1 Hare brain and tortoise mind (Guy Claxton)
2 MBTI (originally Carl Jung)
3 Adaptors versus Innovators (Michael Kirton)
4 The role of humour (Arthur Koestler)
5. NLP (Neuro linguistic programming)
6. HBDI (Ned Hermann's and cerebral dominance and whole brain concept)

We'll examine how powerful these ways of looking at reality are and, in addition, extend them by going beyond their inherently linear scales.

Hare brain and tortoise mind

Guy Claxton[17] makes a fundamental distinction between "hare brain" and "tortoise mind." Hare brain with its faster thought-processing speed is analytical, calculating, self-conscious, and language-dependent (and given to "monkey chatter" in its worse moments). As Claxton emphasizes, 'hare brain' is the right tool for many situations, but not all. When creative solutions are needed, when a problem is fuzzy and imprecise, then the much slower, pondering, and meditative strengths of the "tortoise mind" give answers. Others have named this 'tortoise mind' as intuition, or the unconscious, and the id. Claxton goes on to name it the 'undermind'.

Claxton explores why intelligence increases when you think less. He builds a thesis on the dichotomy between the privileged mode of intelligence-conscious, result-oriented problem solving and the less respectable unconscious intelligence. This unconscious, or 'undermind', approaches problems playfully, examines the questions themselves, and keeps us in touch with our poetic nature. His multidisciplinary approach is beautifully executed, with a constant dialogue on the virtues of intuition and a peaceful mind drawing on the works of poets, novelists, and Buddhist teachings. In the West, 'intelligence' is measured by how well we can verbalize what we do, and therefore much of human capability suffers when put under the spotlight of conscious attention. He contrasts this western approach with the actions of the 'unconscious intelligence', claiming that much of our best thinking takes place below consciousness.

That is why in management we go from one fad to another, because in the long term none of them seem to work. Management writers often say there are just five points, or seven habits, written in a very concise, rational way. You get excited, but the next day you have forgotten 50 %, and by the next Tuesday 98%. The problem in business is that these commandments

[15] Kirton, M. J., 'Adaptors and innovators: A description of a measure', *Journal of Applied Psychology, 61*, pp.622-629, 1976
Kirton, M. J., *Manual of the Kirton Adaption-Innovation Inventory*, London, England: National Foundation for Educational Research, 1977
[16] Thorne, Avril and Harrison Gough, *Portraits of Type: An MBTI Research Compendium*, Palo Alto, California: Consulting Psychologists Press Inc, 1991
[17] Guy Claxton, Hare Brain, Tortoise Mind: How Intelligence Increases When You Think Less Harper Perennial, 2000

leave no room for the tortoise mind – a terribly dangerous development that stifles creativity and innovation and inevitably leads to bad decision making. These commandments are the widely held, but misguided, beliefs that being decisive means making decisions quickly, that fast is always better, and that we should think of our minds as being like computers. Sadly, most of us today believe that a computer is of more use to us than a wise person.

Working together between hare brain and tortoise mind

With your hare brain you might easily conclude that it is in the tortoise mind that creativity is born. Yes, no doubt, using your tortoise mind made the difference. Let's go back to the question we asked at the beginning. What were the circumstances in which your best creative idea was born? Where did it happen?

Let us take a guess. You weren't working hard and pushing for the breakthrough. Neither were you just relaxing and meditating waiting for ideas to drop into your mind. You got to some great ideas when you used the tension between hard work and relaxation. It was on vacation, when you suddenly got the new ideas that could make that difficult project so much easier.

In summary, Claxton describes the hare brain as logical, fast, machine-like thinking. The tortoise mind, on the other hand, is slower, less focused, less articulate, much more playful, almost dreamy. Claxton says that the two sides *need each other* to come up with not just ideas, but good ideas. It is important to note that you need the hare brain. You need to get the information first and work hard on it through the hare brain. Only with that work will you make the tortoise mind effective and creative. You only get the solutions because you work hard. You need to do the hare brain thinking first! Then you must think through the situation and finally, when you have the ideas, you need to evaluate them logically and systematically (hare brain again). It becomes a spiral, reconciling the tension between hare brain and tortoise mind.

You may think that you consciously make moment-to-moment decisions about your life. But Claxton convincingly demonstrates that the mysterious 'undermind' has more to do with who we are and what we do than our conscious, logical, linear mind. The 'd-mode', our *deliberative* thinking style – the one we perfect in our years of schooling – is the most commonly accepted model of how our minds work. However, the experimental evidence suggests that d-mode thinking has relatively little to do with how we make most of the decisions in our lives. The d-mode actually comes up with plausible reasons that justify our actions, but it isn't the *source* of those actions. The conscious mind's job is to focus attention on a particular problem and maintain a coherent sense of ourselves; but these processes all come after the fact of our inner decision making. People often seem happier with their decisions in the long run if they think less about them from the outset. It is in this sense that 'think less' makes one more intelligent.

Myers-Briggs Type Indicator

The goal of making personality traits measurable is the fundamental quest of professional tools that seek to offer an objective assessment. Of these, the champion is the MBTI instrument; the most widely used personality inventory in history, which is administered to over three million people a year[18]. Human Resources professionals depend on it when their clients need to make important business, career, or personal decisions.

One of Jung's most important discoveries was the realisation that, by understanding the way we typically process information, we can gain insights into why we act and feel the way we do. Jung identified two core psychological processes: *perceiving*, which involves receiving, or

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[18] Isabel Myers, *Gifts Differing*, Palo Alto, California: CPP Inc, 1995. And look at
http://www.winovations.com/NFmbti.htm
Myers, Isabel Briggs, and Mary H. McCaulley, *Manual: A Guide to the Development and Use of the Myers-Briggs Type Indicator*, Palo Alto, California: Consulting Psychologists Press Inc, 1992

taking in, information; and j*udging*, which involves processing that information (e.g. organising the information and coming to conclusions from it).

Jung identified two further ways of perceiving information, which he termed s*ensing* and i*ntuiting*, and two alternative ways of judging information, which he termed *thinking* and *feeling*. Moreover, he noted that these four mental process can be directed either at the external world of people and things, or at the internal world of subjective experience. He termed this attitude towards the outer world *extraversion*, and this attitude towards the inner world *introversion*.

Limitations of the (linear) MBTI model

So, can this widely used instrument also give some clues to the creativity of the individual being evaluated?

One such variation of the basic tool that we have found to be particularly useful is the MBTI Creativity Index, or MBTI-CI. The MBTI-CI is calculated by taking MBTI scores and applying an algorithm, developed out of 30 years of creativity research at the Institute for Personality Assessment and Research (IPAR)[19].

Creative individuals tend to be more intuitive (N) than sensory (S), more perceiving than judging (J), more extroverted (E) than introverted (I) and more thinking (T) than feeling (F)[20]. In another study, the MBTI profiles of innovators varied greatly. The great majority had an ENT combination, while the split between judging and perceiving was approximately 50:50. Other studies have shown that up to 95% of senior corporate managers are STJs [21], with Americans tending to be an E type and British managers a dominant I type.

And the frequently occurring difference between innovators and managers is a source of potential conflict. Intuitives and sensers view the world very differently. A change will always seem greater to an ST than to an NT, because STs are typically more comfortable with continuous change than with discontinuous change. An NT, however, may actually enjoy discontinuous change.

But what happens when users try to apply methodologies and instruments to measure things that go beyond the environment and delimitations in which they were developed?

Personality and creativity

What we really need to ask is why the underlying models were designed around mutually exclusive values in the first place. It is because our western, hare brain way of thinking is based on Cartesian logic and forces us to say it is *either/or*, not to say *and ... and*. This contradicts what Jung had in mind when he originally construed the underlying conceptual framework behind MBTI[22].

We want to consider how we can extend MBTI by slightly adjusting the context and thereby make it a more effective instrument, measuring creativity far beyond any cultural preference. Although there is some evidence that the typologies are statistically related to creativity, we believe that the assumptions on which the instrument is based prohibit its potential to measure creativity. We need a different approach, and a different context.

First of all, it needs to be redesigned into an Integrated Type Indicator that overcomes the

[19] Gough, Harrison, 'Studies of the Myers-Briggs Type Indicator in a personality assessment research institute', paper presented at the *Fourth National Conference on the Myers-Briggs Type Indicator*, Stanford University, California, July 1981

[20] Thorne, Avril and Harrison Gough, *Portraits of Type: An MBTI Research Compendium*, Palo Alto, California: Consulting Psychologists Press Inc, 1991

[21] Kroeger, O., Thuessen, J. *Type Talk at Work*, Dell Publishing: New York, pp 394–399, 1992

[22] Carl G Jung, *Psychological Types*, Routledge & Kegan Paul, 1971

limitation of the linear model; and secondly, we need to adjust the process in which it is embedded.

Though the MBTI is a 'ready reckoner' of personality types, there are serious problems of superficiality and of proper application.

The superficiality problem stems from *either/or* classifications. Is it really the case that we judge *or* perceive, think *or* feel, etc.? Jung himself arranged his 'opposite' archetypes in the shape of Tao and wrote of *effectance through synthesis*. He warned us that ESTJ was the dominant profile of relatively young, brash people in the practical world. He regarded these as the dominant western industrial values. But is this related to the process of creation? Our research suggests not!

What Jung advocated was that we move *out* of this pattern and mature over time, especially in our later years. He believed that introversion should qualify extraversion, that intuitive faculties should guide sensing, that our feelings could tell us which thoughts were more profound and that good judgment was based on the fullness of perception. In short, Jung sought to *reconcile* his four functions, not polarize them.

It's also instructive to consider what the MBTI does *not* measure. It does not measure the capacity to reach out to another person with the opposite profile, and it does not measure how severely the 'shadow sides' are repressed within the candidate. Severe repression would, according to Jung, make it very difficult to communicate with someone with the characteristics you so dislike in yourself.

Our new Integrated Type Indicator

We have seen that the MBTI brilliantly measures four very important decisions but is unable to assess to what extent these contrasting types have been integrated *with* each other, as opposed to subordinated *to* each other. Might it be possible to *conserve* the best aspects of MBTI while inquiring about the extent to which introverted ideas have been extroverted, sense impressions have been intuited, feelings have been thought about and judgments formed on the basis of strong perceptions? And in this process of integration of opposites might we just find the key to creativity?

Given the millions of people who are interested in one way or another in MBTI profiles, it is important *not* to let all this measurement, coaching, mentoring and insight go to waste. We must, if possible, build on this famous instrument, not try to demolish it or replace it. This is what we have tried to do in our Integrated Type Indicator.

We believe that there is too much one-dimensional thinking when it comes to leadership. Thus our quest is to ask how can we extend one-dimensional models like MBTI by slightly adjusting these instruments and the way of thinking that forms the context of their application, hereby making them jewels that go far beyond any cultural preference?

We can recall that research has sought to correlate these original MBTI scales with different job categories and functions. Thus, there is evidence to suggest which dominant type best fits a marketing role and which type is found most often amongst successful managers. However, with the internationalization of business we are suddenly confronted with some interesting dilemmas that challenge this principle. Consider for example the situation where the culture in which people are being recruited has a preference for Sensing, what could be done when one is facing an environment where Intuiting is the preference for making a successful career?

Our fundamental concern with the classic MBTI and other such profiling tools is that each dimension is based on the single axis continuum. The MBTI logic asks if you are Sensing **or** Intuiting? The **more** you identify yourself as Sensing, the **less** you must be of the Intuiting type. When seeking to apply the MBTI typology, or indeed any other associative model in an international context, we find that accretion to the extremities of each scale is constraining.

Despite professional psychologists discussing preference with reference to the dominance of our right or left hand when writing, it remains a poor solution. Both could be used, but one is usually dominant. Whilst this model is applicable in explaining individual writing; it hardly helps one when clapping. During applause it doesn't really matter which hand is dominant, but success will depend on the coordination between both the hands.

Although users of MBTI do talk about combining the variety of preferences in teams and organizations, one cannot derive this approach from the basic MBTI instrument as it is based on forced choice bi-modal questions.

We have to remember that much of this type of research owes its origin to Anglo-Saxon or North American thinking, even though it has been 'exported' across the world. When we begin to incorporate other types of logic, such as Ying-yang or Taoism, we soon realize that we have been restrictive in basing the profiling on bi-modal dimensions. Let's apply this thinking and new logic to the scales of Myers-Briggs.

To test the preference for thinking or feeling, a forced choice question such as the following is usually asked:

> a. *I like to subject a problem to rational thought and logical analysis. Wishing something were true, does not make it so. Feelings are not "wrong". They're irrelevant.*
> b. *I always ask myself what I feel about a problem, because "the heart has its own reasons which Reason knows not of". I seek to develop emotional muscles.*

Thus with a series of such questions, we are trying to place the individual along the scale:

How the respondent answers this question gives insight when the dominant culture in which it is applied prefers decisiveness or being consulted (as in the original mode for which MBTI was conceived). But what if in a multi-cultural environment one finds people with different opinions? The decisive leader will agonize over the fact that many want to go for consensus. Conversely, the sensitive leader will not succeed because of an apparent lack of decisiveness. Thus we have a dilemma between the seemingly opposing orientations of Thinking **OR** Feeling.

Charles Hampden-Turner et al (2001) shows how we can reconcile seemingly opposing from his meta-level Dilemma Theory. Thus the addition of two alternative options provides a means of evaluating the individual's propensity to reconcile this dilemma:

> c. *I like to subject a problem to rational thought and logical analysis. Yet feats of intelligence or folly arouse feelings within me, so these too guide my intelligence.*
> d. *I always ask myself what I feel about a problem, because my boredom, irritation or excitement is an early clue to whether I can engage intelligently and find a solution.*
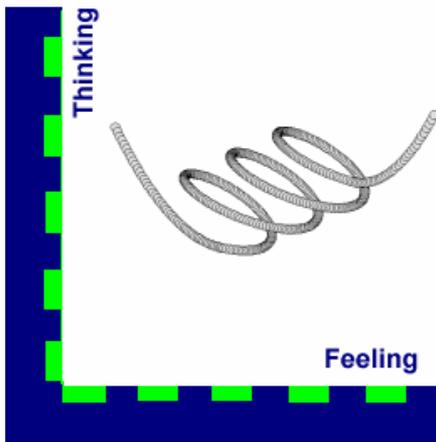
Those who answer 'c' are starting from a 'Thinking' orientation but accounting for the Feeling of others. They have successfully reconciled the opposites. This process involves starting from one axis and spiraling to the top right (10,10 position) and thus the individual has integrated both components.

Similarly, those who answer 'd' are starting from 'Feeling' but spiraling towards 'Thinking' and again integrating the two seemingly opposite orientations.
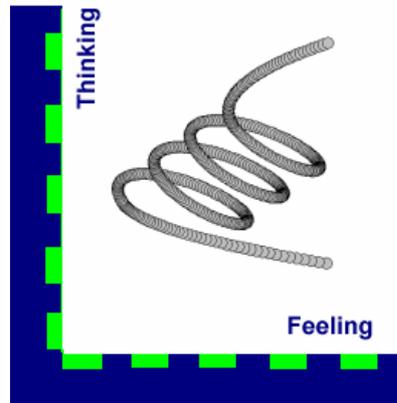
A second example focuses on the preference between Judging or Perceiving:

Conventionally instruments pose questions such as the following:

While tackling an issue I rather work in a ...
a.   structured and organized way,
*b.   flexible way, with the necessary improvisation.*

In Germany there is a tendency to one score higher on *a.* while *b.* would rather appeal to the French. Thus in a team/group of both Germans **and** Latinos, wouldn't the following be more effective to diagnose effective orientations?

While tackling an issue I rather work in a ...
c.   structured way in order to stimulate improvisation in certain boundaries
d.   way with the necessary improvisation trying to develop the best procedures and organization.

In our extended model of MBTI, which we call the ITI (Integrated Type Indicator), we use our own questions that represent the two extreme opposing values for each conjugate pair. However, we also add two additional choices that represent the clockwise and anti-clockwise reconciliation between these extremes.

By combining the answers from a series of questions in this extended format, we can compute a profile that reveals the degree to which an
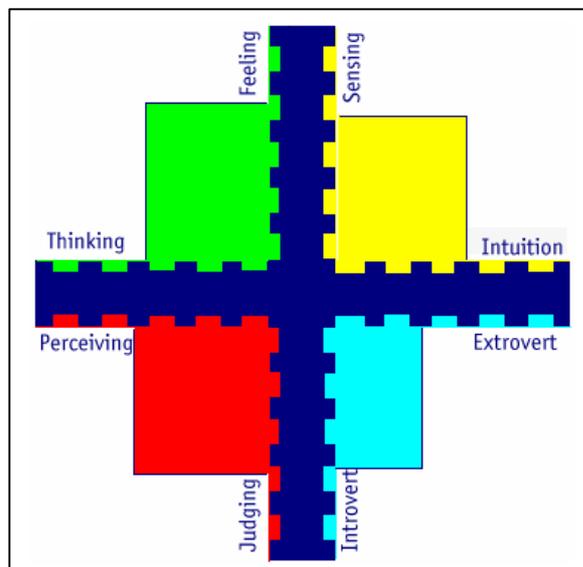
individual seeks to integrate the extreme dimensions.

Each variable is scaled from 0 to 10 by combining responses to these extended questions. A typical ITI profile could then be $I^9e^3N^6s^2T^9f^1P^8j^7$ compared to the standard **INTP** description.

Then the overall propensity to reconcile (= a index between 0 and 100) is

> **(Introvert + Extrovert) + (Sensing + Intuiting) + (Thinking + Feeling) + (Judging + Perceiving) ÷ 4 = Developing Creativity Potential**

We have analyzed responses to the web-based version of this ITI model. Taken by itself – that is, responses to this instrument alone – this model has already generated insights over and above the basic MBTI profile based on the traditional four linear scales.

Reconciliation: a new paradigm for creativity beyond cultural bias

Simply rejecting opposite orientations will get you nowhere. Abandoning your own extreme and adopting the other extreme is like trying to impress on your first date by acting out an unfamiliar role – and you'll soon be found out.

The integrated approach enables us to determine an individual's propensity for reconciling dilemmas, as a direct measure of creativity. We call this ability *innovative competence*. It transcends the single culture in which it may be measured and so provides a robust, generalisable model for all environments. Reconciliation is the real essence of the creative individual.

This ITI is different because it is underpinned by the recognition that, while managers work to accomplish this or that separate objective, creative leaders deal with *the dilemmas of seemingly 'opposed' objectives, which they continually seek to reconcile*. Given the importance of reconciling opposites, it is surprising that no instrument that measures this has been published before.

Learning styles revisited

Inspired by the work of Kurt Lewin[23], Kolb[24] provides one of the most useful descriptive models of the adult learning process available.

Kolb's model suggests that there are four stages that follow from each other: *concrete experience* is followed by reflection on that experience (*reflective observation*). This may then be followed by the application of known theories or general rules (*abstract conceptualization*), and then the modification of the next occurrence of the experience (*active experimentation*), leading in turn to the next concrete experience.

Kolb's model assumes that active experimentation and reflective observation are *opposite* modes, and that abstract conceptualisation and concrete experience are opposite modes. By crossing or combining the four learning modes, four learning style types can be defined as follows.
- *Divergers – reflective observation combined with concrete experience.*
- *Assimilators – reflective observation combined with abstract conceptualization.*
- *Convergers – active experimentation combined with abstract conceptualization.*
- *Accommodators – active experimentation combined with concrete experience.*

This distinction was first made by Hudson[25] in terms of styles of thinking rather than forms of knowledge. Kolb and Hudson took a useful step by integrating the extreme poles of their

[23] Lewin, K., (1942) 'Field Theory and Learning' in Cartwright, D. (ed.), *Field Theory in Social Science: selected theoretical papers*, London: Social Science Paperbacks, 1951
[24] Kolb, D., *Learning style inventory*, Boston, MA: McBer and Company, 1985
[25] Hudson, L., *Contrary Imaginations; a psychological study of the English Schoolboy*, Harmondsworth: Penguin, 1967

adjoining scales into new categorisations of personalities: respectively, the diverger, assimilator, converger and accommodator.

Learning styles and creativity

Broadly speaking, Kolb suggests that: practitioners of creative disciplines, such as the arts, are found in the *divergent* quadrant; pure scientists and mathematicians are in the *assimilative* quadrant; applied scientists and lawyers are in the *convergent* quadrant; and professionals who have to operate more intuitively, such as teachers, are in the *accommodative* quadrant. There are also differences in the location of specialists within the more general disciplines.

However, our research indicates that the full creative process lies in the integration of the opposites, i.e. the reconciliation of active experimentation and reflective observation, and of concrete experience and abstract conceptualisation. Again, where opposites connect, the creative juices flow.

As mentioned earlier, Donald Schön referred to the reconciliation of theory and practice as *The Reflective Practitioner*[26]. Educators have become familiar with the concept of reflective practice through Schön's work[27].

In summary, the reflective practitioner, in reconciling active experimentation with reflective observation, needs also to integrate abstractions with concrete experiences in order to be creative and avoid making the same mistakes forever.
This complementary process leads to what Lakoff[28] calls the *conceptualising experience* or *experiential conceptualisation*.

So, let's apply this logic of reconciliation to the full creative cycle, starting with a concrete experience, leading to all kinds of diverse possibilities (do they make sense in theory?), which are reflected upon through inductive assimilation.

Note that this also means that we have to ask different types of questions, to probe degrees of reconciliation, and abandon linear models.

[26] Schön, D.A., *The Reflective Practitioner*, New York: Basic Books, 1983
[27] Schön, D.A., *Educating The Reflective Practitioner,* San Francisco: Jossey-Bass, 1988
[28] Lakoff, George and Mark Johnson, *Metaphors We Live By*, Chicago: University of Chicago Press, 1980

Adaptors versus Innovators:

Kirton's KAI[29] measures individual styles of problem definition and solving. Style, in this case, refers to an adaptive, building or analogic problem-solving style versus an innovative or pioneering style.

In the following list, Jack Hipple (et. al.) summarizes the two groups and how each group is viewed by its opposites[30].

Table 1: Characteristics of Adaptors and Innovators

Adaptor	Innovator
Efficient, thorough, adaptable, methodical, organized, precise, reliable, dependable	Ingenious, original, independent, unconventional
Accepts problem definition	Challenges problem definition
Does things better	Does things differently
Concerned with resolving problems rather than finding them	Discovers problems and avenues for their solutions
Seeks solutions to problems in tried and understood ways	Manipulates problems by questioning existing assumptions
Reduces problems by improvement and greater efficiency, while aiming at continuity and stability	Is catalyst to unsettled groups, irreverent of their consensual views
Seems impervious to boredom; able to maintain high accuracy in long spells of detailed work	Capable of routine work (system maintenance) for only short bursts; quick to delegate routine tasks
Is an authority within established structures	Tends to take control in unstructured situations

Kirton noted that some managers were able to initiate change that improved the current system, but were unable to identify opportunities *outside* the framework of the system[31]. Kirton calls this style 'adaptive'. Other managers were fluent at generating ideas that led to more radical change, but failed in getting their radical ideas accepted. Kirton termed this style 'innovative'. These observations gave rise to Kirton's hypothesis that there is a personality continuum called adaptor-innovator, which presumes two very different approaches to change[32].

The main weakness of Kirton's assumptions perhaps lies in their succinctness and precision. One of the main assumptions is that cognitive style, which underlies the KAI instrument, is conceptually independent of cognitive capacity, success, cognitive techniques and coping behaviour. We agree with this – but this all comes from an assumption that Kirton makes more implicitly: that the adaptor style and the innovator style are *mutually exclusive.* This is

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[29] M.J. Kirton (ed.), *Adaptors and Innovators: styles of creativity and problem solving*, revised edition, New York: Routledge, 1994
[30] Jack Hipple (et. al.) 'Can corporate innovation champions survive?', *Chemical Innovation Magazine*, Vol. 31, No. 11, pp.14–22, November 2001
[31] Kirton, M. J., *Management initiative*, London: Acton Society Trust, 1961
[32] Kirton, M. J., 'Adaptors and innovators: a description of a measure', *Journal of Applied Psychology 61*, pp. 622-629, 1976

shown well by the presentation of the scores of the KAI instrument as the scores on a *balance*, where a higher score on the adaptor side automatically results in a lower score on the innovator side[33]. Much as with the MBTI, the main focus is on the *preferences* that people have, as people have two hands but prefer to write with one.

In order to provide empirical evidence for these bold conclusions, we asked some 250 managers from a variety of cultural backgrounds to complete our ITI and an adapted version of the KAI.

We found that creative people move more effectively *between* intuition and thinking, that innovators extrovertly publish their introverted calculation and constantly learn by oscillating *between* judging and perceiving, and finally check their feelings *through* thinking. An additional finding is that culture often determines the side that respondents start from. So we are not saying that one culture is more creative than another; only that their starting point for looking at a problem is different.

Not combining opposite logics shows an absence of creativity. Clapping with one hand makes little noise.

So, instead of questions from Kirton's original KAI that are based on linear (Likert) scales, our 'integrated innovation indicator' asks questions in the following format:

> Q1 Which of the following four options best describes how you most frequently behave?
> a) I am efficient, thorough, adaptable, methodical, organized, precise, reliable and dependable. (5 score in invention, 0 score in adaptation, 0 score in innovation)
> b) I am ingenious, original, independent, unconventional and unpredictable. (0 score in invention, 5 score in adaptation, 0 score in innovation)
> c) I am continuously checking in an organized and methodical manner whether my original ideas do work in practice. (5 score in invention, 0 score in Adaptation, 8 score in innovation)
> d) I am methodical and organized first, to set the basis to launch my unconventional ideas. (0 score in invention, 5 score in adaptation, 8 score in innovation)

From humour to creativity

Many of us fall into the same trap when we go hunting for brilliant new ideas. We roll up our sleeves and say, "It's time to get to work." A look at the creative process, however, suggests the opposite and instead we should roll up our sleeves and say, "It's time to go and play."

Here are just some of the reasons why humour and/or play can lead to creative thinking:

1. Both humour and creativity involve playing with ideas and changing our mental perspectives.
2. Play uses other part of our brains – literally providing an energizing experience that gets the neurons charged up and ready for action (laughing increases the level of adrenaline and oxygen going to the brain).
3. Play lowers our inhibitions, so we become less likely to suppress truly novel ideas.
4. Humour in a workplace fosters a culture of risk taking – an essential ingredient
5. Humour challenges our basic assumptions and rules.
6. Play encourages spontaneity – another key to generating creative ideas.
7. Humour keeps people focussed on solutions rather than problems (brainstorming vs. "blame-storming").

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[33] M.J. Kirton (ed.), *Adaptors and Innovators, styles of creativity and problem solving*, revised edition, New York: Routledge, p.105, 1994

Creativity and humour are identical. They both involve bringing together two items which do not have an obvious connection and creating a relationship. We can elicit this underlying dichotomy in some examples from the better known comedies.

The work of comedy writers such as John Cleese, (including *Monty Python*, and *Fawlty Towers*), John Sullivan (*Only Fools and Horses*) and Matt Groening (*The Simpsons*) are quite different to my professional work, but are complementary. We seem to have one thing in common: the functional use of humour. Like Arthur Koestler, they all believe that humour is very much linked with creativity. Why? Because humour is the process of discovering that two apparently opposite logics turn out both to be logical. That is what makes you laugh. As Koestler has shown, humour is built on bi-sociation [34]– the ability mentally and emotionally to traverse both paths of a bifurcating line of thought, the recognition of which provokes laughter. Bi-sociation through humour allows managers a more complex view of their organization: it offers an *and ... and* rather than an *either/or* orientation to the contradictions of managing and organizing.

The findings from our research shows that this cannot be achieved with linear thinking and an *a priori* need to avoid mistakes. If we respect the diversity of the human species and its cultures, the (business) world we are living in starts to be loaded with dilemmas that cannot be pushed aside by making linear choices. An alternative, non-linear approach is needed to reconcile these dilemmas. Humour is just one powerful way of approaching dilemmas effectively. There are always two opposite ways of messing up. We must just laugh and try again.

NLP - Neuro-linguistic programming

Is there one universal way of being creative or are people creative in different ways?

Originally, advocates of Neuro-linguistic programming (NLP) taught that most people had an internal preferred representational system (PRS) and preferred to process information primarily in one sense.

Some people have a predominance for the visual and explain how they 'saw' an idea in their head. Others are auditory and describe noises or whispers they 'heard' in their head that gave them the new idea. Some are primarily kinesthetic and can 'feel' or 'touch' an idea. There are even the gustatory who get a taste in their mouth when creating, and some can literally 'smell' (olfactory) an idea. NLP practitioners have long observed that different people use their senses in different ways in displaying their creativity but this may not mean that they use their senses in a hair brain mode. While the loss of Beethoven's hearing prevented him from playing the piano properly, it did not limit his creativity. Between 1800 and 1824 Beethoven wrote nine symphonies, many of which are still considered to be perfect. He went completely deaf in 1804, around the time he completed his third symphony, the Eroica.

NLP practitioners believe that you should observe the person with whom you are interacting and try to determine their preference. And then abandon your own preferred orientation and adopt the preferences of your business counterpart. However, we believe that this is like trying to impress someone on your first date by acting in an unfamiliar style. Creativity based on the integration and combination of all the senses is far more powerful.

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[34] Arthur Koestler, *The Act of Creation*, Penguin (Non-Classics), Reissue edition, 5 June 1990. Koestler has coined the term 'bisociation' in order to make a distinction between the routine skills of thinking on a single 'plane', as it were, and the creative act, which, as he tries to show, always operates on more than one plane.

Cerebral Dominance and HBDI

Ned Herrmann began developing the HBDI™ and Whole Brain Thinking in the 1970s. It is well established that the human brain is highly specialized. His whole brain theory allocates the brain's specialized modes into one or more of these four physiological structures. This allocation of specialized modes is the basis of the four quadrant model. Since dominance can only occur between paired structures, we now have the basis of a much more sophisticated and useful model comprising not only the left and right modes, but also the cerebral and limbic modes. The cerebral modes are made up of the two interconnected cerebral hemispheres and the limbic mode is comprised of the two interconnected halves of the limbic system. Extensive data has shown that there are an equal number of people whose mental preferences are primarily cerebral or limbic as those that are primarily left or right.

Therefore, the four quadrant whole brain model (HBDI profile) allows us to differentiate between not only the more popular notions of left brain/right brain, but also the more sophisticated notions of cognitive/intellectual which describes the cerebral preference, and visceral, structured, and emotional which describes the limbic preferences. Hermann claims that once an individual or group has their HBDI profile, they are better able to successfully apply not only their understanding of their thinking style, but also their preferred learning, communicating, and problem solving styles, and hence become more creative and effective. However, no one HBDI profile appears to correlate with the capacity to be creative.

But again we argue that it is the integration of the cognitive and limbic, and the rational analytic with the more emotional quadrants that as a whole and in the end results in creativity. People may have different starting points in terms of preferences or orientations, but it is how well they make connections between these orientations that generates new thinking.

Concluding comment

We have tried to show that with even the plethora of models and frameworks for exploring individual creativity, the emphasis is still on reductionism likely as a result of too much Anglo Saxon or US linear (Cartesian) based thinking and research.

The creative process is essentially a process where different logics are united and as such create a new reality. If we look at the Japanese garden we see it is an invitation to accumulate different viewpoints so that every tour is a creative act. And if we walk together it connects your-point-of-view with my-point-of view. Follow this journey in the rest of this lecture.

Critical discussion: Creative individuals in teams

Does individual creativity guarantee teams and organizations become more innovative, when these individuals work together? The extant research evidence is confused and open to interpretation, but research consistently shows that, for a team to be innovative, diversity is crucial. The top reasons cited by Human Resources executives for increased diversity in the workplace include not just better utilization of talent and understanding of the marketplace, but also enhanced creativity and problem-solving ability[35].

However, if we review almost 50 years of social science research on diversity in teams, the reality appears much less clear cut. Elizabeth Mannix and Margaret Lean[36] have attempted to disentangle what researchers have learned over the last 50 years and conclude that visible differences – such as those of race/ethnicity, gender or age – are more likely to have negative effects on a group's ability to function effectively. By contrast, underlying differences – such as differences in functional background, education or personality – tend to lead to performance improvement. In particular, underlying differences can facilitate creativity or group problem solving – but again, only when the group process is carefully supported.

In some early studies, Hoffman indicated that, for complex decision-making problems, heterogeneous groups produced higher-quality solutions than homogeneous groups. He suggested that diverse groups of individuals should be expected to have a broader range of knowledge, expertise and perspectives than homogeneous groups of like-minded individuals. These factors should facilitate more effective group performance, especially when the task is cognitively complex or requires multiple perspectives[37]. Conversely, other studies conclude that the business case for diversity (in terms of demonstrable 'black and white' financial results) remains hard to support [38]. However, these latter studies have all been based on generic research, without taking a holistic or medium- to longer-term perspective.

So what conclusions can we draw about how to make a team innovative?

Innovation and teams

Teams are successfully innovative when they combine three main factors:
> 1 they are diverse;
> 2 they are inclusive and share knowledge and experience; and
> 3 they take care of the basic enabling processes, especially leadership.

An early stream of research into diversity and problem solving was carried out by Triandis and colleagues. They argued specifically that heterogeneity was most beneficial for challenging tasks requiring creativity[39].

When we look critically at what type of diversity leads to creativity in teams, we find that the invisible characteristics dominate. In particular, functional differences in skills, information and expertise have been shown to improve performance because they give rise to a stimulating debate, and this leads to creativity and improved problem solving. These findings

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[35] Robinson and Dechant, 1997

[36] E. Mannix and M. Lean, 'Diverse Teams in Organizations', *Psychological Science in the Public Interest*, Volume 6 - Number 2, American Psychological Society, 2005

[37] Hoffman, L. Richard, and Norman R. F. Maier, 'Quality and Acceptance of Problem Solutions by Members of Homogeneous and Heterogeneous Groups', *Journal of Abnormal and Social Psychology 62 (2)*, pp 401-7, 1961

[38] Kochan, T., Bezrukova, K., Ely, R., Jackson, S., Joshi, A., Jehn, K., Leonard, J., Levine, D. & Thomas, D., 'The Effects of Diversity on Business Performance: Report of the Diversity Research Network', *Human resource management,* vol. 42, no. 1, p 3, 2003

[39] Triandis, Hall and Ewen, 1965

support the view that diversity in teams creates a positive environment of constructive conflict – an environment in which ideas synergistically resolve into higher-level outcomes than would be achievable in more homogeneous teams. In the conceptual framework of this paper, we describe this phenomenon as the reconciliation of dilemmas created by different points of view. The tensions deriving from these dilemmas are the main source of creativity; the reconciliation of these dilemmas is the essential challenge and is thus the competence required of a team leader[40].

Margaret Mead once said: 'Small groups have changed the world. Indeed nothing else ever has.' The qualities of the leader and of the team, and the interaction between all team members, are the most important factors in an organization's success.

One of the most original thinkers on management teams is the British author and consultant, Meredith Belbin. In his first book[41], he describes how one Apollo Team of highly talented people achieved significantly less than a second Apollo Team comprised of people who were far less gifted, but who co-operated better. For Belbin, an effective team is a group of people that aims for a shared goal while progressing through four phases: forming, storming, norming and performing.

In this section, we take an unconventional view of Belbin's work. We try to build a general theory that team innovation comes from the tensions between the key roles. If any of these roles is missing or is poorly served, this hampers the process of moving from ideas to finished projects or products. We go beyond the focus on one particular role – that of 'the Plant' or creative ideas generator – within the group, as we did in our previous work. Here we focus on situations where the Plant's ideas receive broad support from other roles – and as a result we expect the team to be highly effective in its innovation[42].

In the case of entrepreneurship, the single founder of a company must either play all necessary roles him/herself or find colleagues to play these roles. In any event, the founder has to take responsibility for ensuring that these roles are played, or risk the failure of the entire enterprise.

Since a multiplicity of roles is vital to any and all innovative team working, we can understand why a team is, or is not, effective at innovation by studying *the tensions between team roles.* We can also 'map' these tensions so that teams can diagnose where they stand and, if stuck, take corrective action by strengthening the roles that are underperforming.

Team role tension and phases of innovation

To manage innovation in a team, it is not sufficient just to have the roles played in different intensities at different stages, but you also need to reconcile the dilemmas between the team roles. Below we take you through five typical key stages of a new-product project, and the dilemmas between different roles that these raise. Obviously, there are many other combinations of crucial encounters between roles in the total process, but these give some examples of the way such dilemmas can be addressed, stage by stage and gate by gate.

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[40] See also Bunderson and Sutcliffe, 2002; Carpenter, 2002; Pitcher and Smith, 2000
[41] Meredith Belbin, *Management Teams – Why they succeed or fail,* Butterworth Heinemann, 1981 (2ed. 1993)
[42] Fons Trompenaars and Peter Woolliams, *Business Across Cultures*, London:Wiley, 2005

Five key stages

> **Stage 1   Scoping:** A quick and inexpensive assessment of the technical merits of the project and its market prospects.
> **Stage 2   Build business case:** This is the critical homework stage – the one that makes or breaks the project. Technical marketing and business feasibility are accessed resulting in a business case with three main components: product and project definition; project justification; and project plan.
> **Stage 3   Development:** Business case plans are translated into concrete deliverables. The product is developed, the manufacturing or operations plan is mapped out, the marketing launch and operating plans are developed, and the test plans for the next stage are defined.
> **Stage 4   Testing and validation:** This validates the entire project: the product itself, the production process, customer acceptance, and the economics of the project.
> **Stage 5   Launch:** Full commercialisation of the product – the beginning of full production and commercial launch.

Below we draw attention to just five of the dilemmas or tensions between the roles that we found from our research that are crucial to get what has been 'sown' to the point of harvesting. While there are other crucial tensions, these five illustrate our main research evidence.

Five frequently re-occurring tensions or dilemmas

	The tension expressed as a Dilemma	Role versus Role	
1	*Scoping*: Creative Ideas versus Critical Appraisal	Plant	Monitor/Evaluator
2	*Build business case:* Real versus Window of Opportunity	Resource Investigator	Shaper
3	*Development:* Disciplines versus Final Alignment.	Specialist	Co-ordinator
4	*Testing and validation* Consensus versus Mature	Team Worker	Completer-Finisher
5	*Launch:* Capturing Resources versus Practical Embodiment	Resource Investigator	Implementer

These five 'crises' are crucial tensions at the gates (= quantum steps) involved in the innovative process. The challenge is to ensure that each role engages successfully with its opposing role. When all these crises are resolved, successful innovation will follow.

We will now explore one of these dilemmas to present the model of the reconciliation process and its support for the creativity of a team.

Stage 1 Scoping: Creative Ideas versus Critical Appraisal

> *A quick and inexpensive assessment of the technical merits of the project and its market prospects.*

The Plant or creative person must be present within the team, although there is scant evidence whether several Plants are better than one. As with all roles, the team needs diversity. It needs all or most of the roles to be covered, otherwise major weaknesses occur. To have three, four or five persons spouting ideas with no one listening or taking them on board is a recipe for team sterility, however imaginative its talk. But a having only Plants will lead to ideas that don't get tested: they need to be evaluated so that the merits of the project can be assessed.

Almost nothing is more crucial to innovation than the relationship between creation and criticism. Criticism can improve creativity, so that excellence emerges from the 'purging fires'. Yet the critic gets a bad press: 'No statue was ever erected to a critic.' Brilliant artists are depicted as starving in garrets because critics can't or won't acknowledge their genius.

Mapping the three forms of failure

Take a look at the Dilemma Grid. On the horizontal axis, we have Creative Ideas, without which innovation is impossible. On the vertical axis, we have Critical Appraisal, without which endless time would be wasted on half-baked notions. Creativity that resists or escapes criticism is mostly Blue Sky (grid reference 1/10) – so speculative, so long-term, so pie-in-the-sky that no one is tempted to engage critically with it. If it is *only* an idea, why bother?

But when critics go on the rampage, or the team is full of Monitor-Evaluators, many ideas are Strangled at Birth (10/1). The Monitor-Evaluator is often very intelligent, and what better way to display your critical faculties than to take an embryonic idea and shred it? Simply enumerating all the barriers to its realization should be enough. It has barely popped out of the ground and you throttle it. Grudging acceptance (5/5) is unsatisfactory too as it is only a compromise.
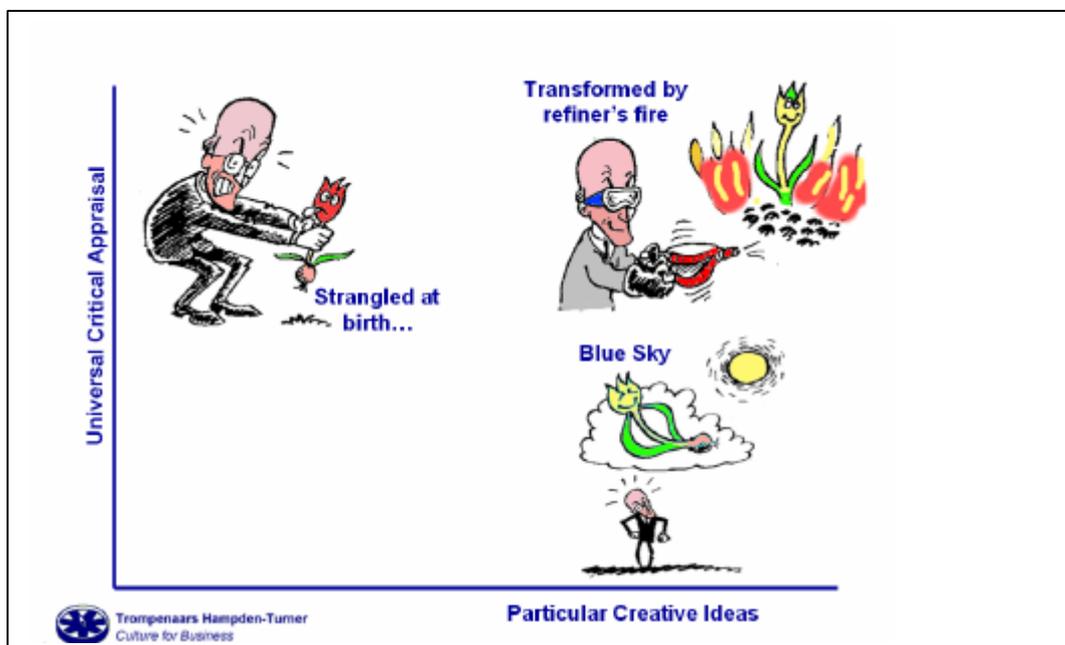
Mapping the reconciliation

The supply of ideas soon dries up. Even when critics are less destructive, ideas may still have a Short Life (5/5). If they do not succumb at once, they may die in development, manufacturing, marketing, etc., especially if saddled with all the costs of distribution through new channels. EMI won a Nobel Prize for its Magnetic Resonance Scanner, but lost $300 million marketing it to hospitals, instead of music shops. Less than 10% of registered patents actually make money. Perhaps there is too little criticism (not too much!). What is new to science may not interest customers; what is new to customers may use only routine science.

The way to achieve innovation is to improve ideas without destroying them (although some ideas *are* non-viable, for unforeseeable reasons). Criticism must be constructive, offered in the spirit of improving something or someone you admire. The Plant makes errors and needs corrective feedback just anyone else. In fact, doing something new is *more* prone to error, and negative feedback from a friendly source is invaluable. Great ages of creativity have seen the *interstimulation of like minds*, with artists, patrons, critics, sponsors and sophisticated audiences all involved. The Dada artists not only challenged the conventional art of their

predecessors, but criticised members of their own movement even more – always with the intent to improve.

On the 'map', we follow the path of the Creative Idea from an initial point (2/8), through a period of Critical Appraisal, back to an improved product, then as it is plunged once again into Critical Appraisal, until it emerges from the Refiner's Fire Constructively Improved.

Making it part of the team process

The logic and power of positive criticism is beyond doubt, as it increases the chances that bad ideas will eventually be killed and potentially good ideas will be supported. But how can we implant such a spirit into the team?

Synetics developed a very powerful approach. When someone comes up with an idea, anyone who wants to react must start by mentioning at least three good aspects of the idea, before any possible criticism. Criticisms then have to be formulated as follows: 'How can we overcome the handicap I see in achieving this innovation?'

So instead of an idea being raised and immediately killed by the Monitor-Evaluator, the response might be:

> 'I like the idea a lot because it has the potential to open our market to a new segment of clients. It also shows that we have another high-quality product, and it would work in our existing distribution channel. How can we find the additional resources and budget to sponsor the market research, and how can we test the reliability of this potential new product as economically as possible?'

And not:

> 'Interesting idea, but I think it will overstretch our budget and drain our scarce resources, plus I doubt that the product is reliable enough.'

End of idea.

In fact, positive criticism lifts the idea's potential and sharpens your response to its potential weaknesses. As a result, the idea gains focus. Criticism acts as oxygen to the fire of the team's innovative spirit.

Research evidence: our web-based investigative model

We have repeated this extended team-role model with many client companies using an interactive, web-based system that captures the strategies that enable participants to work better with other team roles. From these assessments, we are now building an inter and intra team-role dilemma database, which characterizes all the combinations of primary and opposite team roles. This evolving database shows that these tensions are manifestations at the team level of the more generic dilemmas faced by organizations today. We also know from our work, where we measure the business impact of these reconciliations, that this analysis improves business performance at the bottom line through better team working.

Our concern about applying any linear model across international boundaries might be explained by our own overdeveloped reconciliation profiles. However, we insist that, with the combination of seemingly opposed orientations, a team can flourish in diversity. Yes, all team roles need to be present and played out, but it is the reconciliation between them that makes the team excel. And no one has ever measured anything like this before.

The Chair: Big Chief Reconciler

In models such as Belbin, we should appreciate the implicit values associated with the diverse roles. In most theoretical frameworks for team roles, characteristics are often a straightforward addition of the roles, as if they are stable and independent. In reality, however, the effectiveness and innovative power of a team depends on how it takes advantage of the *differences* in roles, in which the dynamic of complementarities is essential. In particular, in the transitions between each of the five phases, the differences between the

roles become even clearer, and the reconciliation of the different orientations becomes essential.

A leader needs to focus on reconciling the key dilemmas created between the various team roles, and on organizing the relationship between the roles to this end. In this new *modus operandum*, the basic requirements of the team's success are secure, based on a strong underlying foundation, and are ready to be nurtured.

Dilemmas between people have to be played out, and it is the job of the Chair to provide an environment in the organization in which such dilemmas can be reconciled. At the meta-level, the Chair's overall task is to reconcile the tension between the nomothetic (organizational perspective) and the ideographic (individual perspective of each employee) – what matters for the organization and what matters for the team members.

So the Chair can create an atmosphere of questioning ideas. In a 'culture of creativity' there is no such thing as a mistake. If somebody is weak, then it stimulates a cascade so that others show their ideas. People need to build on each other. And further, the Chair should create a humorous atmosphere. As the Dalai Lama said, 'I love laughter because then people can have new ideas.'

Note that the stereotypical team roles we discuss are being applied to the *roles people play*, not the people themselves. People can take on many roles, and are far more flexible and complex than this typological framework implies.

Thus we can see an executive capable of playing *all* these roles, but such a paragon is rare. Most people *do* have role preferences, and much prefer certain roles to others. If there is any serious imbalance, like a team with too many Monitor-Evaluators or too many Specialists, then team performance deteriorates sharply. The Monitor-Evaluators cut each other down and the Specialists have difficulty communicating. There can even be too many Plants, producing verbal fireworks but no useful conclusions.

Belbin's research also infers a strong case for diversity. It is *because* diverse role-players are different that a team comprising them is effective. All the roles described are complementary, and authority should ideally shift as the process develops through various stages.

Phases of innovation

As innovation moves through the stages from accumulation and resolution of ideas (assimilation) to adoption, adaptation, acceptance, routinisation and infusion [43] , all organizational actors (senior managers, middle/project managers, operational staff) are involved in the change process.

To improve the capacity for absorbing innovation, Sherif and Menon [44] argue that all organizational actors must be engaged, though it is crucial that appropriate interventions are taken in each of the innovation-assimilation stages.

 For innovation to become routine and infused in everyday working practices, a *culture change* must occur. New attitude and behavioral stances must be adopted, and employees must be ready to change[45].

To summaries, changes in strategy, process and culture must accompany innovation assimilation. Actors on various organizational levels are responsible for making these happen, resulting in faster and more successful innovation.

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[43] Cooper & Zmud, 1990
[44] Sherif and Menon, 2004
[45] Leonard-Barton & Deschamps, 1988

Cross-cultural teams

Earlier we have argued that one of the most significant sources of innovation is the internationalization of the workforce because of the different points of view. Traditional idiosyncratic paradigms are challenged and multicultural diversity has become a great source of innovation to the team.

It is part of received wisdom that groups of executives or managers should learn to operate as effective teams. Getting everyone to think the same way is a tempting strategy, but our new research reveals that real innovative work comes when cultural opposites are integrated to work with each other.

As emphasized earlier, the importance of reconciling these opposites is a cornerstone of our work. As with MBTI, Kirton and other linear models, we have found there is too much one-dimensional thinking across too many of these frameworks and claimed solutions. Too many cultural analyses mark out people as either 'universalistic' or 'particularistic'. But why if you are a 'universalistic' person can you not act as a 'particularistic' person? And if you are 'individualistic', can you not also be 'collectivistic' and therefore work with others as a good team player?

The internationalization of business has both brought standardization of business (MBA education, etc.) and an increased diversity of culture on the work floor. It is amazing how many creative breakthroughs have been accomplished by going international. Though many international teams resulting from mergers and acquisitions have failed, those that have succeeded have brought great innovative results.

But is international and intercultural team building that simple? If members of a team play different roles and have different cultural orientations, then the team is full of potential conflict and misunderstanding. Globally we have found the Anglo Saxon world of the USA and UK tends to be more individualistic, while Asians take to a more communal teamwork approach. So as long as the Americans remain in America managing all-American teams while, for example, the Chinese stay in China doing the same, then conflict and misunderstanding is at least on the local level. But in today's multicultural world, an American leader could be running a team of Thai, Chinese, French and English members. And furthermore, what if the senior management group already in place come with an imbalance of team roles?

When we begin to incorporate non-western types of logic, such as Yin Yang or Taoism, we soon realize that we have all been restrictive in basing any profiling on bi-modal dimensions. We recognized these limitations in earlier versions of our own cross-cultural frameworks. For example, we were trying to place respondents along a scale with 'individualism' at one end and 'communitarianism' at the other. But in a multicultural environment, a highly individualized leader will agonize over the fact that many subordinates prefer to work with their team. Conversely, the group-oriented leader will fail because of an apparent lack of recognizing the efforts of individuals. Thus we have a dilemma between the seemingly opposing orientations of individualism and communitarianism.

We have investigated how well organizations and their teams reconcile these seemingly opposing views by extending our own instruments to explore how well everyone works together in their team to help the organisation, but where teams encourage, stimulate, reward and celebrate individual contributions. And this is just one of the examples. Teams that are innovative reconcile the tensions that are created by the diversity of cultures from which its members come.

Seven intercultural dimensions of innovation

In approaching a model of competence for teams to become innovative by taking advantage of their diversity, we have applied our seven dimensional model of culture, which we've described more generically in earlier works. Each has contrasting value poles. These are

selected because we have found that they best account for the major differences between national cultures.

The seven dimensions are as follows.

	On the one hand		On the other hand
1.	Rule making (universalism)		Exception finding (particularism)
2.	Self-interest and personal fulfilment (individualism)		Group interest and social concern (communitarianism)
3.	Emotions Inhibited (neutral)		Emotions expressed (affective)
4.	Preference for precise, singular 'hard' standards (specificity)	versus ...	Preference for pervasive, patterned and 'soft' processes (diffusion)
5.	Control and effective direction comes from within (inner-directed)		Control and effective direction comes from outside (outer-directed)
6.	Status earned through success and track record (achievement)		Status ascribed to person's potential, e.g. age, family, education (ascription)
7.	Time is conceived of as a 'race' with passing increments (sequential)		Time is conceived of as a 'dance' with circular iterations (synchronous)

Each of these seven dimensions can be polarised with each other, producing spectacular, amusing, and sometimes tragic contrasts; alternatively, all seven can be integrated and synergised, in which case we achieve team innovation.

Value differences and innovation: a summary

The challenge for teams and their leaders to become successfully innovative is to integrate the value differences we have discussed. These tensions and their reconciliations are summarised as follows.

1 We first contrasted rule making and exception finding and argued that they are integratable. You use exceptions to improve rules and rules to recognise what is genuinely exceptional. We call this learning *revising rules to accommodate exceptions*.
2 We then contrasted competitive individualism with the requirement that communities co-operate and argued that these were integratable. It is possible to compete at co-operating with customers and/or within your team. It is possible for communities to develop and to celebrate their outstanding individual members. Competing helps us to differentiate best practices. Co-operating helps us disseminate and adopt the best. We called this learning *co-opetition*.
3 We contrasted the preferences for analysing issues into specifics and synthesising, elaborating these into diffuse wholes, and argued that these were integratable. You have to allow self-organising knowledge, values and team processes flow diffusely, then supply detailed, specific feedback on their effectiveness. We call this learning *co-evolution with corrective feedback*.
4 We contrasted neutral and rational with affective forms of expression, in which feelings are fully owned, and argued that these were integratable. You cannot think about your emotions unless these are owned, expressed and shared, but you also have to control yourself until the right moment and circumstances. We agree with Pascale that *the heart has its reason*.
5 We contrasted two sources of experienced control: that from inside us, inner-directed, and that from outside us, outer-directed. Strategy, for example, could be designed from within top management, or it could emerge from the company's interface with customers, outside top management. We argued that these processes were integratable. Top management could use its inner resources to design and reshape the strategies emerging outside, which had already pleased customers. We called this

crafted strategy, in honour of Henry Mintzberg, as when the clay rises spontaneously from the rotating potter's wheel.

6 We contrasted status earned through achievement with status ascribed to the person's potential, i.e. age, family, and argued that these were integratable. The more you respect a person's potential and the more you invest in training them, the more likely they are to reciprocate by achieving on behalf of the company. We called this *mentored achievement*.

7 Finally, we contrasted a sequential view of time as some kind of race against the clock, with a synchronous view of time, as in a finely choreographed dance. We saw that these were integratable, as when by synchronising processes just-in-time you 'shorten the race-course' by way of parallel processing, before combining these in final assembly. We called this *flexible manufacturing* or, in a market context, *pull strategy*.

Not only do these seven integrations constitute a conceptual model of transcultural competence, but they also represent a framework for 'valuing' in general, wherein the preferences and stereotypes of a culture are relative, while the need to integrate values is absolute and essential to civic society as well as to wealth creation. The danger of stereotyped cultural imagery is that it hides this necessity from us. It follows that foreign cultures may arouse what is latent in our own values: they may remind us that what is perhaps overemphasised in their culture is underemphasised in ours. We have the preferences of foreign cultures within our own, albeit in a weaker state.

Measuring innovation competence

We experimented with several diagnostic questionnaires with different formats, but these were all based on the same underlying conceptual framework and research quest: to distinguish between rejecting opposite values, going for compromise, and reconciling by either starting from one's own perspective and accommodating the other or vice versa. We have researched a wide range of organisation types and industry sectors and sought to correlate responses with innovation other business performance variables, such as profitability, costs, growth metrics, etc.

The following trends from the research data reveal:

There is a capacity to deal with and reconcile values in general. Respondents who reconcile dilemmas are likely to employ similar logics across the board, as do 'compromisers' and 'polarisers'.

Innovation competence, as measured by our conceptual framework, correlates strongly, consistently and significantly with:
  a) extent of experience with international assignments;
  b) rating by superiors on 'suitability for' and 'success in' overseas postings and partnerships; and
  c) high positive evaluations via 360° feedback. This arguably reconciles equality versus hierarchy, since the verdicts of peers, superiors and subordinates are compared.

Finally, we can conjecture that transcultural competence may only be the tip of the iceberg, representing the most visible manifestation of human diversity in general. The role of leaders and managers is increasingly to manage diversity *per se*, whatever its origins in culture, industry, discipline, socio-economic group or gender. If there is indeed a way of thinking that integrates values as opposed to 'adding value', the implications are far-reaching.

Creative people and teams: necessary but insufficient

Creative individuals and inventive teams are both necessary, but this is not sufficient to generate conditions for an organization to be innovative. Organizations need to take a specific path to turn creative individuals and inventive teams into sustainable innovations by creating an integrated corporate culture. It's a bumpy path with many crossroads and many crises to be overcome. And the path never ends, because the culture of creativity needs to continuously integrate all the fundamental logics of an organization into a culture of sustainable innovation. The dynamics and processes are quite different from those we've discussed for the individual and at the team level. But what they have in common is that many key (and frequently recurring) dilemmas have to be reconciled. And the methodologies that enable us to diagnose and provide routes to improvement for corporate culture need to evolve from a rather static snapshot picture to a dynamic process of reconciling competing values.

egalitarian

INCUBATOR	GUIDED MISSILE
Main characteristics: • person oriented • power of the individual • self-realization and development • commitment to oneself • Management by Passion • professional recognition • individual creativity Main defaults: Creativity for the sake of being creative, whilst ignoring customer needs *Person-oriented*	**Main characteristics:** • task orientation • power of knowledge/expertise • effectiveness • commitment to tasks • Management by Objectives • Pay for Performance • shareholder value Main defaults: Decentralization for the sake of empowered, whilst ignoring long term needs of the whole organization. Too much attention to shareholder value leading to a opportunistic approach where innovative products are on the market too quickly or against a too high price *Task-oriented*
Main characteristics: • power orientation • personal relationships • Management by Subjectives • affinity/trust • loyalty/commitment • power of network. Main defaults: Centralization for the sake of being in control, whilst ignoring needs of the market. Too much attention to harmony of relationships leading to a country club. **FAMILY**	**Main characteristics:** • role orientation • power of position/role • Management by Job Description • rules and procedures • efficiency • order and predictability. Main defaults: Rigidity for the sake of being efficient, whilst ignoring task orientation and flexibility of paths going there. **EFFELTOWER**

hierarchical

The importance of corporate culture.

From the dearth of literature on corporate culture, it is becoming clear that any dominant organizational culture has its strengths and weaknesses. After twenty years of measuring corporate culture ourselves, we have identified that the large majority of organizations – such as those we discuss in our book *Riding the Waves of Culture*[46] – have a single dominant corporate culture that struggles with less dominant orientations. We distinguished four corporate cultures stereotypes, that derive from two dimensions. They are either rather egalitarian or rather hierarchical; and similarly rather oriented to people or oriented to tasks.

The need for a new paradigm of corporate culture

Over 20 years of seeking to capture different corporate cultures in well over 100 organizations with very different signatures, we have observed that all four orientations exist to some degree in all organizations. However, one logic is normally dominant. This could partly be explained by the fact that within organizations all kind of sub-cultures emerge, with more of an Incubator for R&D, Family in manufacturing, Guided Missile in marketing/sales and Eiffel Tower in finance. When searching for correlations with performance, or innovative strength, or whatever other output variable we considered, there were no significant correlations. Families did as well or as badly as Incubators. Eiffel Towers showed no better performance than Guided Missiles. We infer either that corporate culture made no difference for an organization's performance, or that we were missing an important variable.

The research of scholars such as Jim Collins and Robert Quinn[47] undoubtedly demonstrates the importance of corporate culture in creating a high performance organization. We've also found that where organizations have established a sustainable culture of innovation (IBM, Dell, HP, Lego, Microsoft), this can't be explained purely by a Jahori window-style cutting of organizational realities into four elegant paradigms. This doesn't have the requisite variety and is not sufficiently comprehensive. Four-quadrant models like this are just a snapshot photograph of a static model that persists in the current, as well as in the desired, culture.
Its attraction is that it appeals to the dominant type of linear thinking, where people make sense of the world by analytic, sequential, rational, discontinuous and verbal ways of reasoning. It is based on traditional (more western) logic, looking at framing corporate cultures in such a way that you can describe at least four general perspectives on what 'good' organizations are and what 'good' leaders in those cultures do. This is true for all these types of framework, whether promulgated by Handy[48], Harrison[49] and Cameron or Quinn[50] and Dennison. They all combine two organizational perspectives, such as internal versus external focus with flexibility versus control, task- versus person-orientation and egalitarian versus hierarchical orientations, coming together in a two-by-two Jahori window.

These models tend to thrive because of our bias in how we process information, and because we have a preference for living in certain kind of settings. Because these dominant orientations are so powerful, it is difficult to ignore them without being schismogenic[51]: in other words, it is difficult to recognise that there are weaknesses in our own perspective and advantages in opposing perspectives. And the diagnostic questionnaires used to measure those mutually exclusive realities invited the respondent to make a choice between them! Aren't we all used to 'forced-choice' questionnaires that contain traditional questions such as the following?

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[46] Fons Trompenaars and Charles Hampden-Turner, *Riding the Waves of Culture*, Wiley, (1997, 2nd edition)
[47] Jim Collins, *From Good to Great*, Collins Publishers, 2001; Robert Quinn, *Beyond Rational Management*, Jossey Bass, 1988
[48] Charles Handy, *Gods of Management*, The Changing Work of Organizations (Organizations): Arrow Books Ltd; New Ed edition , 2 Feb 1995
[49] Roger Harrison, *Corporate Ideologies*, San Francisco, 1972
[50] Cameron, K. S., & R. Quinn, R. E., *Diagnosing and changing organizational culture*. Reading: Addison-Wesley, 1999
[51] The term *schismogenesis* ('creation of schisms') according to Bateson in *Mind and Nature*, 1979, refers to arguments, theories, or perspectives that are broken or split (schismo) at the outset (genesis). One of two opposing but connected values is chosen over another.

In this organization ...
   a) one is open to the personal needs for learning and growth. (Incubator)
   b) one has a clear division of functions and responsibilities. (Eiffel Tower)
   c) one respects the judgment of those in authority. (Family)
   d) one clearly allocates resources and expertise for the job at hand. (Guided Missile)
In this organization...
   a) criticism is aimed at the task, not at the person. (Guided Missile)
   b) criticism is only given when asked for. (Eiffel Tower)
   c) criticism is mainly negative and usually takes the form of blame. (Incubator)
   d) criticism is usually avoided because people are afraid of hurting each other. (Family)

Unfortunately, the empirical foundations of traditional social science often stand in the way of attempts to build a better theory base, which can cope with more complex and realistic environments. Empiricism is primarily a rational-deductive perspective, designed to answer the question: 'What is?' It is constantly breaking things apart, looking for linear, cause-and-effect relationships. The observed is seen as 'molecules that don't talk back', as Alfred Schutz so eloquently said.

One way of exposing the limitations of stereotypical two-by-two culture frameworks is to take them to an extreme and see what pathologies they develop. Notice how cultures cooped up in one quadrant of our chart become, over time, half-crazed with the potentials of their vision. Each of the 'good' criteria can become overvalued by leadership and pursued in a one-dimensional fashion. In this perspective, Quinn notes: 'When this zealous pursuit of a single set of criteria takes place, a strange inversion can also result. Good things can mysteriously become bad things ... criteria of effectiveness, when pursued blindly, become criteria of ineffectiveness.'[52] In this case, the axes of egalitarian-hierarchical and person-task, which are initially conceived as neutral and only serve to categories, acquire negative overtones as in anarchy (too much challenging authority) versus autocracy (too much respect for the status quo of leadership) and hedonism (too much attention to personal development) versus tunnel vision (blind focus on tasks and short-term end results).

Astute readers will recognise that these pathologies occur when the tensions reflected in the axes are not reconciled. Ultimately each of the stereotypical cultures lead itself to a pathology as we described in the previous figure. Any good leader will always try to integrate cultural aspects that are not dominant in their own cultural logic. Only when this is realised effectively will true innovation be sustainable.

Towards the integral organization

A prerequisite for an innovative organization is the reconciliation of the variety of organizational cultures, in order to face the challenging dynamic world in which it operates. In this way, it can overcome the limitations of the dominant culture into which it will otherwise tend to drift, looming from crisis to crisis.

There is synergy among all our pairs of extreme cultures. It is this that distinguishes creative and productive cultures from stagnant and ineffective cultures taken to extremes. If Ruth Benedict hadn't looked between values rather than at them, she would not have understood the subtlety and power of culture.

We are now in a position to present our enhanced definition of culture, which seeks to overcome the limitations of earlier frameworks: Culture is the pattern by which a group habitually mediates between value-contrasting differences, such as rules and exceptions, technology and people, conflict and consensus, etc. Cultures can learn to reconcile such differences from such values at ever-higher levels of attainment. From such reconciliations come health, wealth and, above all, true innovation. But cultures in which one value polarity

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[52] Robert Quinn, *Beyond Rational Management*, p.69,Jossey Bass, 1988

dominates and militates against another will be stressful and stagnate.Organizations that are truly innovative are continuously reconciling the major tensions that were facing them *between* their organizational (sub) cultures. We found many examples of 'Guided Incubators' and 'Family Missiles' among them.

Our traditional 'cookie cutter' model and the questionnaire derived from it couldn't do the job required anymore. And so we developed a new type of questionnaire that could measure the different characteristics of the separate corporate cultures AND the degree to which they were reconciled with alternative models. That is a new instrument that explores the reconciliation between the extremes.

The 'forced-choice' questions were replaced by questions such as the following.

Please indicate how much you agree with this statement	++	+	-	−	

each person is given a clear definition of their responsibilities in the organization					Eiffel Tower
information is shared widely so that everyone can get the information needed when required					Family
we work in flexible networks in which personal development is key					Incubator
there is an orientation to results and achievement to get the job done					Guided Missile

The main difference in the earlier questionnaire (and similar instruments used by quoted authors) is that respondents were forced into one of the four quadrants, whereas now, one can score (potentially) high on all elements. Moreover, questions are included that explore not only the positive aspects but also the negative side of each cultural stereotype. The latter we refer to as *cultural inertia.*

From invention to sustainable innovation: organizational growth cycles

Thorough analysis of the evidence from our research and consulting reveals an organization becomes innovative when the dominant Incubator culture gives the context necessary to produce one innovation after the other. You put creative people in a playground, the lead entrepreneur's passion manages them, and things flow. However, our evidence confirms what others have said: that this type of culture alone is not sustainable once it grows. To make the culture sustainable while maintaining the spirit of long-term innovative capacity, the Incubator must reinvent itself without throwing away its creative powers.

When examining the problems associated with growth and the impact of change on corporate culture, the well-established model described by Larry E. Greiner[53] on how to develop an organization as it grows is helpful. Greiner argues that growing organizations move through five periods of evolution, each of which ends with a period of crisis and revolution. In order to create a meta-level approach for a culture of sustainable innovation, we need to revisit these phases and how they interact.

According to Greiner, organizations tend to follow a pattern from evolution, to a crisis of management style and the problems they face, and then to revolution.

Creating invention: growth through creativity

We can call the first stage of organizational growth 'creativity' and is dominated by the founders of the organization, with an emphasis on creating both a product (or service) and a market. These founders are usually technically or entrepreneurially oriented, and they view

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[53] Larry E. Greiner, 'Evolution and Revolution as Organizations Grow', *Harvard Business Review* May-June, pp.55-68, 1998

management activities with disdain. Their physical and mental energies are absorbed entirely in making and selling a new product. At the birth and newborn stages, communication is frequent and informal. Long hours of work are rewarded with modest salaries and the promise of ownership benefit[54]. Decisions and motivations are highly sensitive to market feedback.

While the great nineteenth-century entrepreneurs still lived, a vital leader (often the founder) remained at the helm of the big companies into which they grew. No one spoke of human resources in those days, but they did speak of genius, innovation, creativity, and mobilisation of the greatest mass of resources the world had ever seen. It is these pre-bureaucratic manifestations of human enterprise that we need to revive.

All growing Incubator corporations face a 'span of control' problem as their numbers increase beyond their founder's capacity to know employees personally. This produced a crisis of legitimacy. At this point rules, procedures, and processes need to be invented. But what kind of substitutes are these for the founder's actual presence? How much of the original genius is lost? All the individualistic and creative activities are essential for a company to get off the ground. But as a company grows, those very activities become the problem. It was once an organisational culture where the inventions became innovations, and the company could find the resources to get these to market because of its smaller size and ease of internal person-to-person communication. With the growth of the organisation, more inventions froze at the level of creativity and never reached the market. This is because increasingly functional specialisation separates R&D from manufacturing and marketing, and the creative inventions fall between the walls – and communication becomes much more impersonal as a hierarchy of titles and positions grow. The result is a 'Crisis of Leadership', according to Greiner. Informal communication becomes infeasible as additional functions must be implemented. As the organization grows, there are management problems that cannot be handled through informal communication and dedication. So the founders find themselves burdened with unwanted management responsibilities, and conflicts between the harried leaders grow more intense.

From invention to intention: growth through direction

As we've seen, Incubator culture that supports great inventions can't cope with growth too well. An increased feeling of lack of direction often results, and the Incubator gradually grows into its own pathology of anarchy. There's a growing feeling that the entrepreneur/leader and the staff are too focused on self-development and the development of the next generation product or service. As a result, the founder often draws more authority to him/herself and quickly realizes that either leadership and management is boring or that s/he lacks the basic talents for doing the job well. At this point, the crisis of leadership occurs and the first revolutionary period begins. 'Who is going to lead the organization out of confusion and solve the management problems confronting it?' The solution is to locate and install a strong manager who is acceptable to the founders and who can pull the organization together. This leads to the next evolutionary period of growth through direction.

At this stage of development, the first critical decision is to locate and install a strong business manager. This often leads to the hiring of someone who has all the founder/entrepreneur's trust. In family organizations, it's typically the brother or nephew who is called in, or the interim manager who will fix the leadership crisis. However, there's a tendency to oscillate between two extremes, leading to another type of crisis.

This issue was explored by Kevin Kelly, who did research on how one might best lead a connected network of professional people, each needing autonomy.

The crisis of leadership can be overcome by reconciling the typical leadership style tensions created between Incubator and the Family style leaders.

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[54] Ibid p.60

1.Leading participating employees versus respect for authority
2.Team spirit versus individual creativity
3. Effectiveness of teams versus creation of cultural knowledge about these teams

Let's consider these dilemmas:

Dilemma 1: Leading participating employees versus respect for authority

We found that this tension came up frequently in our database of dilemmas. This concerns the relationship between the need for autonomy of the Incubator's staff and the need for direction provided by the Family culture. If you give too much decision-making power to the employees, it becomes a lost democratic leadership with too little left for management to direct. Conversely, once management get too much to say, employees are often constrained and feel overly dependent on the last mood of the managers, such as their need to go in their direction. Obviously, reconciliation lies in a form of co-determination and empowerment. There are many aspects to the reconciliation of the paradoxes of leadership.

Authoritative, participative or transformational leadership?

James McGregor Burns differentiated transactional leadership from transformational leadership. In the transactional style, there is a simple exchange of work for money, or votes for representation. Nothing new is created, and each party serves only self-interest.

In the transformational style, the leader transforms the consciousness of those led, and by their response, those led transform the consciousness of the leader. Each elicits a potential latent in others and brings to fruition a yearning or aspiration of which they were not previously aware.

On one horn of the dilemma is the authority of the leader, which becomes corrupted by the unilateral exercise of power from which the populace shrinks. On the other horn is the degree of participation, which can lead to lost or abdicated leaders, whose authority is taken over by those who are supposed to lead. Between this arbitrary and failed leadership lies the transactional leader, as a kind of compromise, tolerated because they provide the necessities of life: routine work for routine pay. The reconciliation is the transformational leader, whose followers 'stand on the shoulders of giants' and are elevated through having experienced them.

Dilemma 2: team spirit versus individual creativity

On the one hand, the organization needs creative solutions where individuals take risks (as they often do in Incubator cultures). On the other hand, within Family cultures, one likes to develop loyal teams with a high long-term commitment. The second major dilemma is thus the tension between team orientation and individual creativity.

So should you compete or co-operate? Recently the hybrid term 'co-opetition' has been used more and more to describe this reconciliation. Is it somehow possible to compete in order to co-operate? Is it somehow possible to co-operate more in order to compete? Many an innovation process does precisely this. In short, these teams co-operate with customers and with each other in order to compete with other teams and float the best solutions up to the top of the company, where senior managers can discover and disseminate them.

Dilemma 3: effectiveness of teams versus creation of cultural knowledge about these teams

Creative teams are a necessary but not sufficient condition of the creation of a sustainable culture of innovation. We've already demonstrated that a reconciling mindset between team roles is essential. In a large organizations there are plenty of cross-cultural skills 'within teams'. In fact the teams seem much more skilled cross-culturally than is often given credit by the company's own senior management. This is because, although great emphasis is placed on client needs inside their myriad teams, this knowledge tends to remain trapped at

middle-management level and not disseminated. But while you may be more skilful than you realise, trapping cultural knowledge within teams may be hampering their capacity to learn from each other. This skill helps clients, but it does not accumulate internally as managed corporate knowledge. One interpretation, which would explain why both groups of informants were accurate in their description, is *that valuable cultural information is being trapped at the team level of the organisation, and is not being transmitted by senior managers into valued, captured and available knowledge, thus hindering the innovation process.*

While knowledge about the latest financial products was moving from team to team and from HQ to the field, knowledge of cultural issues (which was particular to each team) was not being generalised in ways useful to the wider corporation.

In fact, many teams can learn from others as well as from their own experiences, and you need not repeat mistakes, provided you record such experiences and generalise. Leadership that collects team histories and turns these into knowledge at the reconciliation point, informs senior management and develops ongoing cases for in-company seminars and their successors. Why not have a 'historian' in every team, whose job it is to capture what is learned? It spirals from Action (by a team for a client) to Reflection about that action, so that your transcultural knowledge steadily accumulates at the reconciliation point.

From intention to invasion: growth through delegation

In this way, we can see how the first crisis of leadership, resulting from an over-growing Incubator, is resolved by reconciling through a new leadership style, where individual creativity is integrated into teamwork through 'conducting talents' in 'improvising jazz bands'. At that moment, the invention gets intention and it is captured into an enriched Family culture, where vision reigns and teams work across boundaries. By the reconciliation on the vertical axis of the egalitarian and hierarchical, we soon see that, in the growing Incubating Family, the seeds of the next crisis are sown. This is the result of the increasing effect of the horizontal axis of person- and task-orientation. Both Incubator and Family cultures now inhibit sustainable innovation because of a lack of task-orientation.

Although the new, directive processes direct employees' energy more effectively into growth, this eventually becomes inappropriate for controlling a more diverse and complex organization. Lower-level employees find themselves restricted by the cumbersome and centralized hierarchy of the Family culture. According to Greiner, they have come to possess more direct knowledge about markets and machinery than the leaders at the top. Consequently, they feel torn between following orders and taking initiative on their own[55]. It takes too long for new ideas in the lower echelons to be discussed higher up, and the innovative teams feel a lack of sponsorship from the very top. As a defense mechanism, employees tend to start fulfilling their own personal and team goals and, before you know it; Family culture slips into becoming a comfortable Country Club.

As a result, the second revolution emerges from a 'crisis of autonomy'. The solution adopted by most companies is to move towards more delegation. Yet it is difficult for top-level managers, who were previously successful at being directive, to relinquish responsibility to lower-level managers. Moreover, the lower-level managers are not accustomed to making decisions themselves. As a consequence, numerous companies flounder during this revolutionary period, because they adhere to ineffective, over-centralized methods, while lower-level employees become disengaged and disenchanted, and leave the organization.

From intention to invasion: the need for a Guided Missile culture

The second crisis above jeopardizes the innovative process significantly, and the leadership now faces many new dilemmas. The Family culture that was a platform for reconciling so much of the chaotic Incubator culture was effective, until growth made these more centralized approaches redundant.

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[55] Larry E. Greiner, 'Evolution and Revolution as Organizations Grow', *Harvard Business Review* May-June, p.60, 1998

Lower-level managers come to demand more autonomy, and this eventually leads to the next revolutionary period – the crisis of autonomy. The apparent solution to this crisis is usually greater delegation, so the next management response is decentralization. So much so, that often the organization goes public and there is a separation between ownership and management. However, once again, managers have difficulty relinquishing authority. The need to develop a more Guided Missile culture becomes evident.

The dilemmas created in the transition from Family to Guide Missile culture need to be reviewed in order for the innovation process to be sustainable.

They include the following.
      1 Lord, servant, or servant leader?
      2 How do we centralize lessons reaching us from decentralized locations?
      3 Social learning versus technological learning

Dilemma 1: lord, servant, or servant leader?

In business, the concept of the 'servant leader'[56] is appropriate wherever it is an inherent mission of the company to be innovative for customers. When any leader serves his or her subordinates, they are modelling how they should do likewise for customers. If the leader is not too proud or too high to serve others, why shouldn't employees imitate this by mirroring their behaviour? Servant leaders are forever trying to give away their status, only to get it back again through gratitude and admiration. The more you serve, the more you lead fellow servers.

Servant leadership is a powerful vehicle for the transition from the Family to Guided Missile culture. The leader 'gives' followers more than they could conceivably repay; thus they become obligated and even more compliant to the leader's wishes. Is the servant leader at the bottom of a deep shaft, or at the apex of a truncated pyramid? The answer is 'both'. The leader has reversed the organisational hierarchy and is serving subordinates as if they were superiors.

The apparent modesty of this style of leadership is especially important in reconciling the need for intention and the need for invasion. Those who have weight do not throw it around. Indeed, they behave as if they were eager to learn from you, as if they had nothing to boast about. High-status people exude modesty, which enhances their status. They have nothing to prove. We shouldn't underestimate the concept of servant leaders in making innovation sustainable to the next evolutionary phase.

Dilemma 2: how do we centralize lessons reaching us from decentralized locations?

A consistently vexed issue is where information originates and where and how it should be captured for greatest effectiveness. If a corporation is to communicate its knowledge, from where and to where should it travel? Should it move bottom up, top down, outside in or from inside to outside? Arguments about centralising versus decentralising never seem to end and are rarely settled. For several years on end, the watchword has been 'decentralise!' But those with memories can recall that 'centralise!' was once the cry. Will we ever make up our minds, or is the concertina with us for good? Obviously we've seen the need for centralisation in the second stage. Now there is a call for decentralisation that characterises the Guided Missile. And we must conclude that, at their extremes, both centralisation and decentralisation jeopardise the innovation process.

One way of avoiding this contradiction is to ensure sure that what is decentralised is subtly different from what is centralised. The slogan 'Think Global–Act Local' gives us a clue.
What we should decentralise are the activities across the organisation. What we should

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[56] Greenleaf , R.K. 1977/2002. The Power of Servant Leadership. Berrett-Koehler Publishers, Inc, San Francisco

centralise is *knowledge* about these activities. The company has a central nervous system, through which impulses about its diverse, local activities travel. These become knowledge to be stored centrally. If we consider the dilemma step-by-step, it progresses. That's how innovation is extended.

Dilemma 3: social learning versus technological learning

Is social learning different from technological learning? Can we achieve both?

In Incubator and Family cultures, we've seen a focus on the human side of innovation. Self-development was central in the learning Incubator, while the Family was very person-oriented. Innovation is stifled when there is no means for the de-personalisation of the process. The Family turns into a Country Club if no more formalisation is achieved.

Unfortunately, there has long been a split in our educational system between the Sciences and the Humanities or Liberal Arts. There are similar splits in business organisations between those qualified to understand machines (largely engineers), and those claiming to understand people (HR, Sales, etc.)

This venerable dichotomy was measured by Robert Blake and Jane S. Mouton[57]. They tracked the development of managers on two 'opposed' axes: Concern with Task (or technology) and Concern with People. Hence we see that high Concern with Task taken to its extreme leads to a Sweatshop, while high and exclusive Concern with People leads to a Country Club. But there is no inherent reason why these two paradigms should not be combined, where Concern with Productive People combines technical with social logics. This optimising of the socio-technical system is the long-standing mission of the Tavistock Institute of Human Relations in London.

From invasion to implementation: growth through co-ordination

It's no surprise then that the next crisis begins to evolve as the top management senses that it is losing control over a highly diversified field operation. Autonomous field managers prefer to run their own shows without co-ordinating plans, money, technology, and personnel with the remainder of the organization. Freedom breeds a parochial attitude[58]. Lower-level management begins running its own show without any co-ordination with the rest of the organization.

Soon, the organization falls into a 'crisis of control'. This phase is characterized by the application of formal systems for achieving greater co-ordination and by top-level executives taking responsibility for the initiation and administration of these new systems. Management must again focus on control. The 'crisis of control' often results in a return to centralization, which naturally is now inappropriate because it creates resentment and hostility among those who had been given their freedom.

From invasion to implementation: the emerging Eiffel Tower culture

The task-oriented Guided Missile culture has been given a newborn external focus to the market, and the 'right things' are again done since the 'politically correct' Family culture focused on the internal political processes of direction. The market invasion culture, however, was in its opportunistic drive, focusing on the 'right things'. However, because of the short-termism to satisfy clients, innovative new products came either too early for the market or with too high a price.

In the resulting control crisis, there's a call for 'doing the right things'. The invasion needs efficient implementation through the reconciliation with the role-oriented Eiffel Tower culture. The evolutionary co-ordination phase is characterized by the introduction of formal systems

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[57] Blake, R. R. & Mouton, J. S., 1964, *The Managerial Grid*, Houston: Gulf Publishing.

[58] Larry E. Greiner, 'Evolution and Revolution as Organizations Grow', *Harvard Business Review* May-June, p 62, 1998

such as a job evaluation process, focus on product groups, formal planning procedures, initiation of company-wide programmes, investment centers, IT systems and extensive educational programmes to increase staff's professional knowledge. All these new co-ordination systems need to become useful for achieving growth through the more efficient allocation of scarce resources.

The invasion of the intended inventions is only implemented efficiently when the following dilemmas are reconciled.

1. The role of standards and benchmarks: should we meet or transcend them?
2. Meeting financial criteria versus developing our people
3. Focus on external customers versus focus on internal processes

Dilemma 1: the role of standards and benchmark: should we meet or transcend them?

Most learning seeks to approximate the standards or benchmarks that authorities have preordained. The difficulty we encounter in the innovation process is that strategic goals are, in themselves, constantly evolving and changing. If it takes three years to get an employee performing to the highest standards, during which time those standards must change anyway, then where are you? In the previous phase of placing the Guided Missile in the foreground, the standards of the 'Management by Objectives' system are frequently carved in stone for the period. As Peter Drucker once said: 'Efficiency focuses on doing things right and effectiveness on doing the right things.'

If you follow our logic, you will easily recognise that standards and benchmarks become obsolete because they are one-dimensional. You achieve them and then wish you hadn't! You've sacrificed one side of a dilemma to the other side. And the innovation process is stifled by it!

For the innovation to get through the next gate, you have to juxtapose two questions: 'Have our people lived up to our standards?' and, 'Have our standards lived up to the aspirations of our people?' Chris Argyris[59] calls this Learning I and Learning II or, taken together, 'double-loop learning'. Only when we reconcile both values by creating Ever-Moving Goalposts as our people come up to current standards, which must themselves be subject to critique and updated as the environment shifts. This is a reconciliation between Guided Missile culture and Eiffel Tower culture.

Dilemma 2: meeting financial criteria versus developing our people

In our consulting practice, we have run Management Development programmes for many Anglo-Saxon organizations for more than a decade, only to have them cancel our interventions after just *one* bad financial quarter. What a contrast with some German Eiffel Towers, where we were asked to continue our educational programmes despite several bad quarters in succession. In order to overcome the dominant financial perspective of most measures of performance, Robert Kaplan and David Norton[60] developed the well-regarded Balanced Scorecard. The point is not to 'balance' past financial performance with future learning goals, but to use those poorer financial results to learn – that is, to reconcile people growth with hard financial data.

The balanced scorecard proposes that we view the organization from four perspectives, and to develop metrics, collect data and analyze it relative to each of four perspectives. In the same way that we have developed prototypes of other instruments, we would seek to extend Kaplan and Norton's ideas into an Integrated Scorecard. The fundamental challenge is to reconcile the two major cultural dilemmas that underlie the original Scorecard, i.e., the Past

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[59] Argyris, Chris and David Schön, *Organizational Learning*, Reading, MA: Addison-Wesley, 1978.
[60] Kaplan, R. S., & Norton, D. P., "The Balanced Scorecard: Measures that Drive Performance," *Harvard Business Review*, 1992, January.

(Financial) and the Future Perspective (Learning and Growth) dilemma and the Internal (Business Process) and the External Perspective (Customer) dilemma.

Following the logic that pervades this lecture, the best support for the vision and strategy of the organization is found in how past financial performance could not be balanced with future growth but reconciled with it.

Dilemma 3: focus on external customers versus focus on internal processes

To create sustainable innovation, we also need to improve the internal processes through the involvement of customers. Co-development programmes, where suppliers align strategically with their clients, are a great example. Applied Materials, as one of the main suppliers of microchips, has used this approach very effectively. Their survival is completely dependent on co-developing systems with AMD and Intel. This is quite different from 'balance' (as in the Balanced Scorecard). It supposes that value is not added by having high scores in each of the four perspectives and then adding them up; rather, it needs the added extra from a win-win solution that derives from the cross-integration of past and future, internal and external values. A company can be paralyzed by analysis or by 'lean and mean' cost-cutting. It can indulge itself in subsidized seminars and become the customer's creature, ignoring its own internal standards. Or it can grow innovatively. Such growth requires more than balance. It requires a fusion and reconciliation of such contrasting values.

From implementation to inquiring: growth through collaboration

A more effective solution tends to initiate the next evolutionary period – the co-ordination stage. This period is characterized by the use of formal systems for achieving greater co-ordination with top management as the 'watch dog.' Yet most co-ordination systems eventually get carried away and result in the next revolutionary period – the 'crisis of red tape'. This crisis most often occurs when the organization has become too large and complex to be managed through formal programmes and rigid systems.

If the crisis of red tape is to be overcome, the organization must move to the next evolutionary period – the phase of 'collaboration', in which management must promote interpersonal collaboration. While the co-ordination phase was managed through formal systems and procedures, the collaboration phase emphasizes greater spontaneity in management action through teams and the skilful confrontation of interpersonal differences. Social control and self-discipline take over from formal control.

The characteristics of the transition of the Eiffel Tower to the renewed Incubator are the integration of functional specializations (e.g. task forces across functions). Teams are given the right sponsorship and span of discretion, and educational systems focus on behavioral skills for achieving better teamwork. Real-time information systems are integrated into daily decision-making processes, and experiments are allowed to become *serious plays* rather than *l'art-pour-l'art*.

Progression through this gate will be achieved through the reconciliation of the following dilemmas.
1 Authority of sponsor versus empowered teams
2 Should we strive to be right first time, or make errors and correct them quickly?
3 Do we learn explicitly or tacitly?

Dilemma 1: authority of sponsor versus empowered teams

In the dominant Eiffel Tower culture, teams come about because an authority figure sponsors them. With continued growth, top managers have fewer and fewer answers. The world is simply too complex for the person furthest away from field operations to know what should be done next and then issue appropriate orders. So there is an increasing need for members to self-organise to solve a problem which is confronting and disturbing them.

The sponsor of a team faces real dilemmas. The sponsor may try to create a Captive Team by seeding it with informers, but such a team, full of people anxious to please the boss, is

very likely to prove stagnant and unoriginal. What the sponsor fears is the other extreme – a team that runs away with the mandate it is given and ties its sponsor in knots! Only with care and skill will the sponsor be provided with a creative solution of genuine novelty. Here an empowered team presents an innovative solution to its sponsor.

Perhaps the most famous team sponsor was Jack Welch of General Electric. At the height of team processes at GE, Welch was debriefing four to five teams a week and taking their conclusions on board. He would implement up to 75% of their suggestions. Sponsorship is no easy task.

Dilemma 2: should we strive to be right first time, or make errors and correct these quickly?

Our dominant Eiffel Tower thrives on being objective. The knowledge that's easiest to objectify is the self-sealing technique or experiment, which can be tested and replicated by others before being sold in the market place. This is what most people mean by the Knowledge Revolution: that is, a mass of discrete tools, which are thoroughly tested and are right the first time when they are installed. It is this type of knowledge that is idealised by the university and academics in the utopia of Knowledge Management.

But there is a quite different kind of learning, very widely used in business and everyday living. Here we learn by successive approximations. It's on this logic that the Incubator bases its reason for being. We make errors in our early attempts but we quickly correct them. Getting to know customers, learning languages, trying to love or to help someone, crossing cultures to engage foreigners, and virtually all entrepreneurship and innovation consist of trial and error.

But trial and error doesn't simply occur with inexact ways of inquiry in softer subjects; it becomes very important when issues grow complex and never making mistakes is an impossible demand. This is where model-making and simulations come in. You correct errors in simulations so that you do not have to make them in reality. Knowing that mistakes are inevitable and needing to learn from mistakes, you set up simulations and dry runs. Once you've eliminated errors one by one, you can employ this technique with confidence in real situations.

> This process has been called 'serious play'. Remember the old saying about all work and no play making Jack a dull boy? World-class companies today need play – serious play – if they want to make truly innovative products, argues Michael Schrage: 'When talented innovators innovate, you don't listen to the specs they quote. You look at the models they've created.'[61]

The play occurs when inexpensive errors are made in simulated environments. The seriousness occurs when the perfected techniques are put to use in real situations. As an added precaution, the techniques themselves can be cybernetic and self-correcting, so that 'Houston, we have a problem' can be put right after it occurs. You build into a system the capacity for retrieval.

Business succeeds by getting it right in the shortest possible time, using the logic of the integral organisation.

Dilemma 3: do we learn explicitly or tacitly?

In the process of finishing the infinity loop and overcoming the red tape crisis, Greiner observes the need for stronger interpersonal collaboration, where subjective social control and self-discipline take over from the objective measures of formal control through procedures.

Another way of distinguishing 'objective' information from personal knowing is via a

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[61] Michael Schrage, *Serious Play: How the World's Best Companies Simulate to Innovate*, Harvard Business School Press, 1999

distinction made famous by two Japanese researchers, Ikujiro Nonaka and Hirotaku Takeuchi[62]. They contrast explicit, codified knowledge with tacit knowledge, shared intuitively between people. The latter is inseparable from the personalities of its creators, although it may later be turned into a codified technique and separated from them.

Corporations make innovation flourish by interweaving the tacit with the explicit. This is sometimes done by use of a narrative or 'learning journey', in which knowledge is generated and made explicit. Here we use the example of Moses leading the Children of Israel across the Red Sea. On the far side is the Land Flowing with Milk and Honey. A stirring narrative with explicit and tacit meaning holds the experience of an entire ethnic group together. The story has the effect of eliciting new meanings until the end of time. You never know quite what the story 'means', because it is there to help you create new meanings. Knowledge leaders embark on journeys of endless discovery, sharing and codifying as they create knowledge. John Sculley of Apple wrote *Odyssey*[63] about his time with the company. His slogan was: 'The journey is the reward.' Like Odysseus, he saw himself on a wandering adventure without end. Computers were 'the wings of the mind', navigating through seas of knowledge. You never finally arrive, but you keep inquiring. He called himself the Chief Listener.

From inquiring to innovation: growth through external connections

What is the next stage the leaders of organizations need to enter, now that the predominantly internal dilemmas have been reconciled?

The stages of invention, intention, invasion, implementation and inquiring have been entered in a continuous enrichment process, leading to an organizational culture that supports sustainable innovation. Greiner anticipated that the next revolution might centre around the 'psychological saturation' of employees – when employees grow emotionally and physically exhausted by the intensity of teamwork and the heavy pressure for innovative solutions. But Greiner was doubtful himself, and admitted that he might be wrong.

We admire his predictions because, in the 2006 IBM study, the main conclusion was that in their conversations with 760 CEOs, a persistent, worldwide, sector- and size-spanning push toward a more expansive view of innovation was found – with a greater mix of innovation types, more external involvement and extensive demands on CEOs to bring it all to fruition[64]. Yet all too many companies approach innovation without a game plan that positions them for success. Instead, they take the strategies that worked in the past and try to execute them better[65].

When asked which sources their companies relied on most for their innovative ideas, CEOs held some surprises. Business partners were right near the top of the list – just behind the general employee population. And customers were third, which means two of the top three significant sources of innovative ideas lie outside the organization!

Business model innovation matters

Leaders frequently define their businesses in terms of the products and services they take to market and naturally focus their innovative energy there. But with technological advances and globalisation presenting so many new opportunities – and threats – CEOs are now giving business model innovation as prominent a place on their agendas as products/services/markets innovation and operational/process innovation.

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[62] Nonaka, I. & Takeuchi, H., 1995, *The Knowledge-Creating Company*, New York: Oxford University Press.

[63] John Sculley, *Odyssey,* Stoddart, 1989

[64] The Global CEO Study 2006, *Expanding the Innovation Horizon*, IBM Global Business Services, p.2

[65] Scott D. Anthony, Matt Eyring, and Lib Gibson, 'Mapping your Innovation Strategy', *Harvard Business Review*, May 2006

Christiansen et al. describe the need for 'thinking catalytically', as existing players have resources, processes, partners, and business models designed to support the status quo. This makes it unappealing for them to challenge the prevailing way of doing things. Therefore, the catalytic innovations that will bring new benefits to the most people are likely to come from outside the ranks of the established players[66].

Encouraging collaboration inside and out

Regardless of the type of innovation undertaken, collaboration and partnering are very important to innovation. But leaders thriving for innovation have a problem – and it is not a small one.

Despite all the potential challenges encountered when collaborating externally, *internal* collaboration sometimes proves even more difficult. In fact, the inability to collaborate internally can foil companies' attempts to deliver innovative value propositions for their clients.

The upside of collaboration is underscored by the financial performance of companies with extensive collaboration capabilities. Extensive collaborators outperform the competition in terms of both revenue growth and average operating margin. When we analysed operating margin results, for example, over half of the extensive collaborators outperformed their closest competitors.

To outgrow the internal and systemic phase of innovation, when everything is centrally co-ordinated, to a more modularised and networked phase of innovation, the leader faces the following dilemmas:

    1 internal versus external innovations
    2 investing in Research and Development efforts versus co-operating with rival companies
    3 hi-tech versus 'hi-touch' in virtual teams
    4 systemic versus modular innovation

Dilemma 1: internal versus external innovations

When working with this type of base, the organisation changes from a well-defined entity consisting of fixed structures of managing systems into an entanglement of network systems with fuzzy boundaries[67]. Here the focus shifts from products and companies as units of analysis to people, organisations and the social process that binds them together in ongoing relationships. Most firms now realise that a key factor in obtaining lasting innovations is not the ability to administer existing knowledge, but the capability to constantly generate *new* knowledge.
The network perspective is essential in understanding the process of idea generation. The *locus of innovation* has shifted from individual firms to networks of inter-organisational relationships, where participation in and invitation of knowledge exchange are essential[68]. As a result, organisations are slowly evolving from 'well-structured and manageable systems into interwoven network systems with blurred boundaries'[69]. This trend will presumably continue, making the process of idea creation and the transfer of new knowledge into network structures, rather than the work of one individual, thus blurring the borders of internal and

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[66] Clayton M. Christensen, Heiner Baumann, Rudy Ruggles, and Thomas M. Sadtle, 'Disruptive Innovation for Social Change', *Harvard Business Review*, December 2006

[67] Andreas Seufert, Georg von Krogh, Andrea Bach, 'Towards knowledge networking', *Journal of Knowledge Management*, September 1999
[68] Walter W. Powell, Kenneth W. Koput, Laurel Smith-Doerr, 'Interorganizational Collaboration and the Locus of Innovation: Networks of Learning in Biotechnology', *Administrative Science Quarterly*, Vol. 41, No. 1, pp.116-145, March 1996
[69] Seufert, A., Von Krogh, G & Bach, A.,'Towards knowledge networking', *Journal of Knowledge Management*, 3, pp.180-190, 1999

external innovations[70].

Dilemma 2: investing in Research and Development efforts versus co-operating with rival firms

This dilemma can best be reconciled by a concept called *open innovation*. We define open innovation as systematically encouraging and exploring a wide range of internal and external sources for innovation opportunities, consciously integrating that exploration with firm capabilities and resources, and broadly exploiting those opportunities through multiple channels.

The open innovation paradigm is often contrasted with the traditional vertical integration or 'proprietary' model, where internal research and development activities lead to products that are developed and distributed by the firm[71]. This challenge involves quite a number of dilemmas. Why would firms spend money on research and development efforts if the results of these efforts were available to rival firms?

Earlier models and 'fully integrated innovators' or 'systemic innovators' like AT&T (now Lucent), Bell Labs and IBM conduct basic research through commercial products. By contrast, open innovation celebrates success stories like Cisco, Intel and Microsoft, which succeed by leveraging the basic research of others. Under this paradigm, internal innovation is supplemented by systematic scanning for external knowledge, with firms maximising the returns that accrue from both sources. We observe four strategies that firms employ:
   1   pooled R&D or product development,
   2   spinouts,
   3   product centric approaches and
   4   attracting donated complements.[72]

Dilemma 3: hi-tech versus hi-touch in virtual teams

In the development of an open culture to support the combination of business models and partners, the use of virtual teams has become increasingly important. The use of geographically dispersed virtual organisations, however, comes loaded with dilemmas. In particular, the role of a culture of trust and commitment in the virtual organisation is paramount.

Multiple relationships arising from alliance-based structures require clear commitment to enable the development of trust as a basis for longer-term partnership. Paradoxically, the perceived low level of commitment from the organisation does not engender the high level of trust and commitment required from virtual teams to maximize their performance[73]. Charles Handy argues that it is easy to be seduced by the technological possibilities of the virtual organisation, but the managerial and personal implications may cause us to rethink what we mean by an organisation. At its simplest, the managerial dilemma comes down to the question: *How do you manage people whom you do not see?*

The simple answer is, by trusting them, but the apparent simplicity of this idea disguises a turnaround in organisational thinking. The rules of trust are both obvious and well established, but they do not sit easily with a managerial tradition that believes efficiency and control are closely linked and that you can't have one without a lot of the other[74].

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[70]Christian Vintergaard and Kenneth Husted, 'Enhancing selective capacity through Venture bases', *CKG Working Paper No. 13*, 2003

[71]Chandler, A.D., *Scale and Scope*, Cambridge, MA: Belknap, 1990

[72] Cohen, W. M. & Levinthal, D. A., 'Absorptive capacity: a new perspective on learning and innovation', *Administrative Science Quarterly*, 35, 1, pp 128-152, 1990

[73]Liz Lee-Kelley; Alf Crossman; Anne Cannings, 'A social interaction approach to managing the "invisibles" of virtual teams', *Industrial Management & Data Systems*, Volume 104, Number 8, pp.650-657(8), 2004

[74] Charles Handy, 'Trust and the Virtual Organization', *Harvard Business Review*, May/June 1995

This is perhaps the area in which balance is most crucial, from both a personal and a corporate point of view. The distant hi-tech extreme can lead to disruption, and the diffuse hi-touch extreme to a lack of perspective; a collision between them results in paralysis. It is the interplay of the two approaches that is the most fruitful for the virtual team: recognising that privacy is necessary, but that complete separation of private life leads to alienation and superficiality; that business is business, but stable and deep relationships mean strong affiliations.

Dilemma 4: systemic versus modular innovation

In its years of expansion, Lego, the Danish toy company, wanted to improve their bricks and their possible combinations to help increase sales.

Clotaire Rapaille eloquently showed that Lego found reconciliation in combining boxes for the international markets:

> 'Lego repositioned itself as a source of developing creativity and imagination. If they explained, however, that with one box of Lego there exist infinite possibilities, consumers would only buy one box, creating a loop. Lego needed to create a spiral, with possibilities for children to create more with two boxes than one, and still more with three than two. Instead of an instruction booklet, they needed a growth map, showing how a child's creativity grows from one box to the next.'[75]

This is a wonderful example, where the unique guidelines and infinite possibilities are combined with a universal and standardized brick. The international success of this creative tool is unprecedented, and has been described by top management as the Tool of the Century. It was cynical to see that at the end of that same century Lego ran into trouble. Their standardized bricks and tools/instruments were combined with templates of standardized solutions: sales went down, and the rest is history. With the introduction of the internet-driven 'Mind-games', Lego has put itself ahead of the game again, by combining universal parts with infinite combinations.

The success story of IKEA is very similar. As the following analysis clearly shows, making the parts relatively modularized and standardized to make them cheap, while putting them together to the customer's technical skills and taste, made these unbeatable products.
Very much in line with the previous set of dilemmas, we can distinguish between innovation activities that are clearly separable/modular or strongly interdependent/systemic in nature[76]. It is common knowledge that organizations involved in autonomous modularized innovations benefit from decentralized approaches in virtual companies. Largely through the marketplace, they co-ordinate the information needed to integrate an autonomous innovation with existing technologies, which in most cases will be well understood and possibly codified in industry standards. Such codified information is difficult to protect.

Conversely, in the case of systemic innovations, where the reaping of economic benefits depends on related complementary innovations, benefits are said to take place best within a centralized organization, i.e. in integrated companies that have control of the activities that need to be co-ordinated by means of a hierarchy. Achieving control of innovation activities is necessary in order to control co-ordination and facilitate rapid mutual adjustment[77].

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[75] Clotaire Rapaille G., *7 Secrets of Marketing in a multi-cultural world*, p.204, USA: Executive excellence publishing, 2001,

[76] Chesbrough, H.W. and Kusunoki, K., 'The Modularity Trap: Innovation, Technology Phase Shifts and the Resulting Limits of Virtual Organizations', pp.202-230 in Nonaka, I. and Teece, D.J. (eds.), *Managing Industrial Knowledge.* London: Sage Publications, 2001

[77] Chesbrough, H.W. and Teece, D.J., 'Organizing for Innovation: When is Virtual Virtuous?', (HBR Classic), *Harvard Business Review*, August, pp.127-134, 2002

As value creation becomes increasingly dependent on learning and the development of new knowledge, it is crucial to improve our understanding of the complexity of the reconciliation mindset in relation to the possibilities for engaging in knowledge-producing interactions. This poses new challenges for management, since corporate strategy must take account of how to support the ability to enter into the right kinds of knowledge-creating interactions, and how to maximize the scope for appropriating the benefits in different contexts. This thus calls for openness in two dimensions: openness towards collaboration partners; and openness towards alternative uses of newly developed knowledge, i.e. developing new knowledge with a heterogeneous rather than homogenous demand structure in mind.

The carousel

After the dominant mindsets of *homo apprendis* in the Incubator, *homo socialis* in the Family, *homo economicus* in the Guided Missile and *homo efficientis* in the Eiffel Tower, the time has come for an organisational mindset where actors integrate opposites: the *homo reconciliens*. It is the actor who works in organisations where opposites, dilemmas and trilemmas are being reconciled on higher levels. Only then is innovation sustainable.

It is not surprising that recently the value of shares is completely dominated by financial and therefore historic numbers. These determine the rate of the share in combination with the expectations of that same share. Now expected and actual numbers alone can hardly be trusted; we need to find more reliable indices. We have always wondered how the value of an organisation where employees, suppliers, clients and shareholders meet, can be determined by a relatively small group of short term movers of money.
But what is a better means of determining value?

Much in line with the criteria of good individual leadership and innovation, we need to fundamentally redefine and rebalance the criteria for the quality of the collective organisation. Many traditional methods for determining leadership qualities and their creative powers base their score on a number of criteria, where the extremes of the scales are mutually exclusive. The ISTJ (introvert, sensitive, thinking and judging) score, for example, is the most popular typology amongst successful managers based on the Myers Briggs model. With Shell it was the more analytic and realistic 'manager with helicopter' quality that prevailed.

But all of these qualities exclude their mirror images. It is not that we proclaim that the extrovert, emotional and perceiving manager or an integrating and imaginary leader with a landing gear should get more chances. In order to ascertain the essential qualities of a leader we need to judge how well this person integrates opposites in tension. The innovative leader will use emotions to increase his or her power of thinking, use analysis in order to test the larger whole and use imagination in order to make realistic decisions. The same applies to organisations in which these leaders operate.

In our consulting practice, we've recently analysed and codified over 7,000 such tensions and dilemmas with which organisations wrestle. We've applied clustering and factor analysis type methods to reduce these thousands of outputs to a core set of ten golden dilemmas of innovation (see our website: innoscan). In parallel, we've undertaken many experiments in this area with ten blue chip organisations. We researched how we could map the value of an organisation in an alternative way, by the degree to which these organisations integrated the tensions over and above conventional linear measurement KPI-style indicators. We sought to discover if such new measurements could give us a much better insight than through the standard pure financial and technical analyses.

In this way the reconciliation of the dilemma between efficiency of the internal organisation and the development of the employees is of prime importance for the innovation power of an organisation. Here *homo efficientis* meets *homo socialis*. On the playing field of tension between financial short-term results and investments of people for the long term, *homo economicus* meets *homo apprendis*. The development of technology needs to reconcile itself

with the demand of the market in such a way that the market helps decide what technologies to push. On the other hand, the push of technology will need to help determine by what markets one wants to be pulled by. The need for consistency in the creative organisation needs to be fine-tuned with the need for local flexibility and sensitivity. In other words, *homo apprendis* needs to be integrated with *homo efficientis*.

The last example relates to a simultaneous high score on both specialisation in supply and the value added of the organisation by a broad assortment of products.

Guidelines for future research

In due course we will ask the representatives of the four dominant organisational perspectives – management, clients/suppliers, society and financial analysts – to provide their opinions and score the organisation on the ten golden dilemmas according to the methodology and format described below. This is a type of 360° evaluation at the organization level, akin to 360° competence profiling of individual employees by their peer group. On each of the ten scorecards, we will ask the relevant group to indicate the relative importance of dilemma for the future sustainability of the organisation's innovation on a Likert scale, so that we can weight the relevance differently for different organisation sectors or categories.

Our quest is to arrive at a new, alternative 'ROR' index that will eventually push away financial-technical analyses and reconcile the various perspectives. Historical indices will be enriched by future potential. Return on Investment (ROI) will finally be replaced by the much more penetrating Return on Reconciliation (ROR).

Let's be just a little creative in the approach and assessment of the creativity and innovative powers of our organisations.

It is time.

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Amsterdam
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