



## City Research Online

### City, University of London Institutional Repository

---

**Citation:** Baden-Fuller, C. & Morgan, M. S. (2010). Business Models as Models. Long Range Planning, 43(2-3), pp. 156-171. doi: 10.1016/j.lrp.2010.02.005

This is the accepted version of the paper.

This version of the publication may differ from the final published version.

---

**Permanent repository link:** <https://openaccess.city.ac.uk/id/eprint/13975/>

**Link to published version:** <https://doi.org/10.1016/j.lrp.2010.02.005>

**Copyright:** City Research Online aims to make research outputs of City, University of London available to a wider audience. Copyright and Moral Rights remain with the author(s) and/or copyright holders. URLs from City Research Online may be freely distributed and linked to.

**Reuse:** Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge. Provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.

# Business Models as Models

Charles Baden-Fuller\* and Mary S. Morgan\*\*

**\* Centenary Professor, Cass Business School, City U. London & Senior Fellow, Wharton School, U. Penn & Fellow Strategic Management Society**

**\*\*Professor, London School of Economics & Fellow of British Academy**

Author submitted version of Baden-Fuller, C & Morgan, MS (2010). Business Models as Models. LONG RANGE PLANNING, 43(2-3), p156-171

## ABSTRACT

Drawing on research undertaken in the history and philosophy of science, with particular reference to the extensive literature which discusses the use of models in biology and economics, we explore the question ‘Are Business Models useful?’ We point out that they act as various forms of model that provide means to describe and classify business uses; to operate as sites for scientific investigation; and to act as recipes for creative managers. We argue that studying business models as models is rewarding in that it enables us to see how they embody multiple and mediating roles. We illustrate our ideas with reference to practices in the real world and to academic analyses, especially in this *Long Range Planning* Special Issue on Business Models.

## ACKNOWLEDGEMENTS

We were provoked to write this piece by Rob Grant’s challenge: ‘Why do we need the business models concept? What use is it?’ We acknowledge support from the EPSRC (grant number EP/E037208/1) on Financial and Organizational Innovation. We thank those who commented on the original draft, especially historians and philosophers of science: Marcel Boumans, Sabina Leonelli, Simona Valeriani; and management scholars: Sid Winter, Rob Grant, Giovanna Padula, Rodolphe Durand, and Benoit Demil; all those who participated in the discussion at our presentation at the Cass International Workshop on Business Models in December 2009, and finally Jon Morgan for his inspired editorial work.

## Introduction

Does the idea of business model matter? The term has become widely used in board rooms, by managers in organisations, by consultants, by commentators of business, and even on radio and television programmes aimed at the general public. Indeed, it is more widely used nowadays than almost any other concept in strategy: when people are asked ‘what is strategy?’ most give an answer that includes the words business model. The ubiquity of the terms and the plethora of its uses suggest that business models are profoundly important to the world of work – yet management academics rarely put the concept centre stage, preferring their established stresses on such concepts as competitive advantage, core capabilities, routines and resources. Public perception of its usefulness seems to fly against this academic reluctance (in main-stream journals and texts) to acknowledge the term, its use and its consequences.

This article suggests answers to the questions ‘Why is the concept of business models useful?’ and ‘Who uses them, for what, and how?’ We have sought answers that take seriously the ways in which business models function as models in various different forms, and brought into the management field insights drawn from writing and first hand research by historians and philosophers of science who have probed how models are used in disciplines beyond the management arena. Models, modelling and their discussion have a long history - particularly in biology and economics - that pre-dates the arrival of the business model concept in management thinking. We mobilize our thoughts in three sections:

- The first compares scale models and role models to explain how the notion of business models enables us to classify businesses in a taxonomy or a typology. Although management scholars have long sought to classify their world, we argue that using the business model notion - and business models themselves - as classifying devices provide valuable ways to expand our understanding of business phenomena.
- The second section compares business models with the model organisms of biology and the mathematical models of economics to show how business models form instruments of scientific enquiry. This section is more strikingly novel to management academics, for it looks at the biology analogy in a new light: not that of an evolutionary theory of the firm (e.g. Nelson and Winter), but of the use of the methodology of the life sciences.<sup>1</sup>
- The third section suggests that specific business models function like recipes: as practical models of technology that are ready for copying, but also open for variation and innovation. Here we move back to a more comfortable arena for management scholar-

teacher-practitioners, but also one that opens up perspectives for further development. Taken together, these three sections reveal how models, and modelling generally, and the use of business models in particular, already play a central role in progressing management thinking.

## Business Models as Descriptions of ‘Kinds’ in a Taxonomy

One role of business models is to provide a set of generic level descriptors of how a firm organises itself to create and distribute value in a profitable manner. This definition is manifest in many different ways and forms, and Table 1 shows a few examples of how writers in this issue approach business model definition.<sup>2</sup> This table also provides a column showing how these writers make use of the many different notions of ‘model’ we discuss and analyse in this article. These (and, of course, many other) articles share a common feature – they describe typical kinds of organisations and behaviours by firms (or perhaps units within multi-business firms) in such a way that we can label different kinds of behaviour and then classify individual firms accordingly. Thus, the general idea of business models is intimately linked with notions of taxonomies and kinds.

Names	Definition of BM	Focus of analysis includes	Model in Use	Examples include
Teece	<i>How a firm delivers value to customers and converts payment into profits</i>	Notes business models are often ‘shared’. Relates business model innovation to technical innovation.	Kinds and Types; Role Models	Swift meat packers, Sea Land containers,. Netflix online DVD rental
Zott & Amit	<i>The business model is a system of interdependent activities that transcends the focal firm and spans its boundaries.</i>	Emphasizes interdependencies beyond firm boundaries. Good BM design requires: Content (what), Structure (links) and Governance (who does what).	Kinds and Types	Ebay, Inditex (Zara), First Data corp FriCSO (start up in lubrication)
Williamson	<i>..cost innovation business model offers advantages from emerging economies in radically new ways</i>	Low cost business models from China (and India) how low cost BM work and the challenge they pose	Role Models to follow	Shanghai Zhenhua Port Machinery, Haier refrigeration, Nano car- Tata + range of emergent

	<i>meaning more for less.</i>			market players
Gambardell& McGahan	<i>Business model is a mechanism for turning ideas into revenue at reasonable cost... BM innovation as new way of capitalising value of underlying asset</i>	Examines Business-Model innovation in high technology sectors that allows small firms to capitalise on their ideas.	Scale Models or short-hand descriptions to follow	Many references including Google, Apple, Ideo, Yogitech + biotech start-ups
Itami & Noshino	<i>..business model is a profit system, an activity system and a learning system</i>	Puts learning centre stage, and classification is by firm systems	Role Models and Model Organisms	Toyota and Google
Yunus, Moingeon & Lehmann-Ortega	<i>A value system plus a value constellation</i>	A social business model that lies between for profit and not-for profit	Role Model	Grameen Bank + collaborations with Telenor, Veolia and Danone
Casadesus & Ricart	<i>The logic of the firm, the way it operates and how it creates value for its stakeholder</i>	Interfaces between Business Model, Strategy and Tactics	Model capable of manipulation	Ryan Air Telmore/TDC
Demil & Lecoq	<i>The way activities and resources are used to ensure sustainability and growth</i>	Dynamics of Business Model change over time	Model organism	Arsenal FC
Sabatier, Rousselle & Mangematin	<i>Cross roads of competence and consumer needs</i>	Portfolio of Business Models	Recipes	French Biotech firms

When business models come up in business discussion, they are often linked with the names of firms, each understood to epitomise a particular form of behaviour. These are existing firms, whose behaviour has been observed and is often given in a nutshell description alongside their name. Some prefer the use of the name alone - the ‘McDonalds business model’ or the ‘South West Airlines business model’ - over their counterpart brief description - ‘the franchising model’ or the ‘low cost airline model’ - because they prefer the real business example. This naming and labelling invokes two different ideas of models that

have the long-standing, common, senses of *role* models, and *scale* models. *Scale* models offer representations or short-hand descriptions of things that are in the world, while *role* models offer ideal cases to be admired - in these respects at least, the notion of *business* models resonates with our experience of models, from the arts and sciences to ordinary, everyday life.

A replica model of a tractor or a fire engine is a scaled-down version of a real thing, capturing only certain details of its style or mechanism; a model ship in a bottle has a similar character. They are small, simplified, and only describe some aspects of the real object: they might be described as ‘nutshell models’, for it is not just an issue of scale, but of picking out the elements that seem most important to represent the object being modelled. Such models are very different from the role of a Chanel dress as a model for the mass market to copy, or Beckham’s legendary ability to ‘bend’ the flight of a ball acting as a ‘role’ model for young soccer players. These models do not offer scaled-down versions or generic descriptions: they are what they are, and play only an exemplary role. Thus, *scale* models are *copies of things*; *role* models are *models to be copied*. In *business* models, the two notions come together: the organisations named above and in Table 1 have exemplary status: real examples which give life to the short-hand descriptions - as Google is to the internet business model.

-----  
**Insert Pull Quote 1 here**  
-----

We leave go of the exemplary notion of model for the moment and its possibilities for copying (although we come back to it later) to explore how models understood as scaled down short-hand accounts lead to descriptions of kinds: taxonomy and classification. The real world of firms is made up of very many enterprises that behave and are organised in very different, individualistic ways. In contrast, theories of firm behaviour tend to be very general, such as the economists’ theory that firms act as if they aim to maximise profits, or the institutional theory in management that firms mimic other firms to gain legitimacy (even though this may not maximise their profits).<sup>3</sup> Business models operate at an intermediate level between these two poles. Management scholars generate descriptions of firm behaviours that capture their salient features: like scale models, these business model descriptions are neither so general that they fail to distinguish the main differences between firms, nor are they so absolutely particular that they cover every last detail of contract and activity. Scholars recognise that firms – for all sorts of reasons - do not all behave the same: but nor are they all completely different, for if they were, every firm would appear to have a different business

model. This ‘in-between’ quality is the first sense of what we mean by a ‘generic level’, but it is intimately linked with the second sense that lurks in the idea of business models - that *there are generic kinds of behaviour which are distinctly different*. And it is these generic kinds of behaviour - that form the set of known business models at any point in time - that enable scholars to classify individual firms that they study into groups according to those described kinds. So, this classificatory function of the business model concept depends on these short-hand descriptions, these scale-models.

The virtues of descriptions at a level that characterise and label ‘kinds’, and so enable us to classify further individual observed examples into one of those kinds, is most evident in the field of biology. Knowing that something is an animal is often not very helpful, as we usually need to know what *kind* of animal it is. We can describe the characteristic differences between insects and mammals - taken as a whole - and make those descriptions useful for classifying things from the living world into these (and other) natural kinds. We can go down a level of detail and still this relationship - between description of kinds and classification - works well to sort spiders from flies, distinguish mosquitoes from houseflies, and recognise the difference between the stinging wasp and the benign hover fly. And while biologists who work on fruit flies do - for certain purposes - want to sort their specimens by eye colour or genetic detail - for other purposes, such a highly detailed level of description is not needed. Different dimensions and levels of description serve different purposes; but the notion of kinds is critical to *the successful characterization of similarity* and the *definition of difference*. Like the ‘kinds’ of natural history, the role of business models as descriptors supports a classificatory function to distinguish and sort firms, because the descriptions they generate reveal ‘kinds’ of business behaviour. This points us to the other sense of generic that is relevant here - as referring to ‘genera’ or classes - to ‘kinds’ of things.

**Table 2: Business Models from Economic History**

Cohort Label	Examples
Guild System	Goldsmith's Workshop
Factory System	Textiles factory with automatic loom and spinning jenny
American System of Manufactures	Singer sewing machines; Model-T Ford production line system;
Network Firms	Bennetton; Nike;
Chinese Low Cost	Shanghai Zhenzua Port Machinery Company

This root notion of generic is nicely compatible with way that economic historians described and labelled the cohorts of firms that characterised the new ways of organising economic activity that marked particular historical eras (as illustrated in Table 2). Interestingly, these are not modern labels, but the contemporary labels given by the actual participants in those long ago economies, suggesting that the notion of business model (if not its label) has long antecedents. In mediaeval times, goods were manufactured by members of guilds: the business model was one of single workshops, small-scale production, using craft skill to produce single item goods with guaranteed-quality outputs and high value-added per piece. The first industrial revolution in the late 18th and early 19<sup>th</sup> centuries saw the development of the 'factory system' in Europe. In this new business model, firms arranged their innovative manufacturing processes inside factories, with division and specialisation of labour, and with mass production but of a heterogeneous collection of goods (such as a variety of textiles) with low costs and low prices. (Such changes, as for other revolutions in business models, typically came with different learning systems and different inter-firm relations.) While the innovators of the guild system are surely lost in the mists of time, we know quite a lot about the innovators of the factory system, for they built 'model factories' in 'model communities' (such as the textile mills and associated settlements of New Lanark in the UK and Lowell in the USA) that offered a new formula for firm success that others flooded to copy. In the second industrial revolution of the late 19th/early 20th century, the 'American system of manufactures' replaced scarce labour with extensive capital in the form of machines (such as the Ford moving production line) that made homogeneous goods, at low cost for the mass consumer (Singer sewing machines as well as Model T Fords).<sup>4</sup> Arguably another industrial revolution is underway now, in the 'Chinese system of manufacturing' - Williamson alerts us (again in this issue) to a new breed of emerging market players who



have moved from applying their labour cost advantage to technologically backward processes, towards a new Business Model offering much higher technology at low cost, coupled with unmatched choice of products. He cites its use in exemplar firms such as Haier (white goods) and Shanghai Zhenzua (port machinery), and warns this new base of competition in manufacturing will leave few places for more traditional rivals to hide.<sup>5</sup>

Of course many other business model taxonomies could be constructed - indeed, each business model definition will focus on different characteristics and so is likely to produce a different set of classes and so possibilities for classification (as we can see in Table 1). For those concerned with taxonomy in management - as in biology - there is no fixed number of labelled boxes, rather a set of kinds which may grow or change over time as ideas and knowledge about things in the world develop. For example, the models of industrial economics developed in the early half of the last century characterised types of firms according to their number in an industry and their competitive behaviour on the basis of pricing, whereas now (according to game theory) industrial behaviour is more likely to be characterised by a firm's strategic possibilities and choices, which provides quite a different taxonomy.<sup>6</sup> Each different way of sorting - based on new ideas, new empirics, or even new business experiences - may reveal different aspects to be of importance and so different elements to be analysed, just as Darwin's tree of life revealed different connections and was used for different purposes to our modern genetic tree of life. Indeed, the current debates amongst biologists and philosophers about the implications of the revolution in genetic information hinge on rethinking the kinds of things that there are in the world, and how they relate to each other.<sup>7</sup>

-----  
**Insert Pull Quote 2 here**  
-----

Building a taxonomy of business-model classes is not a straightforward task (as Lambert shows for e-business models), and nor is the subsequent process of classifying businesses into those classes. These projects, and their problems, have been well rehearsed in earlier literatures in management, as they have in other fields in which taxonomy and classifications are dominant activities.<sup>8</sup> They are worthwhile activities however, for the possibilities they give us for not only defining but also for exploring characteristic similarities and differences and the relationships between classes, but also for developing understanding, explanation, prediction and intervention. As both Crombie and Hacking note, taxonomy is one of the classic means of acquiring scientific knowledge.<sup>9</sup> And while it is of course very

useful to be able to recognise different kinds of firm behaviour, and be able to classify or sort firms into those different generic types, some further way of characterising business models *as models* is needed in order to understand the many other roles they can – and do – play, both for academics and for managers.

This brings us to a broader question about what sort of things business models are. It may help here to begin here with the difference between *taxonomy* and *typology* as a preliminary to understanding the difference between *kinds* and *types*. The usual way to differentiate them is to think of a *taxonomy* as being the classes (or kinds) of things observed in the world, and as being developed from empirical work, bottom up. A *typology* is usually understood as delineating types of things (or events) where the types are decided theoretically or conceptually by the scientist, top down (see Table 3).<sup>10</sup>

**Table 3: Taxonomies, Typologies and Ideal Types**

Taxonomy		Typology	
Kinds (taxa) defined bottom-up through observation and empirical work		Types derived top-down through conceptual and theory work	
Kinds – used to classify firms		Types – used to classify firms	
Ideal Types			
Pugh and Aston Project		Types derived from statistical measurement and analysis of firm characteristics	
BM Projects		Types: derived from exemplary cases and their analysis as models	

However, Max Weber’s ‘ideal types’ - a highly influential notion in modern social sciences - are a bit of both. For Weber, ideal types are generalisations constructed from the facts of experience, yet they create abstract concepts that he described as ‘*pure fictions*’. So ideal refers here not to the notion of perfection, but to the adjectival form of ‘idea’ - and type refers not to a classificatory kind we meet in the world, but to a ‘mental construct’. The ‘ideal type’ notion is powerfully useful because, as he explained, it mediates between our ideas and theories on the one hand, and the things in the world we want to describe and explain in immediately practical ways:

*The ideal type concept will help to develop our skill in imputation in research: it is no 'hypothesis' but it offers guidance to the construction of hypotheses. It is not a description of reality but it aims to give unambiguous means of expression to such a description.*<sup>11</sup>

This notion of ideal types and typologies fits particularly neatly into the management literature, for we can go back to some classic examples in the history of the field that have particular relevance to this discussion of business models. The 1960s Aston Studies programme, led by Derek Pugh, developed labels and accounts of types of organisational behaviour (rather than of business models).<sup>12</sup> His research process involved empirical description and measurement along various broad dimensional categories of organisational behaviour, descriptive statistical work to abstract patterns of those particular characteristics from the mass of those observations, and analytical statistical work to draw out the connections between these patterns, from which he conceptualised and labelled characteristic *types of organisations*. This sounds very Weberian in its combination of empirical analysis of kinds turning into conceptual ideal types, and of taxonomic work leading to a typology, and indeed Pugh related his work directly to Weber's mode of research and substantive work on organisations.

-----  
**Insert Pull Quote 3 here**  
-----

Business models, too, might be understood as ideal types, for they seem to have the characteristics and fulfil the roles that Weber associated with such types: they are based on both observation and theorizing. But if so, what kind of scientific work - empirical and conceptual - goes into establishing business models? They are certainly not isolated by inference from any large statistical study, as Pugh's were: instead we argue that business models are produced by *model work*: that is, scholars investigate, with some considerable depth of scientific research, particular examples that form our set of business model exemplar cases. These scientific enquiries by management scholars provide an *empirically* and *conceptually* grounded account of each case to establish the full portraits associated with their ideal types, to accompany the shorthand (nutshell) descriptions by which they are known (the scale model). This is what we mean by 'model work', a term that relies on the notion of scientific models, and the way models are used in the sciences. This mode of research contrasts with Pugh's process of data collection, extraction of patterns, correlation of patterns, and attribution of labels. His statistical work to construct a typology of organisations

is replaced in the business model literature with model work in the construction of a typology of business models (see again Table 3). But, so far, we do not have enough explanation of what is involved in scientific research with models to support the claim that it is this kind of work which turns particular cases and short-hand business model descriptions into something as rich and as useful as an ‘ideal type’.<sup>13</sup>

## Business Models as Model Organisms for Investigation

So we turn our attention to consider what kind of a scientific model a business model is, and what kind of work is done with it. It is not always obvious why a particular kind of business model is successful: for example, what elements are the real keys to the success of South West’s low cost airline model or Google’s internet model, which details have to be exactly so to make it work, and which are irrelevant and just happen to be present in the particular firm that is studied, rather than true of all firms of that type.<sup>14</sup> Recent commentaries from the history and philosophy of science on the many kinds of models that inhabit the sciences, and on the ways models are used by scientists and for what purposes, throw some interesting light on these questions.<sup>15</sup> In both biology and economics, as in management, models are used to address and help solve one basic problem - lack of knowledge. All three fields have grand theories, and lots of detailed studies, but sometimes lack a way to fit general ideas to the descriptions of events and objects of life in order to understand them. This is where models come in. Economic models are usually mathematical objects (often quite small) which are taken to represent various relationships in the economy as a whole, or the economic behaviour of firms or people. In biology we also find a different kind of model, the so-called ‘model organism’: real life objects such as the fruit fly, the laboratory mouse, the zebrafish, the *C. elegans* worm, the Arabidopsis plant, and so forth, chosen to represent different kinds of life.<sup>16</sup> These two very different kinds of models nevertheless function for those sciences in rather similar ways, ways which may illuminate the use of business models in management science.

The economist and the biologist both use their models as valuable and sophisticated instruments to enable them to gain more knowledge about their worlds. In both fields, models need to be investigated to provide a full understanding of how the model works and to know and understand its qualities. These investigations involve various forms of manipulation or experiment. Economists experiment with mathematical models to learn about the behaviour of the made-up world represented in their model, to analyse its properties and to see what

limitations it offers. They experiment by varying elements in the model in response to different ‘what if’ questions that come from their theories or from real world events (such as What pricing rules should monopolies follow? What should a government’s reactions be to a financial crisis, or a firm’s to doubled oil prices? How would consumer behaviour change if they paid for carbon usage?) and then reasoning mathematically with their model come up with their answers.

Similarly, biologists experiment with their model organisms to learn how they work, but here the experiments are ‘real’ laboratory experiments. By intensive study of a few kinds of organism (a worm, a fish, a plant, a yeast, a mammal, an insect, etc) the community of biologists study how life is lived in these different forms. They learn what behaviour is specific to each form, and what is general and shared between them, which processes and elements can usefully be compared and which not, and what makes them special and what does not.<sup>17</sup> For both groups of scientists, models are the place where they figure out how their particular kinds of ‘things’ of the world work. They check these model findings against their theories, and also against behaviour in the world, to see how far the findings match the characteristics of the real world that their models purport to represent. Research via their models can yield insights into the grand theories, or the smallest details of behaviour, or help develop ideas about mechanisms that operate at some middle level. For both economists and biologists, the model object must be manipulable, or experimentable – for models must offer the kinds of descriptions that can be reasoned with, the kind of resources that can be investigated to answer questions (as Morgan explains in detail).<sup>18</sup>

When we look carefully at how business models are used by their communities, we find a variety of activities going on which we suggest makes them more similar to the model organisms of biology than to the mathematical models of economists. We have already seen how the academic uses business models to describe and give labels to how firms operate in various different generic ways, and then to classify firms according to which kind of business model they employ. But we also want to know why and how each model is successful as a business, why it is profitable. At that point, the particular business models they study take on aspects of the model organisms of biology. Indeed, one could argue that the exemplar case business models (such as McDonalds) are to management what the model organisms are to biology: real-life examples to study.<sup>19</sup>

-----  
**Insert Pull Quote 4 here**  
-----

But biologists also use model organism to learn about life more generally. For them, the model is not just any mouse: it is ‘the lab. Mouse’ - a particular strain bred to a standardized form, and then investigated in exhaustive detail, by many different teams and methods, to ask and answer many different questions about that life form. But biologists also use a model organism to make inferences about other life in the same class, and in the more general class. Thus lab. mice are not just representative *of* mice, but also representative *for* their general class: mammals. The difference between ‘of’ and ‘for’ is relevant for our story.<sup>20</sup> Since a model organism acts as a type representative *for* the bigger, general class/kind of which it is a member - lab. mice stand in for mammals, zebrafish for fish, fruit flies for insects, etc. - investigating any one of these particular representatives provides information that may be relevant for the wider class. The same process of inference from the individual exemplar to the wider class goes on in business model research (which is why our opening discussion of taxonomy and of the classifying function of business models was so important).

In an analogical sense, a high street McDonalds can be thought of as a lab. mouse - as a standardized representative *of* McDonalds as a company. But also McDonalds (as a business) may be taken as a representative *for* a genre of firms that practice a similar kind of business model - ‘business format franchising’ - where a company designs a system to deliver a product/service (as McDonalds delivers hamburgers) and offers knowledge of the system on a fee-related-to-success basis. Business format franchising has become ubiquitous in food outlets, hotels, coffee bars, and in many consumer and small business services. And, while each business format franchise system is different, McDonalds remains the benchmark to which people refer, either centrally or tangentially, when analysing this particular business model: it is *the* model *for* the (business format franchise) model.

In the same way as biologists focus their study on a set of model organisms, business scholars repeatedly study the same organisations: South-West Airlines, Google, Disney, Toyota etc, to understand exactly how that kind of business model works, both in theory and in practice. This intensity of study creates a depth of understanding and provides an analytical account of each exemplar case, involving theorizing, concept formation, and a fully developed appreciation of its practical details. It is this kind of model work, and the knowledge it produces, that turns the example into the exemplar case - something like an ideal type. It is these firms - a widely recognised set, often part of the teaching curriculum as well as the research laboratory - that form the model organisms of management. Each firm is studied not just for its own sake as an exemplar, but as the ‘type’ against which other firms following the same generic business model can be measured and compared.<sup>21</sup> And of course,

each exemplar can also be contrasted with firms practising a different model, i.e. members of a different class.

Business models form the ‘stuff’ of many different kinds of enquiry, by both academic and firm participants, and these model investigations into business models take a number of forms. Some use a schema, or a mathematical model, which can be analysed and investigated. Others use the firm itself – the model organism. Both sorts of models of the firm - the first-hand real organism and the second-hand account of it - can be investigated to learn about the business model. For example, Casadessus and Ricart build a representation of Ryanair’s business model, identifying inter-relationships and causal ‘feedback loops’ between particular aspects of its choices and consequences.<sup>22</sup> Others use their own firm as their model for experimentation, to consider how changing the way its business model is organized or competes can influence its possibility of success. Magretta was among the first to record how managers experimented with their business models,<sup>23</sup> and Table 4 shows some of the ways in which such understandings have subsequently been broadened and deepened from the accounts provided in this issue. Some of this work is via thought experiments, and some involves managers experimenting on their firms in the real world: some experiments take place in the context of transforming an existing business, while for others the context is one of exploring to build a new business.<sup>24</sup>

**Table 4: Examples of Business Model Experimentation**

Author	Company examples	Kinds of experimentation
Sosna, Trevinyo-Rodriguez & Velamuri	Naturhouse	Deliberate real experiments with new business model to change business
Svejenova, Planellas & Vives	elBulli restaurant	Deliberate real experiments by the entrepreneur to create new businesses models
McGrath	Freemium models, Google	Deliberate real experiments by managers to embed business models into the firm
Doz & Kosonen	Mental models of managers	Creating new business models for existing businesses by conducting thought experiments
Chesborough	3Com and Radiohead	Experiments by managers that were partially planned and partially experimental, partially model based and partly real firm based
Dahan, Doh, Oetzel & Yaziji	Corporate/NGO Collaborations	Documenting experiments by managers about changing collaborations within social business models
Wirtz, Schilke & Ullrich	Web 2.0 BMs: Wikipedia,	Thought experiments that link Web 2.0 to

	MySpace	changes in business models for internet firms
Thompson and MacMillan	New businesses for social wealth creation	Creating new business models for social space by <i>both</i> thought experiments <i>and</i> real experiments
Smith, Binns & Tushman	USAToday,	Experiments with balancing exploitation and exploration

Thought experiments or simulations and other business model manipulations are only possible when the model is (like those of economics) simple enough to work through (or where the implications of a likely change can be programmed into it), but yet complicated enough to capture sufficient content of the firm's arrangements to make the experiment meaningful. For investigations into the exemplar cases, management academics gain some of the advantages of complexity and realism of real life firms, without of necessity, having a full account of everything involved in the specific firm. Here is where in-depth case study investigations of the exemplary business are so valuable.<sup>25</sup>

For the managers' real-world firm experiments, the business model is more like the biology model organism - an incredibly complicated set of arrangements where every slight change in one bit is likely to alter all the other relationships. Here - as with biologists - managers experimenting with the business model are undertaking a real life experiment subject to all the unknowns that involves. The most important difference from both economics and biology occurs here, for managers experimenting on their own firm know lots about the elements and relations involved - they are part of it. Managers have tacit 'insider' knowledge that the academic does not have, and which may not be part of any business model account or description. This inside knowledge is surely the most unusual thing about business models as models, and what distinguishes them from the models of other scientific disciplines: that the subject of the model or experiment - the firm or business and its people - is a knowing part of the model, and of experiments with it. This makes business models performative in a particularly reflexive way.<sup>26</sup> The experiments by the managers are on their own firm and involve their own behaviour. For them, and for the people in the firm, their business model is not just a description of how they go on, but offers a model in the ideal sense, in depicting how they want to be in the future, a model to strive for, an ideal outcome. The specific business model a firm adopts offers a point of identification which may be essential to rally its participants, particularly if radical change in the model is planned. After all, such experiments amount to changing the model organism, something not to be undertaken lightly.<sup>27</sup>



## Business Models as Recipes

The experiences of managers point us to an essential element of business models as models - that they are practical things and have a dynamic aspect to them: as Demil and Lecoq explain, firms experiment, change, refine and re-invent their business models.<sup>28</sup> This introduces one more notion of models that we think is important, and which comes from the practical and technological domain rather than the scientific one. Architectural models have been used for centuries, not just to persuade donors to fund construction, nor only to specify aspects of the building contract, but in many cases (as the records of St. Paul's Cathedral show) to illustrate salient details of radically new construction techniques to carpenters and masons.<sup>29</sup> This notion of a model as something that *demonstrates* a technology (rather than as a technology of scientific investigation, as considered in the previous section), is particularly interesting, as such models often display or instantiate matters of principle (how joists are to be joined to support a roof) as well as details of style and content - exact arrangements, decorations, and so forth. They are used to demonstrate or give advice about how to do something *so that the results will come out right*. There is no particular name already given for such models, but they can be well conceived of as *recipes*: they embody some general principles (of cooking: baking, roasting, frying etc and cooking times and temperature, etc.) as well as particular details of ingredients and construction for specific dishes.<sup>30</sup> They lie between *principles* - general theory - and *templates* - exact and exhaustive rules (as discussed in Winter and Baden-Fuller's article on replication referenced earlier). Recipes depend (in a parallel manner to architectural models) on considerable tacit knowledge of the craft of cookery, and on how they represent that knowledge, to make them usable.

-----  
**Insert Pull Quote 5 here**  
-----

As with recipes, business models provide managers and scholars a way to describe and distinguish the variety of types of business behaviour we find in the world of firms, and to outline how the exemplar cases provided by certain famous examples fit in. Ideal-type business model examples provide recipes that have been already tried and tested in the world, ideals that other firms may aim to follow, and on which they may make more or less minor variations without changing the basic recipe for success. While businesses (or units) may copy other firms by following either principles or templates, business models - understood as

recipes - offer another way to copy. But they also suggest that there is no one way by which a business can make money, but many generic types, and within each, many possible variations.

Of course, recipes require ingredients. In the case of business models, these are a variety of strategic elements - resources, capabilities, products, customers, technologies, markets and so forth. But, business models cannot just be defined as the set of elements - to do so would be to ignore the fact that business models function as the recipes that draw the elements together and 'cook' them - arrange and combine them in ways (old and new) through which firms may be successful or not. The recipe notion includes therefore both the *organisation* and *integration* of the main elements of the firm's activity, and provides a set of rules that, if followed, can be expected to produce a particular kind of outcome. Of course, recipes work on the basis of given technologies and ingredients, which may only have value for that particular recipe and dish. Changing the recipe - or, more radically, the dish - will change the value of the technology to the business model and its ingredient/resource requirements.

Lest this all seems over-fanciful, we have in fact borrowed the notion of models as recipes from Boumans' (1999) account of the development of business-cycle models in economics as resembling the development of cookery recipes. When looking at how economists build their models, Boumans says:

*Each case ... contains a new recipe that initiated a new direction in [business-cycle model] research, but in each case the recipe was different. The integration of a new set of ingredients demands a new recipe otherwise the result will fall apart. However, a recipe is not unique in the sense that it is the one and only way to integrate a certain set of ingredients. Thus a new recipe is a manual for a successful integration of a new set of ingredients.*<sup>31</sup>

The idea of the recipe suggests how the chef, within broad constraints of the principles of cooking and the kind of dish chosen, may create variations and innovations. If business models play the same role, they too are not open ended but constrained, involve ingredients that must be arranged and combined according to the recipe (i.e., to some generic business model), but yet have many possibilities for innovation. Just as the creative chef will innovate to produce a new recipe for a successful dish, the creative entrepreneur or manager may innovate to build a new business model, a new recipe for firm behaviour. To reinforce the point that – as in recipes – the possibility for innovation in business models is one of their fundamental features, we point again to Table 2, where economic history displays deep and

long run changes in the ‘standard’ business model of a period (and, indeed, the whole notion of innovation in Business Models is taken up in several articles in this special issue). Innovation, clearly, can take the form of variation to suit changing situations. Thus, a chef may cook several dishes simultaneously, using different ingredients, for different parts of the meal: Mangematin cogently argues (in this issue) that managers may follow several recipes at once for different markets, or repeat the same recipe to enter different markets.<sup>32</sup> Or there may be new appetites to feed: Thompson and MacMillan, Yunus et al. and Dahan et al. suggest new forms of business model collaborations to address the needs of the world’s poorer societies.<sup>33</sup>

The notion of a business model as a recipe captures something quite essential about a firm’s behaviour. The concept ‘business model’ can be said to define the business’s characteristics and its activities in a remarkably concise way, in other words, in a way that matches the generic level that defines a kind or type of behaviour (neither too general nor too particular in its detail) but that also suggests *why* it works, because it embodies the essential elements and how they are to be combined to make them work. Of course, not all cooks can make all recipes work – and not all managers are equally proficient at making a business model work. In this respect Spender’s 1980 thesis *Industry Recipes* considers iron founders and dairy companies and explores what is needed to make such businesses successful. He notes that different combinations (ways to make and bake the cake) can create success, and that management and its attitude are key parts of success.<sup>34</sup> Porac, Thomas and Baden-Fuller, looking at the cognitive communities of Scottish knitwear firms, also unpick the role of attitude and mind-set in the business model, and point to the possibility of a business model being symptomatic of a period, or being shared by a small group of like-minded firms.<sup>35</sup>

-----  
**Insert Pull Quote 6 here**  
-----

The analogical notion of business models as recipes, along with their associated exemplar real cases for each business model type, also allows us to see why the conversation about business models is so important in the real life of organisations. Just as the young footballer is inspired to ‘Bend it like Beckham’, so TV presenters quiz managers and entrepreneurs about their business model, expecting answers that give a recipe, along with the label of the well known company that gave its name to the exemplar recipe. Likewise, managers (and even workers) can be inspired to change behaviours with reference to the business model of an iconic and successful company.

Although many claim that the term ‘business model’ only gained currency in the internet boom years of the late 1990s, its modern public usages in fact mirror the interest shown in ‘model factories’, ‘model communities’ and ‘model farms’ at the turn of the 18<sup>th</sup> into the 19<sup>th</sup> century. In their time, they were well-known exemplary cases, and visitors flocked to see the design and the working of such business models: examples to be copied in more or less detail, with more or less variation, but copied just because they instantiated the most perfect – the most up-to-date and innovative - economic organisations of their day and kind.

## Conclusions

Our discussions suggest that business models have a multivalent character as models. They can be found as exemplar role models that might be copied, or presented as nutshell descriptions of a business organisation: simplified, short-hand descriptions equivalent to scale models. We can think of them not only as capturing the characteristics of observed kinds in the world (within a taxonomy), but also as abstract ideal types (in a typology) in the sense Weber outlined. And when we do so, we can see how this analysis of business models as models challenges the idea and ideal of any single, or fixed, taxonomy or typology of business models. Rather, the developing analysis of business models in itself has prompted the expansion of taxonomies and typologies in ways which throw new light on the nature and role of business models themselves.

Business models also function as models in the scientific sense. They can be investigated as model organisms (as in biology) that stand in as representatives for a class of things. Or they may appear as schemas in academic slides and as representations that can be manipulated like economic models, where, like scientific models in many fields, they appear as generic in-between kinds-of-descriptions that are neither general theory nor full empirical descriptions. And when we look carefully at these very different kinds of scientific models, we see that they function as laboratories that enable the scholar both to generate concepts and theories *and* to investigate empirical domains. Just as in other fields of science – from biology to economics to physics - models function as mediators to enable users to figure out how their world works in the practical context, as well as in the academic.<sup>36</sup>

Finally, we have explored the analogy of models as recipes to understand the role of variation and innovation within the constraints of ingredients and purposes, and their use by managers to motivate strategy changes, and to experiment with their organisations.

We are not suggesting that business models are models in just one of these senses, or play just one of these roles, because these senses and functions are not mutually exclusive. Business models are not recipes *or* scientific models *or* scale and role models, but can play any - or all - of these different roles for different firms and for different purposes: and will often play multiple roles at the same time (as Table 1 shows). This explains not only why the idea of business models seems to be so pervasive, but also why the concept is so potentially rewarding for the future of management research, yet is also so challenging to grasp.

-----  
**Insert Pull Quote 7 here**  
-----

**VITAE** **Charles Baden-Fuller**, Fellow of the Strategic Management Society, has been the Centenary Professor of Strategy, Cass Business School since 1995 and Editor-in-Chief of *Long Range Planning* since 1999. He is a Visiting Scholar at the Wharton School, University of Pennsylvania, and is highly regarded for his research work on topics such as the management of transformational change; exit behaviour; managerial cognition and knowledge replication and transfer. He advises UK and European companies on change management; business model choice; and growth strategies, especially in biotechnology.

**Mary S. Morgan** is a Fellow of the British Academy and Overseas Fellow of the Royal Dutch Academy of Arts and Sciences, and holds chairs in the History and Philosophy of Economics at the London School of Economics and at the University of Amsterdam. She has published widely on topics ranging from statistics to experiments to narrative, and from Social Darwinism in 19th century America to game theory in the Cold War. Her major books include *The History of Econometric Ideas* (1990) and *Models as Mediators* (1999 with Margaret Morrison), while her account of economic modelling is forthcoming in *The World in the Model*. She has recently concluded a major interdisciplinary team project: *How Well Do Facts Travel?* (with Peter Howlett) and is currently 'Re-thinking Case Studies Across the Social Sciences' as a British Academy-Wolfson Research Professor.

---

<sup>1</sup> See R. R. Nelson and S. G. Winter, *An Evolutionary Theory of Economic Change*, Cambridge MA: Cambridge (1982).

<sup>2</sup> Table 1 illustrates different definitions of 'what business models are' describes different firm

characteristics. For example, Teece's definition that a business model is the relationship between creating value for the customer and capturing value for the firm generates descriptions of firm behaviour couched to those terms; Itami and Nishino's view that a business model is the combination of a profit model, an activity system and a learning project generates firm descriptions according to those characteristics, and both of these are more or less different from Zott and Amit's view that stresses inter-firm relationships and from Gambardella and McGahan's, which concerns innovation in value chain positioning. See D. J. Teece, Business Models, Business Strategy, and Innovation, [pages](#); H. Itami and K. Nishino, Killing two birds with one stone, [pages](#); C. Zott and R. Amit, Business Model Design: An Activity System Perspective, [pages](#); A. Gambardella and A. M. McGahan, Business-Model Innovation: General Purpose Technologies and their Implications for Industry Architecture, [pages](#), all in *Long Range Planning*, this issue (2010).

<sup>3</sup> P. J. DiMaggio and W. W. Powell, The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields, *American Sociological Review*, **48**: 147-160 (1983).

<sup>4</sup> See D. A. Hounshell, *From the American System to Mass Production: 1800-1932*, Johns Hopkins University Press, Baltimore (1984).

<sup>5</sup> P. J. Williamson, Cost Innovation: Preparing for a 'Value-for-Money' Revolution, *Long Range Planning* [this issue](#) (2010).

<sup>6</sup> See M. S. Morgan, The Curious Case of the Prisoner's Dilemma: Model Situation? Exemplary Narrative?, in A. Creager, E. Lunbeck and M. Norton Wise (eds), *Science Without Laws: Model Systems, Cases, Exemplary Narratives*, Durham, NC: Duke University Press, 157-85 (2007).

<sup>7</sup> See for instance M. A. O'Malley, Construction and deconstruction: The influence of lateral gene transfer on the evolution of the Tree of Life, in A. Oren and T. Papke (eds.), *Molecular Phylogeny of Microorganisms*, Norwich, Horizon (2010); and the report: *Questioning the Tree of Life* from the Philosophy of Science Association meeting, (6-8 November 2008) see <http://philsci.org/conferences/psa2008/2008-psa-program.pdf>,

<sup>8</sup> There have been a number of recent attempts to create taxonomies for e-business models and for a critical survey, and references to prior work in taxonomy, see S. Lambert, Do We Need a 'Real' Taxonomy of e-Business Models?, *School of Commerce Research Paper Series*: 06-6 (ISSN: 1441-3906) from [http://www.flinders.edu.au/shadomx/apps/fms/fmsdownload.cfm?file\\_uuid=FD4E4DE1-EB6B-7B71-0BCE-8FC142552687&siteName=sabs](http://www.flinders.edu.au/shadomx/apps/fms/fmsdownload.cfm?file_uuid=FD4E4DE1-EB6B-7B71-0BCE-8FC142552687&siteName=sabs) (2006). For classic studies from the philosophy and sociology of science about taxonomy and its consequences in classification in the human realm, see I. Hacking, Working in a New World: The Taxonomic Solution, in Paul Howich (ed), *World Changes: Thomas Kuhn and the Nature of Science*, 275-310, Cambridge, Mass: MIT Press (1993); C. G. Hempel, Fundamentals of Taxonomy, and Typological Methods in the Natural and Social Sciences, both in *Aspects of Scientific Explanation*, 137-172 New York: Macmillan (1965); and C. G. Bowker and S. L. Star, *Sorting Things Out: Classification and its Consequences*, Cambridge, Mass: MIT Press (2000).

<sup>9</sup> A. C. Crombie, Designed in the Mind: Western Visions of Science, Nature and Humankind, *History of Science*, **26**, 1-12 (1988), and I. Hacking, 'Style' for Historians and Philosophers, *Studies in the History and Philosophy of Science*, **23**(1), 1-20 (1992).

<sup>10</sup> S. Lambert (2006), op. cit. at Ref. 8 gives an extended version of top part of this table.

<sup>11</sup> See M. Weber, *Objectivity in Social Science and Social Policy* (1904), translated in E. A. Shils and H. A. Finch (eds) *The Methodology of the Social Sciences*, New York: Free Press (quote is from pp. 90 and 93) (1949). For the relation of ideal types to models, see M. S. Morgan, Economic Man as Model Man: Ideal Types, Idealization and Caricatures, *Journal of the History of Economic Thought*, **28**(1) 1-27 (2006)

<sup>12</sup> See particularly D.S. Pugh, D. J. Hickson and C. R. Hinings, An Empirical Taxonomy of Structure of Work Organizations, *Administrative Science Quarterly* **14** 115-126 (1969).

<sup>13</sup> R. Amit and C. Zott use empirical material to explore the dimensions of business models, but not to

---

construct ideal types - see Value Creation In E-Business, *Strategic Management Journal*, **22** 493 - 520 (2001)

- <sup>14</sup> This is explored at some length in S. G. Winter and G. Szulanski, Replication as strategy, *Organization Science* **12**: 730-743 (2001), and in S. G. Winter and C. Baden-Fuller, *Replicating Organizational Knowledge: Principles or Templates*, Working Paper, Cass Business School, available on SSRN (2008).
- <sup>15</sup> Two recent sets of commentaries that cover models in natural and social sciences can be found at A. Creager et al. (2007), op. cit. at Ref. 6, and M. Morgan and M. Morrison, *Models as Mediators*, Cambridge, UK: Cambridge Press (1999).
- <sup>16</sup> Like economics, biology also has mathematical models, but we suggest that for management scholars it is the model organisms that represent the useful analogy in this context.
- <sup>17</sup> For a classic history of a model organism that shows this experimental activity, see the account of the fruit fly in R. E. Kohler, *Lords of the Fly: Drosophila Genetics and the Experimental Life*, University of Chicago Press (1994). For a philosophical discussion of their comparative roles, see R. A. Ankeny, Model Organisms as Cases: Understanding the 'Lingua Franca' at the Heart of the Human Genome Project, *Philosophy of Science* **68** S251-61 (2001).
- <sup>18</sup> M. S. Morgan, *Modelling as a Method of Enquiry* (2009) to published as Chapter 1 of M. S. Morgan, *The World in the Model*, Cambridge University Press (forthcoming). The chapter is downloadable from <http://www.lse.ac.uk/collections/economicHistory/pdf/Morgan/Morgan%20Chap1%20Modelling%20as%20a%20Method%20of%20Enquiry.pdf>
- <sup>19</sup> For commentaries on the similarities of research modes between exemplar cases and model organism research, see A. Creager et al. (2007), op. cit. at Ref. 6.
- <sup>20</sup> M. S. Morgan, Experiments Without Material Intervention: Model Experiments, Virtual Experiments and Virtually Experiments, in ed H. Radder (ed), *The Philosophy of Scientific Experimentation*, Pittsburg: University of Pittsburgh Press, 216-35 (2003).
- <sup>21</sup> The way in which a particular business case becomes an exemplary case is in part related to its role in teaching. Some smaller set of all the case studies of firms are used again and again, to demonstrate substantive issues or illustrate particular points. Because they are known the world over, such cases become 'naturalised' as the exemplars of their kind of business model. (We thank Vincent Mangematin for this observation).
- <sup>22</sup> R. Casadesus-Masanell and J. E. Ricart, From Strategy to Business Models and on to Tactics, *Long Range Planning*, **this issue** (2010).
- <sup>23</sup> J. Magretta, Why Business Models Matter, *Harvard Business Review* **80**(5), 86-92 (2002)
- <sup>24</sup> See M. Sosna, R. N. Treviño-Rodríguez and S. R. Velamuri, Business Models Through Trial and Error: The Naturhouse Case, **pages**; S. Svejnova, M. Planellas and L. Vives, An Individual Business Model in the Making: A Chef's Quest for Creative Freedom, **pages**; R. G. McGrath, Business Models: A Discovery Driven Approach, **pages**; Y. L. Doz and M. Kosonen, Embedding Strategic Agility: A Leadership Agenda for Accelerating Business Model Renewal, **pages**; H. Chesbrough, Business Model Innovation: Opportunities and Barriers, **pages**; N. M. Dahan, J. P. Doh, J. Oetzel and M. Yaziji, Corporate-NGO Collaboration: Co-creating New Business Models for Developing Markets, **pages**; B. W. Wirtz, O. Schilke and S. Ullrich, Strategic Development of Business Models: Implications of the Web 2.0 for Creating Value on the Internet, **pages**; J. D. Thompson and I. C. MacMillan, Business Models: Creating New Markets and Societal Wealth, **pages**; W. K. Smith, A. Binns and M. L. Tushman, Complex Business Models: Managing Strategic Paradoxes Simultaneously, **pages**, all in *Long Range Planning* **this issue** (2010).
- <sup>25</sup> The model organism version - the real exemplar - maybe more informative just because it is the real thing and there are always hidden aspects of the real thing which matter in an experimental framework, just as it matters that the mouse is a real mouse. For more discussion, see S. G. Winter and G. Szulanski (2001), and S. G. Winter and C. Baden-Fuller (2008) op. Cit. at Ref 14; M. S.

---

Morgan, (2003) op. cit. at Ref. 20 and M. S. Morgan, Experiments Versus Models: New Phenomena, Inference and Surprise, *Journal of Economic Methodology*, **12**(2), 317-29 (2005).

<sup>26</sup> L. Doganova and M. Eyquem-Renault, What Do Business Models Do? Innovation Devices in Technology Entrepreneurship, *Research Policy*, **38** 1559-1570 (2009). Business models are indeed performative in their sense, but it is useful to distinguish them as models from other 'market devices' they discuss, such as business plans, accounts, targets, etc. Business models address how businesses can work and points to relationships, whereas business plans may do neither.

<sup>27</sup> This factor is also explored in another context in C. Baden-Fuller and J. M. Stopford, *Rejuvenating the Mature Business*, Boston, Mass: Harvard Business Press (1994).

<sup>28</sup> B. Demil and X. Lecocq, Business Model Evolution: In Search of Dynamic Consistency, *Long Range Planning* **this issue** (2010).

<sup>29</sup> We thank Simona Valeriani for discussions on this matter. See S. Valeriani, The roofs of Wren and Jones: a seventeenth-century migration of technical knowledge from Italy to England, Working papers on the *Nature Of Evidence: How Well Do 'Facts' Travel?*, 14/06: Department of Economic History, London School of Economics and Political Science (2006) downloadable from <http://www.lse.ac.uk/collections/economicHistory/pdf/FACTSPDF/HowWellDoFactsTravelWP.htm>

<sup>30</sup> It is not only models that have been thought of as recipes: the parallel idea that cake baking demonstrates that technologies are not describable by a unique routine but have elements of choice can be found in S. G. Winter, *The evolution of Dick Nelson*, delivered at the Nelson Fest, (13 October 2000). See: [http://etss.net/evolution/reviews/Nelson\\_Fest\\_Winter\\_Speech.htm](http://etss.net/evolution/reviews/Nelson_Fest_Winter_Speech.htm)

<sup>31</sup> M. Boumans, *Built-In Justification*, Chapter 4 in M. Morgan and M. Morrison (1999) op. cit. at Ref. 15 (quote is from p 67).

<sup>32</sup> For an articulation see: V. Sabatier, T. Rouselle and V. Mangematin, From recipe to dinner: Business model portfolio in the European biopharmaceutical industry, *Long Range Planning* **this issue** (2010).

<sup>33</sup> M. Yunus, B. Moingeon and L. Lehmann-Ortega, Building social business models: lessons from the Grameen experience, *Long Range Planning* **this issue**, (2010) and also J. D. Thompson and I. C. MacMillan (2010) and N. M. Dahan et al. (2010), op. cit. at Ref 24.

<sup>34</sup> Spender's thesis is reprinted in J.-C. Spender, *Industry Recipes: The Nature and Sources of Managerial Judgement*, Oxford: Basil Blackwell (1989).

<sup>35</sup> J. Porac, H. Thomas and C. Baden-Fuller, Competitive Groups as Cognitive Communities: The Case of Scottish Knitwear Manufacturers, *Journal of Management Studies* **26**(4): 397-416 (1989).

<sup>36</sup> See M. Morrison and M.S. Morgan, *Mediating Instruments* Chapter 2 in M. S. Morgan and M. (1999), op. cit. Ref. 15.