

## VALUE CO-PRODUCTION: INTELLECTUAL ORIGINS AND IMPLICATIONS FOR PRACTICE AND RESEARCH

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*This paper surveys the history of an alternative view of value creation to that associated with industrial production. It argues that technical breakthroughs and social innovations in actual value creation render the alternative—a value co-production framework—ever more pertinent. The paper examines some of the implications of adopting this framework to describe and understand business opportunity, management, and organizational practices. In the process, it reviews the research opportunities a value co-production framework opens up. Copyright © 1999 John Wiley & Sons, Ltd.*

### BACKGROUND AND INTRODUCTION

Technological innovations allowing work practices such as distributed processing or concurrent engineering render value creation more synchronous, less sequential (Warnecke, Hüser, and Kaun 1997), and more interactive (Normann and Ramírez, 1993a, 1994). More actions, and more actors, can intervene in value creation per unit of time and space than ever before (Davis, 1987).

Value co-produced by two or more actors, with and for each other, with and for yet other actors, invites us to rethink organizational structures and managerial arrangements for value creation inherited from the industrial era. But it also invites us to rethink value creation itself.

While assembly actually represented less than 10 percent of industrial labor (Hirschhorn, 1984: 9), something about assembly lines galvanized how value creation occurred in industry, and captured the imagination of management thinking.

Twenty years ago, car assembly lines, which had first appeared in the dictionary in 1930 (Hirschhorn, 1984: 9), were argued to be the 'keystone to prevailing 20th century concepts of human management' (Emery, 1976). It is thus hardly surprising that industrial value production was conceptualized in terms of the value chain. With the chain concept, value creation is not only sequential, but also implies that value is 'added.' The taxation system developed at that time reflects this.

In industrial value creation, customers were seen as destroying the value which producers had created for them. Accounting systems emerging at that time thus 'wrote down' the value of what was acquired to zero over a shorter or longer 'depreciation' period. The end user in this scheme equals the 'final' customer. For producers, industrial value was 'realized' in the transaction which joined and separated them from customers. Value here equaled the price which the customer paid: 'in competitive terms, value is the amount buyers are willing to pay for what a firm provides them' (Porter, 1985: 38); or, 'value is what customers are willing to pay' (Porter, 1985: 3).

An alternative view of value creation, 'value co-production,' has been available to us for some

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300 years. Just as Leonardo da Vinci's intellect invented the helicopter before later technical innovation allowed its actual production, so too technical breakthroughs today allow managers and researchers to now take advantage of the options offered by this alternative view of value creation. Sociotechnical (Trist, 1981) advancements liberate us from the constraints of the industrial mode of value creation and its conceptualizations (see Hirschhorn, 1984, for a history of technical innovation as constraint removal), and enable us to consider value creation as synchronic and interactive, not linear and transitive. Customers in this alternative view create value, they do not destroy it. Value is not simply 'added,' but is mutually 'created' and 're-created' among actors with different values. These multiple values are '*reconciled*' or '*combined*' (Hampden-Turner, 1990: 2 and 3) in co-producing value and, as we shall see below, cannot be reduced to a single metric.

In this paper the historical roots of value co-production are surveyed. Then, arguing that a transition from the industrial model is under way, we analyze this alternative view's practical and research implications for defining business, organizing work, and managing the creation of value.

## THE HISTORICAL ROOTS OF AN ALTERNATIVE VIEW OF VALUE CREATION

This section looks at the historical roots of our notions of (1) value, (2) consumption by customers, (3) service, and (4) value co-production. It surveys the etymological development of the terms, and overviews the history of thought regarding these key terms.

### Value

Since the ancient Greeks, and perhaps even before, the notion of value has had a long, complex history. Value, both moral and economic, was studied in moral philosophy until the 18th century, when economics became a field of study in its own right. Since then, much debate has taken place on the relationship between the economic and ethical aspects of value (Bucki and Pesqueux, 1995; Klamer, 1995; Rothbard, 1995).

Etymologically, 'value' originally denoted both

(i) what people had done and become, and the actions they could perform; and (ii) how they traded goods with each other. Over time these meanings separated. *The Dictionnaire Historique de la Langue Française* tells us that in French 'valeur,' first appearing in 1080 from the classical Latin 'valor', meant both (i) 'the esteem a person receives according to merit and qualities' and (ii) an 'assessment of the quality and interest of things' (my translations). The first meaning was extended in 1155 to denote the 'importance' of a person and, in 1172–74, personal acts of valour.

The second meaning, the *Dictionnaire* tells us, says that something has value upon its 'being appropriate for a certain use.' What later became known as 'utility value,' as opposed to the exchange value which dominated in the industrial era, is thus some 900 years old. 'Value' took on a measurable connotation during the 13th century, founding the modern notion of exchange value, applied to traded assets. By the middle of the 16th century, 'value' became commensurate with a measurable unit itself, paving the way for the notion of price to denote this measure, which appeared at the end of the 17th century. At the beginning of the 18th, 'une valeur' was the generic name given to negotiable securities. By the beginning of the 20th century, 'valorisation' and 'devaluer' respectively denoted the enhancement and decrease of merchant, or exchange, value.

The proposition that utility is subjectively assessed arose in the 18th century; the idea that personal judgement establishes the value of things flourished in the 19th century. Anthropologists traced how Western civilization delegates certain values from society to the individual, partly because markets break the stability of values embedded in a society (Dumont, 1980). Individuals then face choices which their own, individual, values are supposed to guide. Their values are, however, expressed only through their judgements. Judgements of what is true, beautiful, and/or good, and the values these supposedly express, led to notions like 'scale of values' and 'value systems', differentiating one culture from another (Dumont, 1980).

Empirical research in the 20th century demonstrated that '*value-based models are difficult to apply to complex, real-world decisions*' (Shafir, Simonson, and Tversky, 1993: 13). Furthermore, people do not know how to choose, or even how to determine objectives, upon facing more and

more unprecedented situations. Empirical research shows that how an elicitor poses the problem affects the values which judgements appear to express (Fischhoff, Slovic, and Lichtenstein, 1980). Values are thus contingent, more than subjective. They do not reside 'in' an individual, independent of his actual actions, nor 'in' a good, independent of the interactions to which it is subjected.

### Customers' consumption

As stated in the introduction, one of the main differences between the alternative school of value co-production developed in this paper, and the industrial one of value creation, concerns the role of the customer.

While in the industrial view customers as consumers destroy the value created by producers, in the alternative one customers create value; or more exactly, co-create and even co-invent it both with their suppliers and their own customers. As a result, there are no 'final' customers in this emerging framework. The history of the term 'consume' clarifies this.

The French verbs 'consumer' and 'consommer' suffered semantic hesitations until Vagelas clarified their sense in 1647 (*Dictionnaire Historique de la Langue Française*, 1973: 480, 483). These difficulties are also present in the English 'consume', for it was derived from the French usage (*Webster's Third New International Dictionary*, 1986). According to the *Shorter Oxford Dictionary*, (1962), 'consume' in Middle English was derived from the Latin 'consumere', and means, (i) 'to make away with, to destroy'; (ii) as of 1460: 'to waste or squander'; (iii) as of 1527: 'to use up', especially 'to eat or drink up'; (iv) as of 1533: 'to take up, spend, waste time'; and (v) as of 1526: 'to waste away', or 'burn away' as of 1591. A second definition from 1483 is derived from the Latin 'consummare,' and by 1541 this second sense meant 'to accomplish, complete'. These definitions imply that by 1541, at the latest, two contradictory senses of 'consume' came to be accepted in English. The confusion was exacerbated by Christian religious teachings and the use of 'consumption' to denote tuberculosis in the first half of the 17th century. In economics this confusion led authors in the mid-1800s to distinguish between 'productive or reproductive' consumption and 'unproductive or non-reproductive' consumption (*Dictionnaire de*

*la Langue Française*—E. Littré, 1963: 719), Adam Smith's (1776) distinction between productive and unproductive work is its most famous manifestation (Rothbard, 1995: 444–448).

While the French 'consommer' implies 'the employment of things which get destroyed as they are used' (*Littré*: 720, my translation), consumption paradoxically also permits value creation. The apparent contradiction between both senses is taken as complementary in the co-productive framework here analyzed: final use of a good is not necessarily tied to 'finalizing' consumption. In other words, the value associated with objects is not 'in' the object 'itself'. It is also not embedded in, or only the result of, the activities which have made it possible for the object to come to be, as is implied in Smith's, and later Marx's labor theory of value. Interestingly, while some resource-based strategy authors argue that a resource's value rests on the difficulty of replicating it, Bowman (1996: 4) shows that other resource-based researchers such as Barney (1986) hold views compatible with that of the emerging co-productive framework. Value in this second sense resides, and strategically this is crucial, in the actions and interactions which the acquired resource makes possible or supports. Simmel went as far as suggesting that it is exchange, or interactivity, which is at the origin of both the rarity and utility (1977: 82) upon which economic value rests.

### Service

Delaunay and Gadrey's (1987, 1992) analysis of three centuries' worth of economic thinking on services provides an informed review of how insights from the etymology of 'value' and 'consume' enable the alternative view of value creation to emerge. Delaunay and Gadrey begin their study with the mercantilists, who studied how fiscal priorities related to national wealth. Gregory King (1648–1712) and William Petty (1623–1687) distinguished activities contributing to a nation's wealth from those reducing it. Some activities today classified as 'services' were classed as wealth creating (e.g., merchants' overseas trade), others as wealth reducing (e.g., those carried out by common seamen). However, Pierre Le Pesnat de Boisguilbert (1646–1714) felt all services contributed to the nation's wealth, because he considered income and consumption

to be inextricably interdependent (1707, quoted by Delaunay and Gadrey, 1992: 10).

As capitalism developed in the 18th century, competition for capital use became a problem, and thus an issue of study. Fiscal concerns gave way to analyses of capital allocation by authors such as François Quesnay (1758) and Adam Smith (1776). In the process, as Delaunay and Gadrey show, de Boisguilbert's (1707, 1966) consumption-oriented framework gave way to a production-oriented one, ranking activities by productivity. Smith analyzed savings rates and surplus value. He did not deny that what we today call services were useful, but he distinguished usefulness from value creation, for usefulness does not *in itself* obtain wealth accumulation. Despite some misreading (e.g., Bastiat, 1851), Smith's concern with profit generation did not imply an explicit position on the tangibility or durability of the output of value creation. Yet, accumulation implicitly requires durability. Smith considered work not directly contributing to wealth accumulation 'unproductive': it was paid out of income, and did not increase net capital. Household servants are thus unproductive. This line of thought was rendered more tenable—in today's terms—by John Stuart Mill (1852), who proposed that services nevertheless 'indirectly' contribute to value creation.

In 1863, Karl Marx (1974) returned the discussion of value to utility, for in his view utility is at the center of merchandise's value for the customer. Because of the state of technology and because of prevailing economic theories in his time, Marx's analyses of the relationship between labor and capital are centered on tangible merchandise (Bidet, 1985; quoted in Delaunay and Gadrey, 1992: 46–47). In Marx's time, 'all personal service was always consumed at the time of its production, and the work done was immediately transformed into money and profit' (Delaunay and Gadrey, 1992: 49). Thus, services, for Marx 'could not appear as value independent from the work itself' (Delaunay and Gadrey, 1992: 54). Yet he considered labor's production of both value and surplus value as creating not only tangible commodity merchandise, but also other outputs less suitable for capitalism. Marx's views of service are in this way remarkably similar to Smith's (Rothbard, 1995).

The asymmetrical relations which many socialists saw in capitalism at the end of the 19th

century led economists close to the dominant groups in society to argue that capitalist markets entailed mutual exchanges among equals (Delaunay and Gadrey, 1992: 65). The *vertical* dependency relations inherent in the servant–master relations which characterized service relationships for centuries are thus recast in *horizontal* terms. This horizontal reconfiguration underlies recent views of services, (Normann, 1978, 1984; de Bandt and Gadrey, 1994), where services are taken as the co-production of value between customer and supplier. De Bandt and Gadrey's studies in particular extend the notion of services to apply to all activities where co-production can be observed. Normann (1991) uses the same notion of services as value co-production to depict a form of value creation which he considers to entail an economy, which is distinct from the industrial—scale—economy and the extraction—rent—economy, but which applies equally well to primary, secondary, and tertiary 'sectors.' Porter (1996) and Milgrom and Roberts (1995) explore this emerging, distinct, economy in terms of complementarity.

Helped by the empirical possibilities which a unified statistical approach brought to national income at the end of the 19th century, 'three sector models' were developed in the 1930s and 1940s to distinguish industrial manufacturing from extraction—agriculture and mining (Gershuny, 1978). Whatever did not fit extraction and industrial transformation was thrown into a 'tertiary', therefore very heterogeneous, category. As Delaunay and Gadrey show, Fisher (1935) developed his three-sector model driven by a concern with employment shifts among sectors. Clark's (1940) three sector model focused on how scale economies enable economic growth. His sectors thus differ somewhat from Fisher's.<sup>1</sup> Fourastié (1949) studied productivity differentials among sectors, paving the way for Bell's (1973) famous work on the postindustrial society. Bell's findings indicating that services have lower labor productivity than manufacturing were based on Baumol's (1967) research on increases in the cost of public services—a concern later treated by Attali (1981) and Stoffaes (1981).

<sup>1</sup>For instance, he included mining in the secondary sector.

## Value co-production

Our current view of value co-production has been built by the following key figures over the last 290 years:

1. de Boisguilbert (1707, 1966), who proposed an economic model based on inter-dependence.
2. Storch (1823), who
  - (a) recognized that services require cooperation between producer and consumer;
  - (b) distinguished the results of services work from the work itself, and developed the notion of 'internal benefits,' which he held were not subject to what Marshall (1961) later called 'decreasing marginal utility,' and which can outlast the durability of material goods. Storch (1823) wrote that societies combine material wealth and internal benefits avoiding conflict between them, a perspective developed by Gershuny and Miles' (1983) analyses on how services and industry relate to each other; and
  - (c) first thought services enable, rather than hinder, capital accumulation.
3. Bastiat, who determined that all economic actors are 'middlemen towards each other' and took value 'to be the result of a many-sided exchange of services' (1851: 67–68), underlining the central importance of interfaces in economic activity, which van der Heijden (1993) called 'concept research.'
4. Mill (1852), who proposed that utility could be embodied in objects, people, or not be embodied (e.g., music). Normann and Ramírez suggested that 'code platforms' in every offering encode programs for future activities which the offering enables actors to do (1994: 56–58). Music, whether performed live or prerecorded, is thus a 'code platform' enabling parties to act in ways that create value.
5. Colson, who suggested that 'In economics, production consists of nothing else than to arrange combinations and transformations which are useful to us . . . To influence these transformations, man's action only produces shifts' (1924: 21). This was developed as 'reconfiguration' (Normann and Ramírez, 1994: 39–41, 73–76).
6. Sauvy (1949), and Naville (1963), who thought of services not in terms of output, but in terms of the type of productive activity that they entail, laying the groundwork for Normann's (1991) distinction between services as a 'sector' and as an 'economy.'
7. Fuchs (1965, 1968) has the merit to have first explicitly considered the consumer as a factor of production.
8. Bell (1973) first drew attention to the importance which the organization of science, technology, and intellect had come to have on value creation.
9. Gershuny's (1978) work on the 'self-service economy' undermined previous assertions to the effect that satisfaction of Engels' curves, as wealth increased, would lead to increases in the proportion of services over goods in an economy. He showed how product innovation-supported self-service replaces services provided by outsiders.
10. Stanback (1980) and Brender, Chevalier, and Pisani-Ferry (1980) concluded that goods and services were complementary, supporting Normann's (1991) view that the distinction which 'three-sector' models of economic activity upheld is no longer valid.
11. Normann and Ramírez (1993a, 1994) extended the notion of services to cover all activities in which obtaining actual utility value requires customer value creation. The link between actions by supplier and customers they termed 'offerings.' The value of offerings is established only partially in terms of the activity which the supplier has poured into these, which these offerings 'crystallize.' Two other conditions are also required for the offering to be of value:
  - (a) the labor-saving or 'relieving' value which an offering represents for the acquirers, who do not have to carry out the activities 'crystallized' in the acquisition (e.g., we do not have to build our own car), and
  - (b) the 'enabling' value which the offering represents for the acquirers, which equals the enhanced ease, productivity, safety, elegance, and/or effectiveness in their own value-creating action and interaction that utilizing it brings for them (e.g., we can drive our acquired car from A to B, which is easier than walking).

Offerings, Normann and Ramírez (1989) suggest, always consist of five elements, which replace each other functionally upon being redesigned as a 'new generation offering':

1. *physically tangible entities* ('goods');
2. *human activities* ('services' and 'self-service') carried out by and shared among, at least, supplier and customer *persons*;
3. *risk-sharing* and *risk-taking* formulae among interacting parties;
4. access to, or usufruct of, *systems* and infrastructure; and
5. *information*, manifested orally, tacitly—often based on previous experience, or in written or numeric or other symbol systems.

From the above it can be seen that 'services' is a framework to think of value creation, and does not entail a distinct set of activities, separated in time and space, and perhaps even in terms of actors, from 'goods production' activities, as the three-sector models implied. 'Services' here concerns a conceptual framework, with which to think of value creation, and which entails a type of economy that is different from, but compatible with, 'rent' and 'scale' economies. This view of services differs fundamentally from the industrial era one, as for example proposed by Porter, who considered services 'activities associated with providing service to enhance or maintain the value of the product, such as installation, repair, training, parts supply, and product adjustment' (1985: 40). 'Services' as a conceptual framework to think of value creation as co-produced invites new types of research to be conducted, and to be conducted in a 'conversational' mode (Morgan, 1983) in relation to those emanating from the industrial economy.

The insights of de Boisguilbert, Storch, Bastiat, Mill, Colson, Sauvy, Naville, Normann, Fuchs, Bell, Gershuny, Stanback, Brender *et al.*, and Normann and Ramírez have over time laid the foundations for the powerful, alternative, conceptual framework with which to understand the creation of value explored in this paper. Technical breakthroughs enhancing asset liquidity (Normann and Ramírez, 1993a, 1994) permit entrepreneurial action to reconfigure activities in time and space with unprecedented ease, enabling actual value co-production practice to reflect the tenets of this conceptual framework.

## THE IMPLICATIONS OF CO-PRODUCED VALUE

The origins of value co-production thinking were surveyed in the second section. In this section, it is argued that the resulting conceptual framework helps to understand emerging, innovative, value creation practices. More specifically, this section overviews practice and research implications for (a) business definition, (b) organizing work, (c) management, and (d) the transition towards a co-productive economy.

### Business definition

Business development entails reconfiguring roles, actions, and interactions among economic actors (Normann and Ramírez, 1993a, 1994; van der Heijden, 1993). These relationships, manifested as offerings, separate and join economic actors.

A value co-production view emphasizes that economic actors hold different roles in relation not only to *different* counterparts (one is one's suppliers' *customer*; one's customers' *supplier*), but also in relation to a *single* counterpart. For example, one economic actor 'A' may simultaneously be (i) a *supplier* to another economic actor 'B', (ii) as well as a *customer* of economic actor 'B', (iii) as well as a *competitor* of 'B', (iv) as well as a *partner* with 'B' to co-produce value with and for a third economic actor 'C', and (v) possibly a *competitor with 'B's partners*, if 'A's own alliance with others competes with 'B's.

Boeing's decision to 'densify' and 'liquefy' (Normann and Ramírez, 1993a, 1994) the maintenance of their new 777 airplane with the 'Digital Data for Airplane Maintenance (DDAM)' program illustrates how firms seize reconfiguration possibilities which mobilizing multiple roles presents. DDAM, the reconfiguring offering, allows maintenance workers employed by Boeing's suppliers, customers, customers' subcontractors, and/or Boeing itself, to access the required information of any 777 airplane which is flying into any airport, and whose on-board computer signals to the pilot that repairs are required. Before the 777 has landed, DDAM enables the workers to obtain information (i) on that plane's particular configuration; (ii) on its up-to-date maintenance records; (iii) on required spare part availability; (iv) on needed competencies to carry

out the repairs; (v) on the plane's expected, and because of the incident, redefined future maintenance requirements; (vi) on possible courses of action to follow here-and-now to bring competence, spare parts, and the airplane together as quickly, or cost-effectively, as possible; and (vii) on training instructions to prepare staff to carry out the repair themselves, even before the plane has landed.

All graphic and other instructions are available through a modem-equipped personal computer 'anywhere, any time, no matter' (Davis, 1987). All operations done on the plane are automatically built into the DDAM data base. DDAM's interactive, decentralized, highly liquid architecture replaces illiquid paper-based repair manuals, micro-films, and magnetic tape recordings. DDAM organizes the value-creating activities of (i) the airline's pilots, (ii) the airline's and (iii) its subcontractors' ground staff, (iv) logistics operators stocking and flying in competencies and/or parts, (v) the airline's maintenance department, (vi) the airline's 'alternative to programmed flights' contingency planning systems, (vii) insurance and/or self-insurance providers for lost flying time, (viii) and Boeing's and (ix) outside supplier spare part operations.

DDAM is now being extended to all of Boeing's aircraft in operation. In the process, Boeing, with the consent of customers, subcontractors, suppliers, and other actors, is configuring a more effective offering than the unbundled set of offerings which used to tie together the constellation of at least nine economic actors (i to ix above). The company is making the overall value creation system more effective through reconfiguring roles, risks, and activity sets. Most significantly, DDAM makes Boeing's clients more effective—while simultaneously increasing the costs of their switching to other aircraft suppliers.

Ciborra (1995) has suggested that the reason such complex relations have not been more readily researched in the past is that our methods of observing organizational life arbitrarily and artificially 'slice' or 'carve out' elements of an infinitely interconnected set of dynamic relationships into static, limited 'cases' or examples. He implies that actual co-production has been there all along, but that industrial-based conceptual frameworks allowed us to pretend that we could study value creation in terms of production, or consumption, or joint ventures, or whatever, separately.

Co-production asks us to reconsider the nature of value creation. From a management and research perspective, it requires that we consider a multiplicity of values, held in relations with multiple actors, which cannot be reduced to a single metric (Dean, Ottensmayer, and Ramírez, 1997: 423). This makes coproduction compatible with the French 'économie des conventions' school, to the extent to which it 'invites us to abandon the utopia of a single-natured universe... and to be clairvoyant about the structural difficulties we encounter when we critically open the possibility of a game entailing different natures' (Thévenot, 1989: 193; my translation). In co-production it is co-produced offerings, not the 'business unit' actor, which become the central unit of (competitive) analysis. This helps co-production to open up new opportunities for researching business development, entrepreneurship, and strategy. Extending beyond the actor and action, to the interaction of actual value, may offer figure-ground reversals for the focus of our research attention. Interactivity as a focus may lead us to rethink the nature of the firm, moving it from 'noun to verbs' (John Seely Brown, personal communication).

### Organization

A value co-production framework provides helpful vocabulary for understanding the organizational and interorganizational systems which can make competitive offerings available. Hirschhorn (1984) specified that industrial manufacturing value creation is characterized by:

1. economies of scale;
2. large, physically and temporally concentrated production facilities;
3. long production runs;
4. mass markets;
5. task specialization; and
6. standardization.

A value co-production framework does not consider this outline to be entirely inapplicable, but it takes it to be applicable only in specific value creating conditions, inscribed in a wider topology of possible forms of value creation (see Normann and Ramírez's arguments to this effect, 1993b). A co-produced value creation framework is thus of a 'higher logical type' than the industrial one,

and entails at least the following organizing characteristics:

1. Scope economics are as important as scale economics, allowing smaller units to compete against big ones—e.g., in steel making.
2. Short product life cycles and production runs becoming economically viable, enabling ‘micro-marketing’ and ‘tailor-made mass co-production’ to emerge.
3. Enhanced asset liquidity and reconfigurability are making fixed or sunk costs increasingly risky: activity-based costing, customer-centered analytic accounting, and other battles to eliminate ‘average’ and ‘fixed’ costing perspectives are signs of this.
4. Co-production is inviting ‘hollow,’ holographic (Morgan and Ramírez, 1984), ‘virtual,’ ‘keiretsu’-like organizing. In many industries, these designs compete well with integrated industrial firms (cf. Piore and Sabel, 1984; Normann and Ramírez, 1993a; Parolini, 1996).
5. Multifunctional teams, project organizations, and/or matrices are being deployed to utilize the possibilities offered by enhanced asset liquidity (Kolodny *et al.*, 1996). But ad hoc structures intended to be ‘temporary’ are often staying on, cannibalizing those they were built to ‘support’ (Gilmore and Krantz, 1991).
6. Replacing hierarchies with ‘lowerarchies’ (Ackoff, 1994) and heterarchies, aiming at what Handy (1992) called ‘subsidiarity,’ is widening spans of management to over 1 : 40, redefining managerial ‘control,’ as in parts of ABB.
7. Stakeholders (Chevalier, 1968; Freeman, 1984) have increasingly important roles in value creation (cf. Weiszfeld, Roman, and Mendel, 1993). Stakeholders enhance positive return economics (Arthur, 1996), requiring their multiple values to be reconciled (Hampden-Turner, 1990).
8. Co-production is rendering ‘make–buy’ organizational boundary definitions less relevant, inviting other criteria to also be considered. Co-production is rendering boundaries, separating *and* linking firms, more permeable, overlapping, and changeable. As a result, it has perhaps never been truer than today in business that ‘good fences make good neighbours.’ Co-production is bringing, not ‘boundary-less’ firms which consider boundaries liabilities, but firms managing these as assets, with feelings and intuitions becoming recognized as organizational resources to be mobilized, not individual liabilities (Hirschhorn and Gilmore, 1992).
9. Controls, externalized since Taylorism, are becoming internalized, mostly into teams, as the NUMMI plant in California exemplifies (Adler and Cole, 1993).
10. Standardizing digitalized information protocols, rather than parts or tasks, enables communicating to support co-production (Baldwin, McVoy, and Stenified, 1996).
11. The recognition of the impossibility of predicting the future bringing with it scenario planning (Schwartz, 1991) and other forms of complexity acceptance. Companies such as IKEA have even abandoned the use of budgets, seen as unhelpful to firms in such conditions.
12. Hastings recently proposed that firms today require ‘radical decentralization; intense interdependence; . . . demanding expectations; transparent performance standards; distributed leadership; boundary busting; and network and reciprocity’ (1993: vii). To achieve this, firms’ connecting with outside co-producers is becoming at least as significant as the connecting among their internal elements. Such collaborations were called ‘lattices’ by Gore (1985); ‘networks’ by Jarillo (1988); ‘webs’ by Hastings (1993) and Whitney *et al.* (1997); ‘constellations’ by Normann and Ramírez (19931a, 1994); ‘holonic organizations’ by McHugh, Merli, and Wheeler (1996); ‘ecosystems’ by Moore (1996). Perhaps a better name is ‘value creation system’ (Normann, personal communication).

Such organizing leads to firms integrating by managing as much diversity as possible (Lawrence and Lorsch, 1967), replacing monoliths integrated through sought-after homogeneity. Their holography enables them to change and learn from, and with, each other (Morgan and Ramírez, 1984; McHugh *et al.*, 1996). They are competent at dialogue (Senge, 1990), overcoming the transaction costs (Williamson, 1975) dialogue supposes, and avoiding the opportunity costs which bad—or no—dialogue entails.

As customer self-help becomes a recognized production factor (Fuchs, 1965, 1968; Gershuny, 1978), organizing and managing 'beyond' the organizational boundary becomes necessary. Boeing's DDAM system overviewed above illustrates this. Co-production as a point of view explains that customers appearing to be difficult, inefficient, or otherwise 'troublesome' may well behave in these ways (even being unprofitable) because the interfaces (offering) which their suppliers have developed with them allow them to behave in such ways, and even make it rational for them to do so.

This also applies to other counterparts. Crozier's celebrated (1964) analysis of workers sabotaging machines as their only rational way to counter management's dialogue avoidance, through attempts to establish control unilaterally, illustrates how costly discussion (in Senge's 1990 sense) can be when the investment in dialogue (Senge, 1990) is not forthcoming. Benetton has systematically engaged others in multiple dialogues as an essential leitmotif structuring its corporate development (Lazzarato *et al.*, 1993; Benetton and Lee, 1992), even seeking controversial dialogues on purpose (Toscani, 1995). Lazzarato *et al.* in particular show how Benetton internalized the social logics of those it engaged in co-production, and then got these to internalize its own logics. Benetton's success thus rests on the resilient design and sustainability of the relations it has engaged with others; it exemplifies Simmel's (1977) views of how exchange can create rarity and utility.

A critical area for empirical investigation of organizing co-production therefore has to do with engagement (Trist and Murray, 1990) and dialogue, which can entail taking on a 'conversational' approach in researching organizational and managerial practice (Morgan, 1983: 405). Dialogue reinforces the interactive nature of co-productive value creation by forcing actors to take feedback into account. In so doing it renders the arbitrary, artificial isolation of cause-effect relations (Ciborra, 1995) more difficult to sustain in the time frames managers deal with (Senge, 1990: 74, 79, 366).

One of two critical dialogues in value co-production is held between competencies/resources and customers (Normann and Ramírez, 1993a, 1993b, 1994). This does *not* mean that the 'client is always right.' For instance, some

tire firms did not develop steel-belted radials because their car manufacturer customers erroneously dismissed this innovation as a gimmick. When auto manufacturers (their customers) changed their minds, these tire suppliers, who had failed to engage a proper competence-customer dialogue, were caught unprepared. Christensen and Bower (1996) analyzed the difficulties this dialogue supposes in high-tech businesses.

The second critical dialogue is one between current critical uncertainties and future possibilities, which can be organized through the use of scenarios (Porter, 1985; Schwartz, 1991). These allow future and present to dialogue with each other, allowing the future to enter the present in which actual management, in which managerial action, takes place. Hamel and Prahalad's (1994) 'stretch' is another example of this dialogue.

Research is also needed on the effective patterns of organizing. A recognition that business development involves reconfiguring value creation interactions time and again appears to mean that organizations and whole value-creating systems have to be as underdesigned as possible (Brand, 1994). If so, Herbst's (1962) 'minimum critical specifications' organizational design principle is gaining relevance. Such specifications secure system-wide coherence and maximize local adaptiveness through delegation, democratizing the corporation (Ackoff, 1994). Quantified research in terms of design variables and redesign opportunities in organizations does not, to my knowledge, exist. To the extent that it is new offerings which define and manifest the interactivity among economic actors, further research examining how product innovation and research redefine the organizing of work (Seely-Brown, 1991) is also called for.

## Management

Co-production enhances value with positive return economics (Arthur, 1996), but in so doing stretches managerial skills. More elements, with incompatible priorities per actor, per time unit, per space unit, demand that new managerial skills develop. Quality control and risk management are examples of managerial competences addressing the quadratic complexity which the enhanced interactive density of co-production entails for any one actor. The exponential increase in the probability of error is meant to be contained

through quality measures, while risk management seeks to limit the consequences of error, partly by creating markets for risk. The phenomenal growth of derivatives, whose transaction volume exceeds the commercial one by a factor of 50, illustrates the importance of these competences as co-production takes hold.

The complexity of holding multirole relations poses other managerial challenges to managers. As opposed to 'complicated' systems, where (a) variables, (b) their dimension, and (c) their purpose in the system are known, 'complex' systems are those in which one or more of (a), (b), and/or (c) is not known (Atlan, 1979). Managing complex systems thus requires managing ignorance, which often extends to the system's very objectives (Fogelman Soulié, 1991). This is—almost by definition—different from managing knowledge. For example, the strategic planning manager of one firm told this author: 'we need to know what we do not know' about a geographical area they were expanding into. One way to address such complexity is to 'engage' counterparts (Morgan, 1983: 13; Trist and Murray, 1990: xi) with whom one decreases or co-addresses this ignorance. Such engagement connects organizations together and, as we saw above, such organizing takes on networking characteristics.

Perrow suggested that when considering organizational networks, complexity in one part of the network did not 'necessarily' affect all of the network (1972: 223). He reasoned that 'loosely coupled' interfaces with less interdependence don't transmit a disturbance from one network entity to the next as well as 'tightly coupled' interfaces might. The 'dampening' of the effects of changes in one network entity onto the next obeys Williamson's (1975) transaction cost analyses. Thus what may appear as 'complex' to a (theoretical, external) observer of the whole network will not necessarily be experienced as complex by any one member of the network. The 'one best way' school of management is maladaptive under such conditions: again, a variety of points of view must be listened to and considered. Senge's research (1990) addresses this, but research addressing this multiplicity can itself become more conversational (Morgan, 1983, 1986).

The extent to which units in a value co-production system experience the complexity of

interfaces elsewhere in this network has to do both with:

1. what Perrow considered to be the 'interactivity' of the immediate parts of the network (1972, 1979: 225; also Weick, 1979); and
2. the extent to which it is possible to argue that the organization 'creates its environment' (Perrow, 1972, 1979: 243).

In other words, the organizational/environment relations in Perrow's eyes concern 'an interactive and fragmented process' (1972: 246). Managing these interfaces requires containment and coordination skills (Gilmore, personal communication), 'concept research' (van der Heijden, 1993), and other boundary-spanning activities (Hirschhorn and Gilmore, 1992). The extent to which managers focus on these as an increasingly important priority has not, to my knowledge, been empirically explored.

Both Perrow's 'organizational networks,' and Trist's (1976, 1979) notion of 'interorganizational domain' approximate 'value constellations' (Normann and Ramírez, 1993a, 1994). But in 'value constellations,' the unit of analysis is the interaction, or offering, not the organization or network. Yet value constellations stand to benefit from the attention which Perrow and Trist brought to what they termed the 'background' to their networks and domains 'figures'.

Perrow illustrated the importance of background with Warren, Rose and Bergunder's (1974) studies of U.S. urban reform, where the 'ground' for the interorganizational network figures 'is intellectual' (1972: 236). The 'institutionalized thought structure' shared by the members of the urban reform network, who had experienced much conflict, was shared much more among them than they themselves had believed.

Trist (1973) considered an interorganizational network's common (back-)ground to have the role of containing social pluralism, avoiding dissociation (p. 188). For Trist too, the nature of this ground is philosophical, reflecting 'ecological strategies': 'a common figure we may not find. Common ground we may' (1973: 188).

Common ground offers coherence and congruence: the current trend of top managers' seeking to define their organization's (or corporation's) values can be understood as a response to complexity following such thinking. Probst and Mer-

cier's (1991) analyses of how complexity challenges conventional management led them to propose that firms addressing complexity alter their structures and management to enhance auto-organizational processes, in line with current 'Santa Fe' thinking on complexity (Waldrop, 1992). Wheatley (1992, 1996) suggests that 'communications' problems seen in this light are not symptoms of other problems, but an expression of the fundamental requirement humans have to co-design their common situations, or 'background' in the above sense.

But, in established organizations, co-production opportunities rendered available at an ever enhanced pace by technical breakthroughs challenge their 'dynamic conservatism' (Schön, 1971). Managers seeking to make these become better co-producers must address their institutionalized inertia. Within the functionalist tradition, they are expected to enhance variety as one way of doing this, for Ashby's (1956) 'requisite variety' principle has held that the more variety one can manage, the more environmental variety the organization so managed can face. But enhancing variety as such may not suffice. The simultaneous holding of multiple roles mentioned above would require managing *incompatible* operational priorities, not only diverse (Lawrence and Lorsch, 1967) ones. Research on how incompatibility may thus be the emerging *raison d'être* of managing (Normann, 1975, 1979; Hampden-Turner, 1990) should be enriched with the value co-production view, for as more stakeholders are engaged in co-production, bridging ever-greater incompatibility may become 'the' managerial competence for organizations to succeed. The extent to which this competence needs to be developed interorganizationally needs to be researched.

Being able to address increasing numbers of co-productive counterparts, while containing the maladaptive effects of this complexity, appears to pay off because of 'Metcalf's law', which states, regarding the Internet, that 'the value of the network increases geometrically with the number of people who use it' (*The Economist*, 1995: 10). Such perspectives on complexity offer new challenges for researching how managerial competence supports and limits the co-production of value.

Effective delegation of responsibility is also evident in managing co-productive value creation.

As the customer-competence dialogue cannot prevent survival by keeping managers from engaging in the present-future one (Christensen and Bower, 1996), much of the first dialogue requires delegation within the present, in which actual management occurs. While the second dialogue requires help from lower levels of management, it involves considerable risks and is properly the responsibility of senior management. Research on how managers redirect their attention from supervision of the present towards out-looking future co-production possibilities through delegation is in its infancy (Kolodny *et al.*, 1996).

As technology changes priorities by rearranging the relative scarcities of resources (Normann and Ramírez, 1994), what management keeps track of also evolves. Customer bases, which in the industrial era remained 'off balance sheet' assets, for instance, are becoming assets which managers have explicit responsibility to develop. Maister (1997) suggests this asset to be crucial in professional services—I contend it now applies to all businesses. Research on valuing customers as assets, and on how managers become responsible for developing their value, has not, to my knowledge, yet taken place.

More generally, customers as consumers creating value (even if they destroy goods in so doing) change the focus of management's attention. From tracking what happens to the good after purchase, systems must be installed to track what happens to the customers' value creating (as well as their own customers', if possible). This extends beyond satisfaction measures: satisfaction and quality may need to be lowered selectively, so as to manage the customer base asset effectively (Normann, personal communication).

In co-productive value creation, customer effectiveness becomes as much of a corporate worry as own employee effectiveness. 'Customer productivity' becomes as important a criterion as internal and supplier productivity. For whatever the customer does not do, or does not do well, represents a business opportunity, for oneself—or for one's competitors. One can logically expect firms to track and even publish 'return on customer base' in the near future. A possible research agenda rests in applying findings so far established for relations with 'suppliers' to those with 'customers,' and vice versa.

As we saw in the first section, values guiding, or expressed in, judgements are today understood

as co-produced, over longer or shorter time frames. The actual values which managers manage are thus neither purely subjective ('in' an individual) nor objective ('in' the object), be they exchange or utility values. They are interactively established, plural, and, as they cannot be reduced to a single metric (Dean *et al.*, 1997), how they are identified, selected, defined, evaluated, communicated, and managed by interacting stakeholders represents a rich set of research opportunities.

Finally, keeping track of reconfiguring possibilities, both in terms of the opportunity and of the risk which they represent, implies that understanding the function of management as entailing co-learning with others is inescapable (cf. Revans, 1982; Ramírez, 1983; Morgan and Ramírez, 1984; Senge, 1990).

### The transition towards value co-production

As younger entrants (or competitors less 'weighted down' with difficult-to-change traditions) adapt to co-produce value more effectively, incumbents are challenged to change radically. But because of 'dynamic conservatism' (Schön, 1971), organizations—particularly if successful—are not easily transformed. Christensen and Bower (1996) document such transition difficulties in an excellent longitudinal study of the disk drive industry. Managing organizational change in the light of ever-renewed reconfiguration opportunities is thus a critical element enabling long-standing firms to co-produce value over time.

In practice, managerial and organizational innovations which entrepreneurs undertake to exploit the opportunities which value creation offers often appear alongside the traditional structures and processes in established firms. These sometimes emerge in an 'ad hoc' manner, but can result from well thought through initiatives. In both cases, when they succeed, they tend to threaten the established order, whose actors develop resistance for both legitimate and illegitimate reasons (Schein, 1993). New practices which succeed and 'take hold' do not automatically replace existing ones. Instead, the emerging 'parallel' functioning is grafted onto the existing line organization, or lives 'around' it, as a parasite does with another organism, or generates a new organization that is 'free' from the constraints of the parent. Normann

observed (personal communication) that some organizations smother new threatening structures through what Adorno and others in the Frankfurt School called 'repressive tolerance,' whereby they 'tolerate' something threatening the status quo to reduce its perceived importance.

Gilmore and Krantz (1991) analyzed processes which emerge alongside older, established formal ones. Quoting Schorr (1988), they propose that 'skunk-works' can easily 'denigrate the line organization in the current contempt for "bureaucrats"' (Gilmore and Krantz 1991: 456). Following Ware's research, they note that even 'at the very inception, a task force is minimally an attack on the existing structure' (1977), if its task is not defined to explicitly avoid undercutting executives' commands. But as it is the same executives who run both formal organization and parallel processes, authority difficulties (Krantz, 1989) make it difficult to reconcile them.

The collegial, horizontal 'leadership' relationship in the ad hoc process is at odds with the vertical, hierarchical, 'managerial' authority relation in the formal organization. Gilmore and Krantz propose that 'splitting' leadership from management converts leaders into 'cheerleaders' and makes managers kill good ideas. This splitting 'risks parallel processes being used to bypass, not to work through, the difficulties that a particular organization is facing' (1991: 465). To avoid this 'bypassing,' effective parallel processes, they conclude, must be 'transitional' (Winnicott, 1958; Amado and Ambrose, forthcoming), providing a 'safe' stage with which the organization can temporarily leave its current mode to explore, and eventually adopt, alternatives. Establishing the validity of this requires further research.

Developing approaches which help experimental, parallel, initiatives to inform, reform, and transform organizations and management explains the increased interest which organizational learning has been getting from practicing managers. New language to depict parallel managerial and organizational modes appears. Top managers of a major European industrial corporation seeking to redefine its business and its relations with customers recently told the author that a major project:

is being 'coordinated' [not 'managed'] by 'mentors' [not 'project managers'] who will clarify

the 'movement' [not 'plan'] which is meant to address the 'drama' [not 'business problems'] that the corporation has been living with. The 'mentors' will do this through several 'processes' [not 'management measures'] which will 'map' [not 'define'] the 'concept' [not 'vision' or 'mission'] which the movement will articulate.

The difficulty of expressing what is being done with conventional language betrays the gap which these executives experience between their formal organizational 'dispositif' (Foucault, 1980) and the processes they are inventing to develop their business. Research establishing whether the speed of reconfigurations is actually increasing has not to my knowledge been undertaken yet. Research analyzing how managerial and organizational innovations match emerging business opportunities explicitly using the co-productive framework is only in its beginnings (Wallin and Ramírez, 1996; Parolini, 1996).

## CONCLUSION

The 'value co-production' framework developed in this paper has a long intellectual history. But it is only recently that sociotechnical breakthroughs have allowed it to emerge in practice. 'Value co-production' offers an alternative to the

views on value which we have inherited from the industrial era. The main differences between both views, as have been examined in this paper, are summarized in Table 1.

This paper has shown that 'value co-production' appears to be better adapted to researching the definition of businesses, the organizing of work, and the management of emerging forms of actual value creating than frameworks associated with the industrial era, which the paper argues we are now leaving behind. The paper considers the industrial view as still applicable to a limited set of value creation situations, but 'value co-production' goes well beyond these.

We have shown that, with 'value co-production,' researchers studying business definition can study how economic actors (i) design new offerings, joining actors in innovative co-productive relationships; (ii) reconfigure the roles each co-producer holds in relating to others; resulting in (iii) new value creation systems. Researchers focusing on how work is organized are helped by 'value co-production' as they study organizing according to the 11 characteristics surveyed in the second section of the paper. Organizing in this way opens up research opportunities in terms of (iv) dialogue and (v) engagement as organizing essentials; (vi) the characteristics of

Table 1. Two views of value production

Industrial view	Co-productive view
<ul style="list-style-type: none"> <li>● Value creation is sequential, unidirectionally transitive, best described in 'value chains'</li> <li>● All managed values can be measured in monetary terms</li> <li>● Value is added</li> <li>● Value a function of utility and rarity</li> <li>● Values are 'objective' (exchange) and 'subjective' (utility)</li> <li>● Customers destroy value</li> <li>● Value 'realized' at transaction, only for supplier (event)</li> <li>● Three-sector models pertinent</li> <li>● Services a 'separate' activity</li> </ul>	<ul style="list-style-type: none"> <li>● Value creation is synchronic, interactive, best described in 'value constellations'</li> <li>● Some managed values cannot be measured or monetized</li> <li>● Values are co-invented, combined and reconciled</li> <li>● Exchange the source of utility and rarity</li> <li>● Values are 'contingent' and 'actual' (established interactively)</li> <li>● Customers (co-)create values</li> <li>● Value is co-produced, with customer, over time—for both co-producers (relationship)</li> <li>● Three-sector models no longer pertinent</li> <li>● Services a framework for all activities considered as co-produced</li> <li>● Consumers managed as factors of production (assets)</li> <li>● Economic actors analyzed as holding several different roles simultaneously</li> <li>● Interactions (offerings) are units of analysis</li> </ul>
<ul style="list-style-type: none"> <li>● Consumption not a factor of production</li> <li>● Economic actors analyzed holding one primary role at a time</li> <li>● Firm and activity are units of analysis</li> </ul>	

stakeholders which are so included; (vii) the incompatibility which can be integrated; and (viii) the design criteria with which such organizing is rendered viable. Finally, for those researching management, the framework opens up possibilities on how (ix) ignorance, as well as knowledge, is managed; (x) how incompatibility is addressed; (xi) how common ground is built and sustained; (xii) how interactive density is mobilized to increase value; (xiii) how customers are managed as assets; (xiv) how entrepreneurial action identifies reconfiguring possibilities; and (xv) how managers address established firms to make them more effective co-producers.

Perhaps most importantly, 'value co-production' provides a unified common (conceptual) ground linking these 15 research opportunities. It renders them not only coherent with each other, but also interactively helpful to each other. As such, for research purposes, the conceptual framework itself entails the co-productive, conversational, engaging characteristics it attributes to emerging forms of value creation. As Simmel (1977) argued, its value rests in the linkages, or actual exchange, which it opens up. Time will tell how valuable it actually becomes in helping value co-production to establish itself as a robust, testable, value creation framework, different from the one we inherited from the industrial era.

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